

Research on the Application of Virtual Reality Simulation Technology in Environmental Art Teaching Design

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Abstract. In order to understand the application of virtual reality technology in environmental art design, the advantages of virtual reality technology are analyzed, and the problems faced by traditional environmental art design are found: tedious manual drawing, computer rough renderings, environmental art design Conflict of subject matter. Multi-sensitivity, interactivity, and conception are the characteristics of virtual reality technology. The application of virtual reality technology in environmental art design is mainly reflected in the display effect, cost saving and the ability to avoid problems. Looking forward to the development prospects of virtual reality technology. The application of virtual reality technology to the field of environmental art design can enable the original flat design works to achieve three-dimensional flipping, and can better show the beauty and advantages of the works from a three-dimensional perspective. This thesis takes this as an entry point, uses VR technology to perform ancient bridge online, and is basically consistent with the finite element analysis results, paving the way for the subsequent realization of more realistic animation effects, and providing reference for further research on the restoration of ancient buildings.

Keywords: Virtual Reality; Simulation Technology; Environmental Art Teaching; Ancient Bridge Reproduction.

1. Introduction

With the advent of the information age, virtual reality technology continues to develop and mature. It is a comprehensive information technology that integrates the latest multimedia technology, Internet technology, and construction technology. The research and development of VR technology in my country originated in the early 1990s. The Xi'an Virtual Reality Technology Research and Development Institute, Tsinghua University Optical Disc Engineering Research and Development Institute, and the Computer Department of Harbin Institute of Technology have all made certain technological achievements. All in all, virtual reality technology realizes panoramic simulation demonstration by establishing a reality simulation system on a computer; creates a virtual roaming system of buildings, and realizes the synthesis of facial images and expressions; explores the synchronization and synchronization of actions and intonations when speaking. Visual technology; volume view and interface design for realizing simulation. With the rapid development of major technologies, VR technology has been used in construction, industry, environmental design and other fields.

This article analyzes the reproduction technology of the virtual ancient bridge scene in detail, and uses the Multigene Creator modelling tool to establish the geometric model of the cultural heritage scene. On the basis of the basic model that has been established, in-depth research has been conducted on the algorithms of scene model simplification related technologies, the use of texture mapping to accelerate scene rendering, and real-time construction of LOD models based on viewpoints. Collision detection is set for some objects and surfaces in the virtual scene, and an appropriate roaming mode is set. Finally, a real-time virtual roaming system is developed with the help of the Vega development platform and tool set. Experiments show that the system has received satisfactory results in terms of display effect and operating speed [1].

2. Discussion on the Characteristics of VR Virtual Reality Technology

As a fusion technology, virtual reality technology can accurately construct a spatial information model under the spatial mapping of various information resources to ensure the multi-dimensional analysis of data information. Virtual reality technology is not limited to the interpretation of digital

information models, and can be combined with audio, video and other technologies to provide users with dynamic data services. Compared with traditional computer graphics, the three-dimensional imaging in VR virtual reality technology can accurately simulate the natural environment. At the same time, its imaging characteristics are only slightly lower than the recognition pixels of human eyes. Under the conduction of subjective ideas, it can be Enhance people's sense of involvement. As shown in Figure 1, it is the implementation process of virtual reality technology.

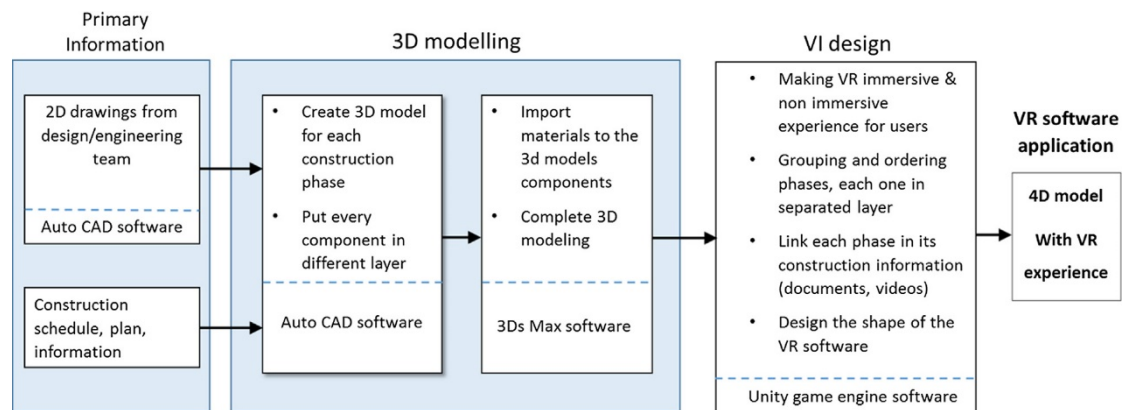


Figure 1. The process of implementing virtual reality technology

It can be clearly seen from Figure 1 that virtual reality technology is completed in the next step under the guidance of user specified requirements. Different virtual scenes need to rely on different technical means to achieve. Generally speaking, most virtual reality technologies The application needs to be equipped with the information input module of the virtual reality system, and rely on the specific operation of the multimedia technology and the information collection module to lay the foundation of the virtual environment, so as to create a three-dimensional environment and display specific virtual objects on the basis of the foundation. , Make the virtual environment more realistic. In addition, the most important thing is the operation of the virtual technology mutual inductance characteristic module. It is with this module that the virtual reality technology has an interactive experience between humans and the environment in the actual application process. Process. Finally, the virtual reality solution is presented to the audience through multimedia technology, computer information technology and other means [2].

2.1 Innovative Teaching Methods

Although many art design majors in domestic colleges and universities have introduced information-based teaching methods and methods, the most critical teaching links are still flat, partial and unreal, and it is difficult for students to gain overall perception from them. The use of VR technology for teaching enables students to obtain a three-dimensional, immersive, realistic and interactive cognitive experience through helmets, remote controllers and other devices in a realistic virtual environment. This new type of teaching method has brought unprecedented appeal to students, and has an obvious promotion effect on the improvement of teaching effect.

2.2 Abundant Teaching Resources

Existing teaching resources (documents, multimedia courseware, etc.) can realize one-way output of knowledge and are more suitable for providing theoretical teaching for students. Using VR technology to carry out teaching, students can create operable 3D models through related software, and they can also use virtual interactive platforms and software with appropriate experience tools to conduct interactive learning in a realistic environment.

2.3 Realistic Working Environment

In recent years, major domestic colleges and universities have promoted "integration of theory and practice, integration of work and study", but there are only a handful of companies that can truly

achieve practical teaching. The use of VR technology can create a realistic job environment through powerful 3D modelling technology and interactive platform and software, which is very beneficial to the cultivation of students' professional quality. At present, VR technology has begun to be used in professional teaching of interior design, animation design, packaging design, etc., and its advantages are beginning to appear [3].

3. Key Technology and Optimization of Ancient Bridge Reproduction Modelling

3.1 The Key Technology of Modelling

When a three-dimensional complex model has multiple objects with the same geometric shapes and the same properties but different positions, the instantiation technology can be used. Instantiation is an algorithm used in graphics to save the running cost of the computer. When constructing multiple objects with the same shape and attributes, if the normal copy method is used, the number of polygons will double for each additional object, and the instantiation technology can increase the number of similar objects without increasing the number of polygons. For example, in a virtual monument scene, there are many trees with the same structure, shape, and texture. The difference between the trees is only in their position, size, and direction. If you put each tree in the memory, it will cause great waste. Therefore, we can use the Instance method, as shown in Figure 2, that is, the same tree only stores one instance in the memory [4]. After a tree is translated, rotated, and scaled, all trees with the same structure are obtained, which greatly saves Memory space. The main processing method now is matrix transformation. It sacrificed time for memory space. The geometric transformation matrix of the object in the three-dimensional space can be expressed by T3D, as shown in formula (1),

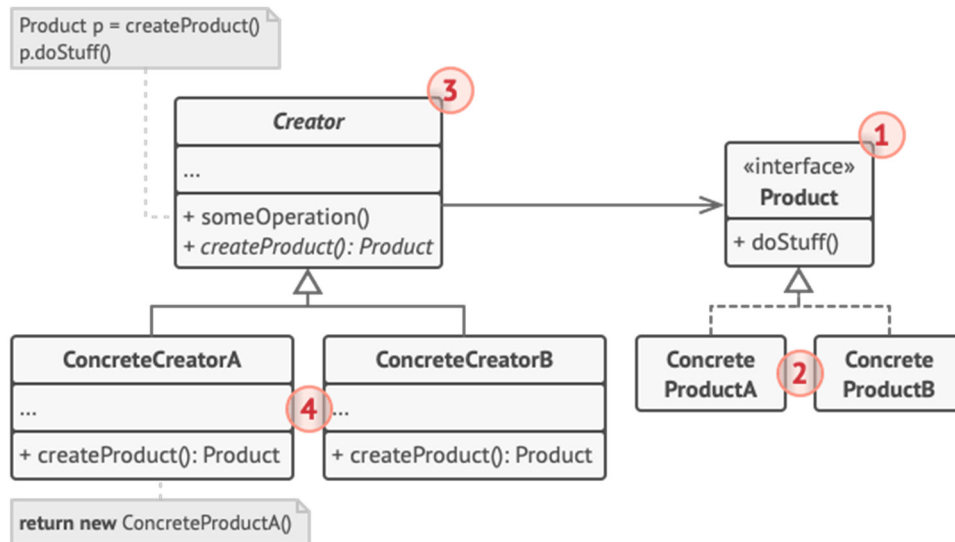


Figure 2. Representation of examples in Creator

$$T_{3D} = \begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ a_{31} & a_{32} & a_{33} & a_{34} \\ a_{41} & a_{42} & a_{43} & a_{44} \end{bmatrix} \quad (1)$$

3.2 Modelling Optimization Method

Before establishing this huge scene model, the hierarchical structure of all entity models in the virtual scene should be determined according to the geometric spatial position of each entity in the virtual scene, as well as the structural relationships between and within the models. After the

hierarchical structure of the scene is divided, it can facilitate the division of labor for scene modeling and the organization and management of the entity model, clarify the model construction goals, and greatly reduce the workload of modeling. Even the simplest model needs to adjust the hierarchical structure of the model to achieve the purpose of optimization. There are often redundancy phenomena when describing the surface of a solid model. Removing invisible polygons in the system can reduce the number of polygons in the system database. Because they are always in an invisible position during scene browsing, removing them does not affect the visual effect of the entity, but it can greatly reduce the complexity of the entire scene and increase the display speed. The redundant polygons here mainly refer to the parts that are not visible when viewing the model from the outside of the entity. For example, the base surface of the building, the inner wall, the connecting surface between the body models, etc. Take the steps in front of the building as an example to illustrate the deletion and merging of faces.

4. Realization of Virtual Reality Simulation Technology of Ancient Bridge Reproduction

Visual roaming is an important part of displaying ancient cultural heritage. Only when the completed 3D model is placed in the environment of the roaming engine, will visitors have an immersive feeling. The ancient cultural heritage roaming system is built on the software Vega platform, and according to the actual situation of the scene, a specific motion model and a collision detection algorithm based on the line of sight are designed [5].

Vega has a good visual editing environment. It uses LynX, an X/Motif-based click-and-click graphics environment, to quickly meet user requirements, and to develop real-time applications in a very short time. Using LynX dynamic preview function, it can see the effect of the operation change immediately. Vega also includes a complete C language application program interface to provide software developers with maximum software control and flexibility. Vega provides a stable, compatible, and easy-to-use interface, making development, support, and maintenance work faster and more efficient.

4.1 Collision Detection

In Vega software, the Iector class is specially designed to handle various collision detection problems, and it provides eight collision detection algorithms for developers to choose. The VOLUME method is used for the collision detection between the user-specified body and the target scene, allowing the user to specify and execute a custom crossover method. The user is responsible for defining the body event and placing the body on the appropriate position; it consists of a single line segment. The HAT method is used to calculate the altitude above the ground, and it is also composed of a single line segment; the ZPR method can calculate the altitude and the pitch and roll of the intersection at the same time, and it is composed of a line segment; The TRIPOD method is used to place a mobile platform on an uneven ground. It is composed of three line segments to calculate the height and direction of the triangular platform; the LOS method is used to calculate the line of sight range and is composed of a horizontal line segment; the BUMP method is specifically used for the need to calculate the collision detection is composed of six line segments; the XYZPR method is used to calculate the intersection point and the yaw and roll of the point in the non-planar earth coordinate system. The LOS method and the BUMP method can be used in this system [6].

4.2 The Roaming Reproduction of the Ancient Bridge Scene

"Ancient building virtual roaming system" uses non-professional computer equipment and display equipment to construct a professional "virtual architectural cultural heritage" serving the general public, allowing everyone to discover computer three-dimensional art from VR New fun. The main functions are: display mode selection, roaming mode selection (including fixed path roaming and random roaming), system information display (including display of refresh rate, refresh time, window

resolution and other information), and other functions (including Illumination, transparency control, reading adf file, picture printing and other functions). As shown in Figure 3.

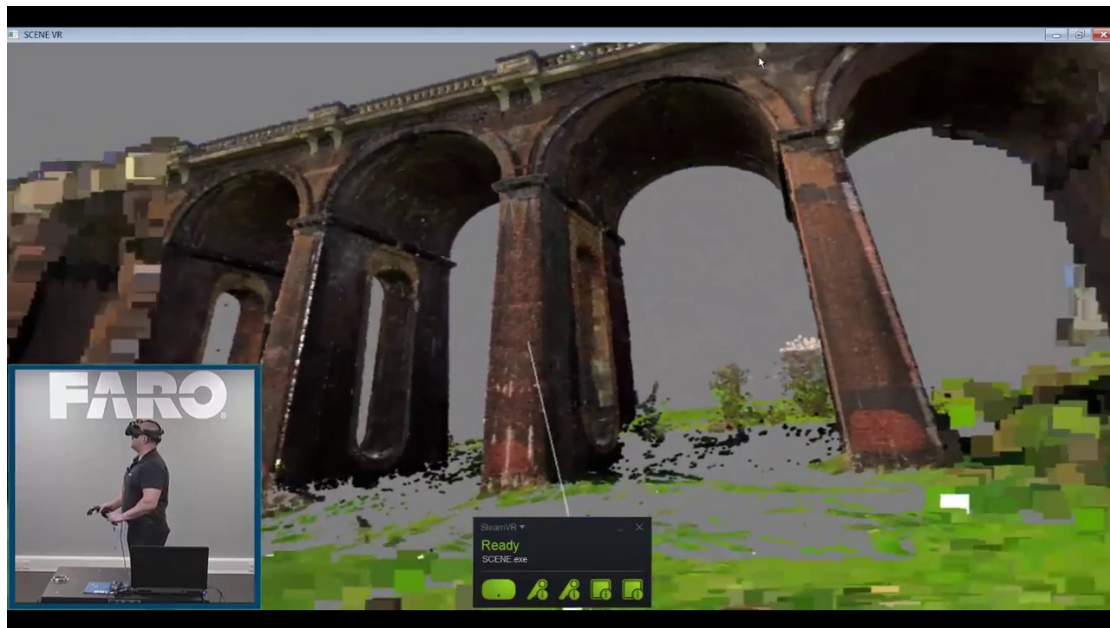


Figure 3. Ancient bridge reproduction roaming system

The production of this system uses low-end PC computers, and the works can be published on the Internet to maximize the generalization and scope of use. This can guide the creation and display of "virtual architectural cultural heritage" out of expert laboratories, Making the virtual architectural heritage to the public.

5. The Advantages of Virtual Simulation Technology in Environmental Art Teaching

5.1 Virtual Reality can Improve Budget Accuracy

The application advantages of virtual reality technology can also be reflected in the calculation of project cost. It can strengthen the accuracy of structure and material budget, so as to avoid various problems due to budget errors as much as possible. Can guide designers to understand the structure, avoid unnecessary losses caused by poor material budget in the design process [7].

5.2 Virtual Reality Technology can Enhance the Interaction between Design Parties

Virtual reality technology shows its unique charm in the reporting stage of the design plan, and it is more interactive than the traditional way of expression in terms of design expression and customer communication. Customers can personally enter the virtual room, inspect the presentation of each specific design part and the interconnection between each design element, understand the function use process and function utilization rate of the entire virtual reality space, so that customers can feel very real the required program display. At the same time, customers can also discuss and communicate various problems in the design with designers in time, and conduct collaborative and collaborative communication. This is incomparable to traditional computer renderings and architectural animation (building roaming), and it is also a presentation mode that many customers prefer.

6. Conclusion

With the rapid development of computer technology and the active participation of environmental art designers, multimedia, visualization and virtual reality technology, intelligent technology, the

integration of CAD and MIS systems, network technology, collaborative working environment, etc. will all enter the field of research and development. The introduction of virtual reality technology can put the designer in a relatively real simulation space, enabling the environmental art design to break through the conventional pattern of "plane, elevation, and section", allowing the designer to directly face the design object from various angles. Deeply study the relationship and proportions between the design elements and spaces in the environment, and design more perfect and more humane works.

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Research and Development of Entrepreneurship Practice Platform based on Computer Cloud Computing Assisted in the Cultivation of Innovative Talents in Electrical Automation

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Abstract. This article takes electrical engineering and its automation major as an example, based on the school's running characteristics, and according to the requirements of the "Education and Training Program for Excellent Engineers", through the investigation and analysis of the needs of talents in the domestic and foreign electrical industry fields, the article has established The "Excellence Plan" with the characteristics of the college explores and practices the training objectives, training models and training programs of the major, and builds a curriculum system of excellent engineers and a talent training model with engineering capabilities for the needs of the future society. At the same time, the thesis conducts design and research on electrical automation management systems, with cloud computing as an auxiliary, to provide an entrepreneurial practice platform for the professional talent training.

Keywords: Computer System; Electrical Automation Major; Talent Training; Practice Platform; Cloud Computing.

1. Introduction

The fundamental task of higher education teaching reform is to improve the quality of personnel training. The core of improving the quality of talent training is to reform the talent training model under the premise of following the laws of education, so that the talent training programs and training methods can be better coordinated with the talent training goals and training specifications, and better meet the needs of social development. To this end, based on the analysis of professional vocational capabilities, the electrical automation technology professional construction project team has researched and developed a high-skilled and applied talent training program for electrical automation technology. Through professional construction, curriculum, and practical teaching reforms, a professional the characteristic practice teaching and quality assurance system ensure the quality of professional training in electrical automation technology.

2. The Core of the Connotation Construction of Higher Vocational Colleges- design of Professional Talent Training Plan

The construction of higher vocational majors is different from that of undergraduate colleges, which is centered on the subject knowledge system. The convergence of higher vocational education and society is the key to the characteristics of higher vocational education. With the confirmation of higher vocational education as a type of education, Chinese higher vocational education the connotation development of education will be more reflected in the professional construction. The professional construction and its talent training program have become the core of the connotation construction of vocational colleges. (1) in fact, if China's higher vocational education cannot continue to improve the level of talent training, it cannot establish the type characteristics and advantages of running higher vocational colleges, and it cannot establish the quality brand of higher vocational education. Vocational colleges will lose room for development. Brand is a concept introduced from enterprise management, which refers to an intangible asset that brings premium to the owner and

generates added value. To establish a brand in higher vocational colleges, we must first implement it in the construction of brand majors, and the core connotation of a brand major is the systematic design of talent training programs [1]. A brand professional with a good reputation and high visibility, which contains the core competitiveness brought by quality assurance, not only plays an important role in talent training, but also has important significance for improving professional reputation and the credibility of vocational colleges. The Opinions of the Ministry of Education and the Ministry of Finance on the Implementation of the National Model Higher Vocational College Construction Plan and Accelerating the Reform and Development of Higher Vocational Education clearly stated that during the "Eleventh Five-Year Plan" period, it is important to build around 500 industries with wide coverage and good schooling conditions, Characteristic specialty (group) with close industry-university integration and high-quality talent training. Recently, the country's first batch of demonstration institutes has checked and accepted, and has also taken the professional finance training program supported by the central finance as the important content of project acceptance and the main carrier for demonstration. Professional construction is an important content of national demonstration construction and the core issue of the development of vocational education. It is the focus and breakthrough point for promoting the development of higher vocational colleges, improving the level of running schools, and improving social reputation. Strengthening brand awareness and creating brand majors are the inevitable choice for higher vocational colleges to gain competitive advantage.

3. Investigation and Analysis of the Talent Needs of Related Companies in the Electrical Engineering Field

In April-August 2018, we conducted research on the demand for electrical talents in state-owned enterprises, private enterprises, and foreign-funded enterprises in the electrical engineering field, including the power industry, electrical and electronic equipment manufacturing, aerospace, vehicle manufacturing, and construction industries. It can be seen from the survey that at present, with the advancement and development of technology, the level of electrical automation of enterprises has been significantly improved than in the past. By increasing the degree of electrical automation, enterprises can increase their economic efficiency by increasing production efficiency, reducing raw material consumption, and saving costs. Due to the wide employment of electrical engineering and automation majors, the companies participating in the survey have recruited a group of college students of electrical engineering and automation in the past five years, and the number of employees has ranged from tens to hundreds. Most of these recruited students are undergraduates, mainly engaged in research and development, production, management, and marketing. A survey of the demand for electrical engineering and automation professionals from various companies in the next five years shows that nearly 75% of companies have an upward trend in the demand for professionals. Through questionnaire surveys, various enterprises have higher requirements for the quality of electrical engineering students, of which the basic theoretical knowledge related to the major is the highest, followed by the transformation and maintenance capabilities of electrical automation equipment, followed by computer information technology, computer control technology and Comprehensive computer skills, organizational management skills, comprehensive English skills, interpersonal skills, etc.

The needs of enterprises for the cultivation of electrical engineering and automation professionals include: the electrical professional knowledge should be broadened, and there is a certain basic knowledge of production technology, electronic and electrical equipment and machinery manufacturing; understand the practical application background and development prospects of electrical control systems; To improve the ability to solve problems, with on-site debugging and operation capabilities; need to strengthen the training of comprehensive computer application capabilities; need to strengthen project management, increase the training of market awareness; understand professional new technologies, improve the cultivation of practical and innovative capabilities; new Under the employment environment, students must adapt to the new environment,

and have the hard work, down-to-earth, dedication and hard work spirit; to strengthen the language expression, communication and coordination skills, etc., as shown in Figure 1 Statistics on the cultivation of engineering and automation professionals require that 80% of companies mention that electrical expertise needs to be broadened, 70% of companies mention requirements for talents' innovative ability, and non-intelligence literacy is gradually being valued by companies.

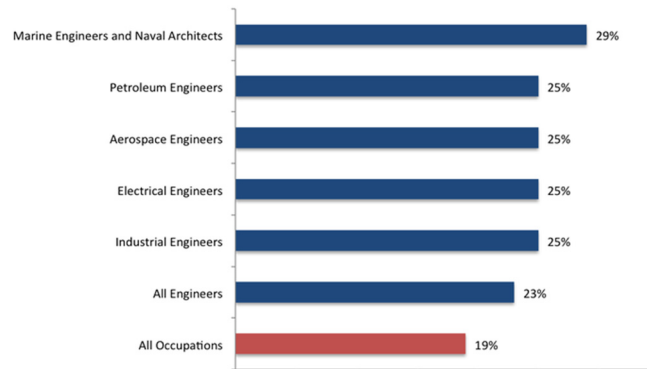


Fig 1. Statistics of enterprises' demand for training of electrical engineering and automation professionals

4. Research on the Training Program of Electrical Automation Technology Professionals

4.1 Employment Positions and Training Objectives

The analysis of data from enterprise surveys and graduate employment shows that the electrical automation technology major has a wide employment area and jobs. It can be employed in petrochemical enterprises, but also in manufacturing, construction, power industry, emerging industries, and Employment in institutions. The occupational positions, typical work tasks and position ability requirements of electrical automation technology are shown in Table 1 [2].

Table 1. Professional Positions, Typical Work Tasks and Job Capability Requirements of Electrical Automation Technology

Career	Typical job tasks and job requirements
Substation operation management	For the operation management of the substation, the system is operated in accordance with the dispatch instructions to ensure the safe and reliable operation of the power supply and distribution system; it can manage, operate, and handle faults in the system
Electrical system and equipment installation	Install lighting lines, high and low voltage power lines, motors and their control equipment and automatic control systems to meet the required technical standards; have the skills of internal and external electricians
Maintenance and repair of electrical equipment	Maintain, test, and overhaul the power supply and distribution system and equipment of the enterprise to ensure its good operating state; can repair electricians
Automatic control and technical transformation	PLC programming and technical maintenance, development and debugging of single-chip application systems, application of new technologies to control or technically transform production machinery, electrical equipment, and automation systems; with the ability to analyze and maintain technical automatic control systems
Electrical equipment sales and technical services	Promotion and sales of electrical automation systems or equipment; ability to provide technical services for systems or equipment

Determine professional training goals based on professional positions and ability requirements. The professional training in electrical automation technology has a good professional quality, master electrical engineering technology, electronic technology, power supply and distribution technology, automatic control technology and computer application technology, has strong engineering application and practical operation skills, and can use electrical automation technology and methods to solve industry For production control problems, it is an application-type highly-skilled person with the ability to install, debug, maintain, repair, and operate management systems and equipment [3].

4.2 Ways to Train Professionals in Electrical Automation

4.2.1 "Industry-Industry-Enterprise"

The combination of "Industry-Industry-Enterprise" is to solve the problem of why and how to do majors. The construction of majors should ultimately serve the development of regional industries. The professional settings and adjustments in higher vocational colleges are mainly affected by the transformation and upgrading of industrial structures in the region. Its impact on talent demand. Therefore, the professional construction must first be "matching industry", "depending on industry", "cooperative enterprise". Among them, industry is the foundation, industry associations are the bonds, and enterprises are cooperative entities.

The connection with the industry is mainly reflected in the professional setting to closely integrate the regional industrial pattern and the distribution of pillar industries, and to adapt to the leading and dominant industries in the region. This combination must be forward-looking and even lead the regional economy and industry. development of. What kind of special industries does a region have, the higher vocational colleges in this region will run related majors, and these majors will often be very distinctive and become brand-specific majors. Therefore, to become a brand in a higher vocational major, it must have a good industrial background, which is determined by the regional nature of higher vocational education. However, industry is a broader concept, and higher vocational colleges must develop substantive cooperation with specific industry associations and their backbone enterprises under certain industry backgrounds in order to develop their characteristics. The construction of the brand major must have the active participation of the industry and enterprises and all-round cooperation, which is determined by the professionalism of higher vocational education [4]. A major can rely on 1-2 industry associations, and under the matchmaking of industry associations, carry out school-enterprise cooperation with the backbone enterprises of the association. The logical starting point of the school-enterprise cooperation is that the enterprise needs the needs of people, so the initial form is often to hold an order class named by the enterprise, and then gradually go deep into the entire process of talent training, such as curriculum construction, mutual recruitment of teachers, and practical Sharing of training bases, joint application research and development, etc. In practice, we recognize that the most difficult thing for school-enterprise cooperation is not school heat and enterprise coldness, but that it is difficult for both schools and enterprises to find a joint point of cooperation at the same time. The school's major is oriented to the entire industry, but it is difficult to develop with an enterprise. All-round cooperation, but the win-win point with an industry association is easy to find. For example, an enterprise's order class often does not last for a long time, and an industry association's self-selected order class or virtual order class is often more popular with enterprises. welcome. Industry associations have a lot of enterprise resources and information, and they also bear certain responsibilities for the employment needs of enterprises. Therefore, industry associations are a good link for school-enterprise cooperation. Higher vocational colleges should scientifically design professional talent training programs according to the needs of industry enterprises, clarify the core value added during the talent training process and after the talents are transferred to the society, and be good at integrating and using various resources on and off campus to create professional core competition Power and "brand patents" form substantial added value.

4.2.2 "Job-Ability-Course"

The combination of "post-ability-course" is to solve the problem of what kind of talents are cultivated and how to design the course system for majors. The soul of professional construction is

the talent training program. The key to the talent training program is the positioning of the talent training goal, and the way to achieve it is the scientific curriculum design. The goal of higher vocational education is to train high-quality and skilled application-oriented professionals, which determines that their majors are not "disciplinary majors" but "technical majors" for undergraduates, emphasizing the theoretical knowledge necessary for a certain professional position or group of positions and mastering practical skills. Therefore, professional construction must be based on the requirements of professional positions (groups), clearly define the ability goals of practitioners, design the curriculum system, and finally construct a professional talent training program.

In order to make professional personnel training meet the requirements of job positions and have sustainable career development potential, first of all, three factors must be considered in the thinking of professional construction: first, market positioning, and what the trained personnel do; second, technical development Trends, the skills that teachers impart to students must meet the requirements of enterprise development; the third is the source situation, and the cognitive characteristics of vocational students must be considered. Therefore, the professional construction path must first clarify the target position, determine the talent training goal, and then analyze the professional ability according to the position of the position, design the professional course system according to the occupational requirements of the professional position (group) and the working process, and generally determine 4-6 of this major. The core curriculum and further determine the expansion curriculum system for the sustainable development of students. At the same time, the general curriculum system is designed according to the needs of "serving the profession and expanding the quality of students". Establish a curriculum system with regional characteristics, systematic hands-on ability training and systematic basic knowledge training to achieve the irreplaceability of talent training, see Figure 2 [5].

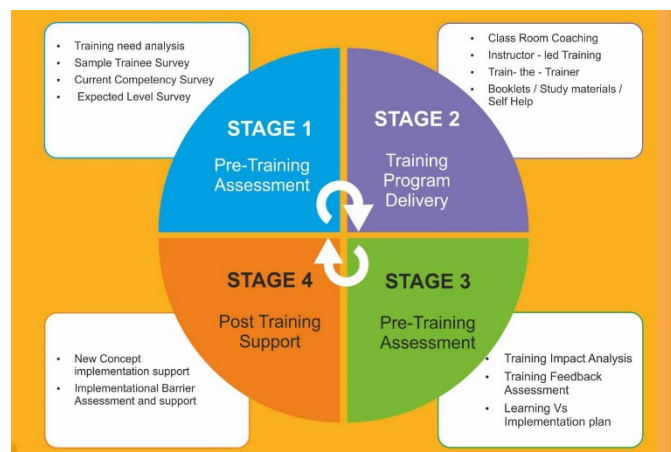


Fig 2. "Job-Capability-Curriculum" three-combined implementation path (six steps)

4.2.3 Construction of the Curriculum System

In order to achieve the goal of talent training, in the past three years, the research team has carried out theoretical research and practical exploration around talent training programs. First, a "professional construction steering committee" composed of senior engineering and technical personnel of the enterprise and school experts and professors was established. Under the guidance of enterprise experts, in-depth analysis of professional positions in electrical automation technology was conducted. · Learning and doing "integrated" and "post · class · certification" integrated training mode, built a "253" curriculum system of 2 platforms, 5 modules, 3 main lines "2.5+0.5", as shown in Figure 3 Show.

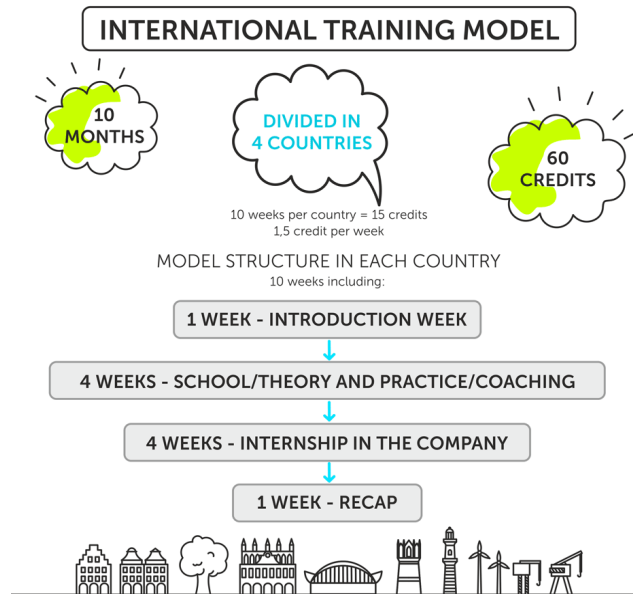


Fig 3. "253" course system of electrical automation technology major

"2 platforms" include basic quality platform and professional ability platform. The basic quality platform reflects the "advanced" of higher vocational education. Through this platform, students' cultural literacy, self-improvement ability, labor concept, teamwork ability and innovative spirit are cultivated to ensure the comprehensive quality of students. The vocational competence platform reflects the "vocational nature" of higher vocational education. Through this platform, students are trained in engineering thinking and engineering application capabilities, forming students' professional knowledge and job skills, and establishing compliance with national standards, safe operating procedures, civilized construction, and safe use. The awareness of electricity, saving electricity and environmental protection guarantees the professional quality of students.

"5 modules" integrates all the contents of electrical automation professional technology and skill training. This is a characteristic module that reflects the attributes of this profession, including electrical installation module, electrical control module, intelligent control module, electrical operation module and top post internship module. The design of each module is aimed at the specific positions of employment. Based on the principles of combining strong and weak electricity, combining electrician and electronics, combining hardware and software, and combining components (equipment) and systems, we design courses and related skills training to Meet the knowledge and ability requirements necessary for a professional position.

"3 main lines" refer to the three main lines of practical teaching, which are composed of electrical technology application engineering practice, electronic technology application engineering practice and computer technology application practice. Through practical teaching, it focuses on cultivating students' professional skills and comprehensive application skills. In order to achieve the goal of high-skilled personnel training, the three main lines of practical teaching are run through the "5 modules" teaching.

4.3 Implementation of "Dual Subject" Teaching in Schools and Enterprises

4.3.1 Teaching Mode

There are 5 core courses in electrical automation technology, which are motor and electrical control technology, sensor and automatic detection technology, modern power supply and distribution technology, PLC control system debugging and maintenance, and automatic production line installation and operation maintenance. The five professional core courses all adopt the theory of integration of theory and project, and the project-oriented teaching mode, interspersing the points of professional knowledge and skill points into each task for learning [6].

4.3.2 Teaching Arrangement

The six semesters are alternated according to the mode of school-enterprise-school-enterprise-school-enterprise, and the teaching arrangement runs.

4.3.3 Teaching Methods and Means

The five professional core courses mainly adopt project teaching methods, group discussions, case teaching methods and other teaching methods.

4.3.4 Assessment and Evaluation

The teaching evaluation of the "dual-subject" talent training model is centered on ability and mainly based on process assessment. Comprehensive evaluation of professional skills, professional knowledge, professional qualities, method capabilities, etc. As shown in Figure 4 [7].

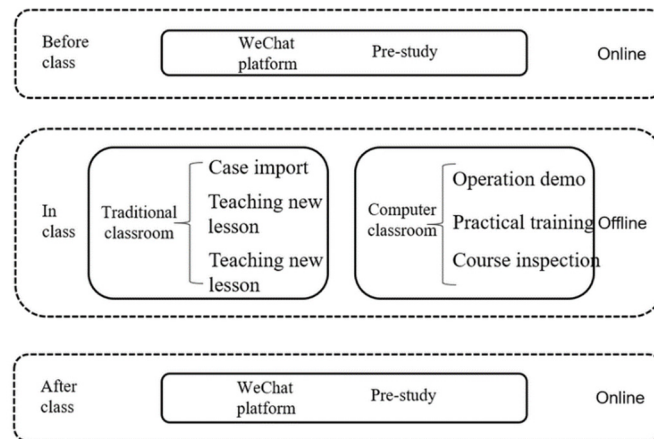


Fig 4. Teaching arrangement operation diagram

5. R&D of Professional System Platform based on Cloud Computing Electrification

In order to ensure the efficiency of the electrification professional talent training, we use the cloud computing platform to design an electrical automation professional platform for the use of learning, production, research, and research, and assist students to realize electrification online operation.

5.1 Overall System Design

In the process of controlling electrical automation, the role of the computer monitoring system is very significant. The computer monitoring system configures and monitors the electrical automation system by combining system functions and functions, total assembly capacity, system type, and motor electrical capacity. The new method can effectively reduce the adverse consequences caused by the design of large machinery automatic control systems. The electrical load automation control system is often used in the process of power grid construction. This control system can ensure the normal operation of the power grid by managing and monitoring the electrical load [8]. However, with the increase in residential electricity consumption and industrial electricity consumption, the traditional method of restricting electricity consumption has been unable to meet the demand for electricity services. At this time, the role of electrical load automation control system is highlighted, using electrical load automation the control system can make electric load management tend to be automated, and gradually realize the integration of electric load management and distribution management.

5.2 Electrical Automation Control Constraint Model

In order to realize the optimal design of the electrical automation control system, the parameter adaptive adjustment is combined with the sensitivity parameters of the electrical output, the parameter

identification model of the electrical automation system is established, and the output steady-state gain compensation method is used to perform electromagnetic coupling control to obtain the electrical automation control DC The /AC inverter model can be described as:

$$G_1(s) = \frac{1}{1 + 0.5sT_{SW}} \quad (1)$$

Among them, s is used to describe the initial empirical mode signal of electrical automation control; T_{SW} represents the delay time constant of electrical automation control, $T_{SW} = 1/f_{SW}$; f_{SW} represents the steady state switching frequency of electrical automation control.

In order to calculate the interference control rate of electrical automation control parameters, the nonlinear equation of the electrical automation control model is obtained according to the high-order sliding mode control algorithm:

$$\begin{cases} x_1 = x_3 \\ x_3 = f_\theta(X, t) + g_\theta(X, t)u(t) + d_\theta(t) \\ x_2 = x_4 \\ x_4 = f_x(X, t) + g_x(X, t)u(t) + d_x(t) \end{cases} \quad (2)$$

In the formula $f_\theta(X, t)$, $g_\theta(X, t)$, $f_x(X, t)$ and $g_x(X, t)$ represent the interference items of electrical control. SPIDNN is used as the learning network in the interference suppression of the automatic control model. The SPIDNN learning network is a three-layer forward learning network.

net_j represents the total input of the j -th neuron in the learning network, which is equal to the sum of the weight value $\omega_{1j}, \omega_{2j}, \dots, \omega_{nj}$ and output $x_1, x_2, \dots, x_n$ of each branch in the automatic control model. Its expression is:

$$net_j = \sum_{i=1}^n \omega_{ij} x_i(t), i \neq j \quad (3)$$

5.3 Hardware Development and Experimental Testing

In order to verify the effectiveness of the electrical automation control model under this method, the performance of the electrical automation control model is tested. Based on the above control algorithm design, the hardware design of the electrical automation control system is carried out under the DC/AC inverter model. Using computer application technology for remote control, the system's hardware composition includes computer program control module, instruction loading module and electrical automation integrated control module, etc. Set the initial parameters of the electrical system to $f=27.05\text{MHz}$, $C_r=14.6\text{pF}$, $R_0=30\Omega$, electrical system load For $R_{pl}=45\Omega$, the power gain is 120KW, using embedded system development technology, remote control under computer technology, the hardware development of the electrical automation control system is shown in Figure 5.

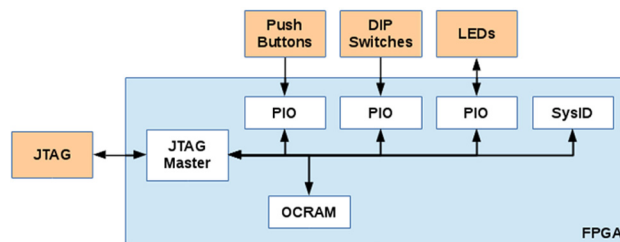


Fig 5. System hardware design

According to the above design results, the simulation analysis of control performance is carried out, and the current and voltage performance curves are tested when the genetic method and the method in this paper are used to control electrical automation. As shown in Figure 6.

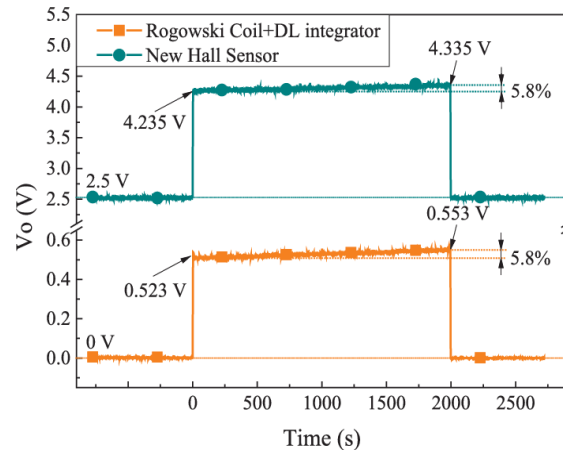


Fig 6. Current control performance test

It can be seen from Figure 6 that when the time is 0.03s, the current of the electrical automation control under the genetic method is -16, and the current method is the same as the current of the genetic method; when the time is 0.04s, the current of the electrical automation control under the genetic method is -13, the current of the method in this paper is still -16; when the time is 0.05s, the current of the electrical automation control under the genetic method is -14, the current of the method in this paper is -15; when the time is 0.06s, the current under the genetic method The current of automatic control is -8, the current of the method in this article is -14; when the time is 0.07s, the current of electrical automation control under genetic method is -10, the current of the method in this article is -14; when the time is 0.08s, The current of electrical automation control under genetic method is -12, and the current of the method in this paper is -14 [9].

6. Conclusion

Through the reform of the "dual-subject" talent training model of schools and enterprises, our college's graduates of electrical automation technology have been unanimously recognized by enterprises. The enterprise believes that the "dual subject" talent training model has distinctive features and the talent training specifications meet the requirements of the enterprise's employment. The "dual-subject" talent training model of the school and enterprise is conducive to the long-term development of students in the enterprise. The curriculum teaching reform can be closely integrated with engineering practice and the industry standards of electrical automation technology, reflecting the characteristics of the combination of work and learning.

Acknowledgments

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Empower Life-long Creators

-- Unlock Creativity from Creativity Conception/Belief/Mindset

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Abstract. Beliefs and attitudes are important factors that influence how individuals manage and cultivate their creativity. This paper seeks to investigate how individuals cultivate creativity by understanding the conception of creativity and applying small “c” framework in the classroom, cultivating creativity as an attitude or a decision, and promoting growth creative mindset among teachers and students. Each section will be supported by theory review, pedagogical implications, and examples of pedagogical advice. Finally, based on the review, suggestions are offered to students and researchers. In a sense, teachers and students should be aware of the conceptions, attitudes, beliefs, or mindsets they hold towards creativity, and by identifying and changing them, they could remove the barriers and be motivated to take creative attempts and become Life-long creators.

Keywords: Creativity Cultivation; Creativity Conception; Creativity Pedagogy; Attitude; Creative Mindset.

1. Introduction

Creativity has been a skill of great importance in the 21st century. [1] For decades, nonetheless, scientists such as Guilford questioned the low correlation between education and creative action. [2] [3] Indeed, the past decades have witnessed growing research and practical efforts of creativity education [4], but there still is much to be explored in this field of research. This article will mainly offer some suggestions for teachers and students in cultivating creativity from the perspective of creativity conception, belief, mindset and attitude.

2. The Role of Teacher Beliefs in Cultivating Creativity

Teachers play an important role in cultivating creativity. Yet teachers tend to desire quick fixes, or techniques that yield quick-fire solutions, when it comes to imparting creativity among students. [5] However, researches point out that “instant creativity” does not exist, as creative competence can only be developed over time [6] [5]. Indeed, some suggest that ten or more years of deliberate practice is required in a particular domain to become a highly accomplished creator [7]. Rather than trying to find sure-fire techniques to develop creativity, researchers should explore pre-methods that teachers utilize, and how those methods might help or hinder the development of creative potential [8] [5]. However, to look at teachers’ behavior is not enough as opposed to examining the beliefs that underlie behavior. Indeed, the beliefs that teachers bring to the classroom can shape and guide their duties, which may be unconscious. It is therefore important to explore the concepts of creativity that teachers hold, and how they might help or hinder creative performance and the development of creative potential.

Many teachers believe that creativity is associated with negative behavior in the classroom, such as rebelliousness, chaotic behavior — in short, highly creative students are believed to be also disruptive [9]. Guided by such beliefs, teachers are prone to dismiss or ignore students’ creative ideas. This negative attitude towards creativity in the classroom can be mitigated when teachers realize that disruptive, yet otherwise creative students can make task-appropriate contributions, and be engaged in school in appropriate ways [10] [5]. In a sense, identifying and changing teachers’ beliefs can help

transform negative attitude into positive ones towards creativity, thus supporting and encouraging the valuable trait, and prevent it from being extinguished.

3. The Role of Students in Realizing Creativity

While teachers play an important part in creative development, students are the main subjects of realizing creativity potential. Their beliefs towards creativity, if negative, can also cause them to lose their willingness to pursue a particular creative aspiration. This is prone to happen following a negative performance outcome, which is referred to as creativity mortification [11]. For example, when students believe they are born uncreative and there is no way to change this situation, they are more likely to avoid creative activities after experiencing drawbacks.

4. The Conception of Creativity

4.1 The Four ‘C’ Model: Understand Levels of Creativity Expression and Apply Small ‘C’ Framework in the Classroom

A common misconception exists that creativity is an inborn trait available only to a rare portion of people [3]. Nonetheless, this could be the result of misunderstanding complex levels of creativity expression, namely the four ‘C’ model [12]: Big-C refers to genius level creativity; Pro-C creativity is expert-level creativity that has not reached genius status; Little/Small-c refers to everyday creativity; and mini-c creativity refers to creativity that is of personal meaning, which stands for new self-discoveries in the individual’s learning process. The four “C” s follow a developmental trajectory, as shown in Figure 1. The mini-c is the basis and starting point for the other “C” s, which reflects the development from personally meaningful creativity to socially meaningful creativity. [5]

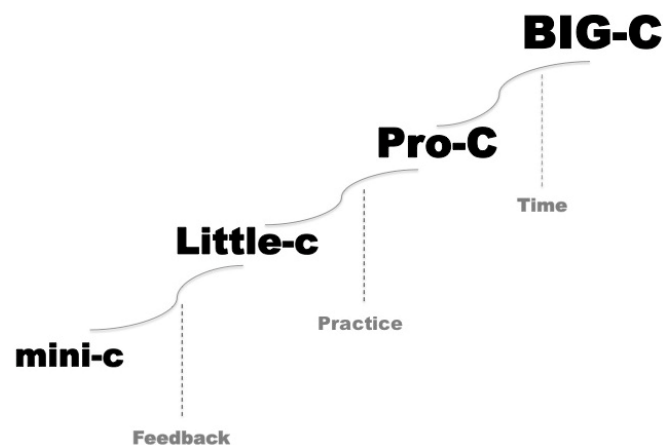


Fig 1. The Developmental Trajectory of Creativity

Upon further examination of the misconception, teachers and students often refer to different levels of creativity. They may equate creativity merely to Big-C and neglect the fact that there is also everyday creativity and personally meaningful creativity. While it is possible that a genius level of creativity only exists in a small portion of people, micro creativity — that of the everyday — is accessible to everyone.

Understanding the 4 “C” s model has significant educational implications. Among the 4 “C” s, mini-C (self-discovery in the learning process) can be the most meaningful to both teachers and students. As noted by researchers, teachers should revise their ideas about the kind of creativity they can expect from their students which reflects the accessibility of small-C versus large-C creativity. [13] [14].

4.2 Pedagogical Implications

As teachers should apply small-C creativity in the classroom, here is one pedagogical example that could be considered.

Consistent with the 4 “C” model, a recent study [14] investigated how teachers’ curricular choices affected the amount of student creativity produced in their classrooms. The proposed Small C Framework has been a successful tool for understanding the degree to which teachers foster small ‘c’ creativity in the classroom, whose components are demonstrated in Figure 2. [14].

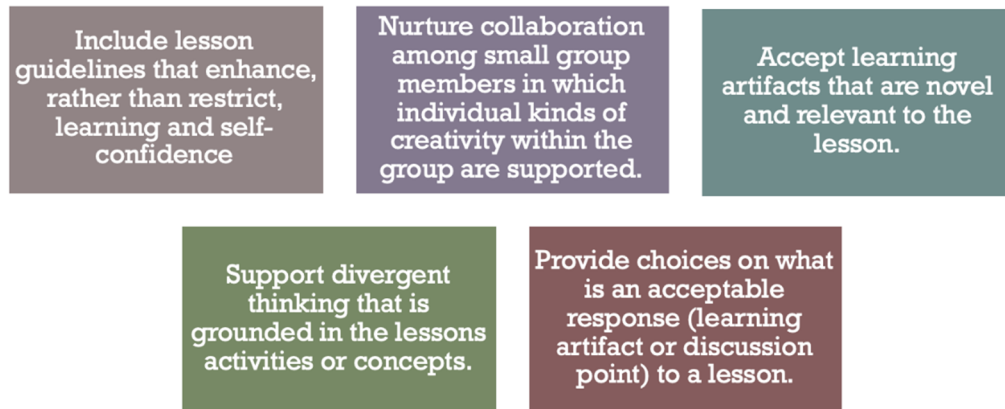


Fig 2. The Small C Framework in the classroom

By applying the Small C Framework, teachers can support divergent thinking among students, offer alternatives to assignments, nurture small group collaboration, provide student choices, and increase learning and self-confidence. The successful practice of such pedagogy is likely to yield more creative outcomes.

5. Creativity as Decision or Attitude

5.1 The Investment Theory

According to Sternberg’s investment theory, creativity requires a confluence of six distinct but interrelated resources: intellectual abilities, knowledge, styles of thinking, personality, motivation, and environment. However, as he emphasized, the key is the decision to use these resources [15]. Even if an individual possesses all the resources as well as great potential to be creative, their decision not to put their creativity to use — if it meant defying a crowd, for instance, rather than hold keeping it to themselves — creativity is unable to be realized. Creative individuals are not only intellectually capable of generating novel and useful ideas, they also tend to be people who have a creative attitude toward life. [15]

Accordingly, the key to realizing creativity potential (cognition) is attitude and action (motivation and affection). Creativity is an attitude towards life [15], or a decision [16]. As Sternberg suggested, the major factor accounting for creativity difference is a mindset geared towards thinking in novel, surprising, and compelling ways—and this mindset can be taught [16] as well as motivated for creative problem-solving [17]. Hence, teaching for creativity needs to incorporate both cognitive training, motivation or affection training, and action or behavioral training.

5.2 Pedagogical Application: Creative Attitude Model

One pedagogical example is the Creative Attitude Model used in Creative Lesson Program) which integrates cognitive, motivation or affection, and behavioral components. [18]

Creative attitude structure has three major components: the perception, cognition, and creative thinking component includes creative thinking drills; the emotion and motivation component encompasses activities that foster curiosity and inquisitiveness, intrinsic motivation and task

engagement, and help identify blocks and barriers; finally, the action and behavior component focuses on creativity problem solving, from identifying problems to implementing solutions. [19]

6. Implicit Theories and Creativity Mindsets

Implicit theories are an individual's beliefs about whether human attributes, e.g., intelligence, personality, creativity have potential for change, growth, and development.[20] While individuals may not be aware of the existence and influence of these beliefs, research has uncovered prevailing theories about intelligence, creativity, and wisdom.[21]

A creativity mindset is defined as “beliefs about the stable-versus-malleable character and the nature of creativity” [22]. In other words, if creativity is regarded as something that is innate, it is fixed creativity mindset; if creativity is regarded as an ability that can be developed, it is considered growth creativity mindset.

Recent research identified the simultaneous existence of both growth creativity mindsets and fixed creativity mindsets among teachers [23]. In these studies, a growth creative mindset is associated with better performance in creative problem-solving tasks [24] and insight problems [22]; while a fixed creative mindset is negatively related to these outcome variables. However, an indirect negative effect tends to be lessened by the growth mindset [23], implying the importance of fostering a growth mindset.

Students hold different beliefs of creativity as well. As a result of the different beliefs they hold, their pursuit of creative endeavors can be influenced towards a certain mindset. Research has shown that a more fixed conception of creativity results in the less willingness to be engaged in creative efforts [23]. Besides, their pursuit of creative endeavors is also directly or indirectly influenced by teachers’ beliefs [23].

6.1 Pedagogical Suggestions

Through self-examination, teachers can see if they hold any implicit theory or creative mindset and be aware of its influence and recognize student potential. They could attend continuing teacher education workshops or programs that foster growth mindset and change implicit theories. Research found that implicit theories, stable but dynamic, can be changed through instruction or exposure to different schools of thought.[25]

Teachers should act as role models of creativity, fostering growth creative mindsets in both students and themselves. Role modeling is noted as the most powerful tool of developing creativity [26], as students tend to keep in mind the consistency of a teacher’s words and actions. It is suggested that as a result of learning through modeling, it is very likely that students possess a fixed mindset as well if teachers possess a fixed mindset [27]. Thus, teachers should remain vigilant about the existence of fixed mindset and should also hold growth creative mindsets towards their own creativity endeavors.

Teachers should also give positive and constructive feedback to students. In the developmental trajectory of creativity expression as shown in Figure 1, feedback from teachers is essential in shaping students’ Mini-C ideas into Little-C contributions that could be recognized as creative by others. [5]

Moreover, research [28] has found that feedback from oneself or others can buffer or catalyze creative mortification, defined as losing the willingness of pursuing a particular creative aspiration after negative performance outcome [11] Teachers’ support and encouragement can help prevent creative mortification in students, preserving their talents and realizing their creativity potential. Conversely, negative feedback from teachers will aggravate students’ creative mindset.[23]

7. Suggestions for Students

Students should focus on types of creativities such as micro-c and small-c that are meaningful to themselves, rather than setting overly high expectations that approach the levels of Pro-C or Big-C. When it comes to Big-C, Pro-C and Little-C, the criteria by which its possession is measured is

dictated by other people: in other words, whether the creativity in question is both novel and useful to the socio-cultural context. But Small C creativity values the kind of thinking that produces new ideas in the learner, and the criteria is measured against the person himself. [13] The implication is that, by focusing on Micro-C, students and teachers do not have to compare themselves with other people to be creative. This will not only relieve teachers' pressure in nurturing creativity, but also help students foster a growth creativity mindset.

When trying to be creative, students should compare against themselves and value personal growth, giving themselves positive self-feedback accordingly. Students sometimes unconsciously compare themselves with peers and exert harsh self-criticism. [29] They may often ask themselves: "His work is more creative than mine. Why I am unable to think of ideas as creative as him? I am a dull person." Such social comparison can generate stress and kill creativity. On the contrary, if a student makes creative attempts that can be considered as self-breakthroughs, the student has been creative in his own regard even if it is not deemed as creative by the environment. In this way, student can feel self-empowered and motivated to further create.

Students could also stay mindful during the creating process. Indeed, one key attitude is to stay concentrated and mindful while creating. Brainstorming always helps generate creative ideas, as ideas flow naturally without being judged or examined. In the creative process, students need to first stop labeling their ideas as good or bad, creative or plain, dull or boring. These judgements can be demoralizing and harmful during the process of creation, impeding creative ideas and endeavors. Being absorbed in the process and worrying less about the result or product means that one will liberate creativity.

Student could be self-empowered to be creative through adopting creative attitudes that can be applied towards micro key decisions. Underneath the macro-decision to be creative, as shown in Table 1, [16] illustrates the suggestions for key or micro-decisions. Most of them are not related to intellectual abilities or style of thinking, but rather motivation, attitude and belief, which could provide students with long lasting motivation for creativity. [16]

To redefine problems
To analyze creative solutions to problems
To sell solutions
To realize that intelligence and knowledge both help and hurt creativity
To take sensible risks
To overcome obstacles
To tolerate ambiguity
To believe in oneself
To continue to grow
To take oneself and one's ideas somewhat lightly and to have a sense of humor
To find what one loves to do
To seek an environment that encourages and rewards creativity
To recognize that creativity is a way of life

Fig 3. The micro decisions needed to be creative

Students should deliberately confront and dispute their fixed creative mindsets, instead fostering growth creative mindsets. They could conduct self-examinations as to whether they hold any implicit theory or mindset by paying attention to their inner dialogues while being engaged in creative activities and staying alert of possible negative influences. This is particularly true when student may unconsciously tell themselves "I can't do this, because I am not a creative person" when encountering drawbacks in activities that require creativity. Indeed, such fixed ability beliefs can contribute to creative mortification [27]

8. Suggestions for Researchers

Most recent research are centered around teachers' creativity conception and mindset, when more research could be conducted on students' creativity conception, belief, and mindsets. Research can especially look at the interaction between teachers' creative mindsets and students' creativity conception, beliefs, and mindsets. While numerous creativity programs have been implemented, research can also look at the influence on students' beliefs in terms of the effectiveness and its presence in creativity training programs. [30]

9. Conclusion

Teachers should be aware of the beliefs or conceptions they might possess towards creativity, and by identifying and switching them they could realize more potential creativity. After realizing their own creative beliefs or mindsets, teachers could help students cultivate creativity as an attitude. In this way, teachers shall have more confidence in teaching creativity, and students will be more motivated in being creative. Motivation for creativity can be very meaningful to one's life. Students could feel apathetic and disengaged, repressed and even depressed in schools, which could extend in their own lives. Teachers should not have unrealistic expectations, and the aim of creativity education should not be turning every student into Picasso or Da Vinci, but rather, unlocking the creativity that is meaningful to students' own life. The goal is not to make comparison with peers but to value the growth of creativity within themselves. Education should empower students to take positive attitudes towards creativity, to make the decision to act for attempts in creating and producing, so that each individual could live a satisfying and fulfilling life.

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The Role of Education in Development of Wisdom

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Abstract. This study will explore the reasons for why wisdom is rare in the world. Specifically, the study seeks the schooling and education that lead to the absence of wisdom among the general population. The study is designed to summarize and analyze the findings and theories of related topics. Its goal is to enrich the presently available knowledge regarding the potential factors that result in the scarcity of wisdom; as well as ultimately improving our schooling and education to reinforce people's wisdom and strive for the greater good of the world. The study has concluded that present education systems give little emphasis on wisdom when compared with other constructs, such as intelligence or transferrable skills. Thus, wisdom has been undervalued. Moreover, the importance of education on wisdom has been underestimated, which one may argue has led to an increasing number of disasters, from war to climate change, many of which are caused by highly intellectual human beings who lack wisdom. The world needs wisdom to compromise self-interests and strive for common good. According to our research findings, there are four main challenges that account for the current difficult situation found in the status quo and some obstacles that prevent wisdom from developing: a) the challenges in assessing wisdom; b) the overemphasis on a standardized testing; c) the lack of Real-life scenario practice, and d) continual distractions from media. The challenges listed above have impeded the role of education in the development of wisdom, and improvements should be expected.

Keywords: Wisdom; Schooling and Education; Intelligence.

1. Introduction

The mismatch between the development of technology, including destructive technology, and the lack of improvement in wisdom has left the world with enormous risks. For example, the advance of technology has allowed scientists to invent devastating weapons of war, such as nuclear bombs or poison gas, yet their unwise application has caused misery for numerous victims and ever-lasting damage to the earth. In other words, those who invent weapons, among other categories of people, demonstrate creativity and knowledge at the expense of the natural environment and humanistic morality. According to Robert Sternberg's balance theory [1] wisdom refers to the application of successful intelligence, creativity, common sense and knowledge through a dynamic balance between the interpersonal, intrapersonal and extra-personal interests of self and others. Wise actions tend to take place over both short-term and long-term period, and are incorporated with ethical values to attain a common good. The theory also emphasizes the importance of the balance between (a) adaptation to existing environments, (b) shaping of existing environments, and (c) selection of new environments. Although there is no validated scientific data on how analytical intelligence, creativity, common sense, or wisdom can be applied effectively to problems of climate change, poverty, or pollution, Robert Sternberg [2] believes that psychology will have a great deal of contribution in solving these problems.

With increasing demands for education in wisdom, many scientists from the psychological and philosophical fields have emphasized the importance of teaching wisdom. According to Robert Sternberg[3], schools mostly teaching students how to be intelligent and knowledgeable, but not how to use their intelligence and knowledge. In addition, Russell [4] claimed that wisdom can be taught

and is needed in education to reduce hatred or narrow-mindedness, thereby increasing the capacity of realizing one's purpose. Therefore, the study aims to investigate some potential factors that currently hamper our education in wisdom. This literature review will focus on four aspects: the challenges in assessing wisdom, the overemphasis on standardized testing, the lack of Real-life scenario practice, and the continual distractions from media.

2. Challenges in Wisdom Assessment

To effectively promote our education in wisdom, a worthy assessment is needed to reflect on the broader capabilities that students need to thrive in the 21st century [5]. There are, however, many difficulties that most assessments have to encounter in the process of measuring one's wisdom.

One of the challenges that wisdom assessment faces is its validity, considering that most tests involve open-ended and self-reported approaches. An overview article by Mag. Dr. Judith Glück [6] describes some current measures of wisdom. The research has found that although in-depth assessments allow scientists to measure wisdom in a systematic and comprehensive way, most of them are subject to the limitations to validity. For instance, according to Berlin Wisdom Paradigm, which outlines a family of five criteria that define wisdom [7-8], some limitations of "wisdom tests" with predefined response alternatives suggest that the majority of people may pick the wisest solutions from among some alternatives when they would not actually be able to produce a wise solution by themselves. The approaches reviewed here all use open-ended responses instead of closed-response approaches, the latter which can only test participants' ability to choose the optimal answer rather than produce an original answer themselves.

Besides the lack of validity, the assessments also suffer from the loss of shared definition of wisdom. The lack of consensus on what the definition of wisdom should be means that there is no unique method of assessing wisdom. For instance, the Berlin Wisdom Paradigm[7-8] defined wisdom as expert knowledge in the fundamental pragmatics of life that permits exceptional insight and judgment, whereas Glueck & Bluck[9]proposed a MORE model with which educators create a intellect-friendly environment that accelerates the learning process.

Yet most researchers and educators would agree that the essential elements of wisdom are mastery, openness, reflectivity and emotion regulation. As long as the definition of wisdom has not been unified, however, assessments will vary accordingly, resulting in the difficulty to integrate different studies for more comprehensive investigation.

3. Overemphasis on Standardized Test

Education is the principal domain where children learn skills and values. It is also where the lack of modern wisdom demonstrates itself. Sternberg has questioned whether the emphasis of modern education systems on academic achievement driven by testing has resulted in the production of "smart fools" [3]. His emphasis is placed upon the damage of exam-oriented education that comes at the expense of cultivating wisdom. Both students and teachers put more emphasis on the speedy obtainment of knowledge as well as better results in exams, while ignoring the process of acquiring knowledge and even the meaning of acquiring knowledge. These people may be high scorers on conventional measures of intelligence, yet may conversely never have clear ideas on how to positively contribute to the world [10]. This is a typical manifestation of high intelligence instead of wisdom.

Despite the damage of these approaches, many schools still continue to use standardized intelligence tests as a key criterion for selecting students for gifted programs[11]. Take China as an instance: at the end of the primary and junior secondary education, every pupil must take a standardized "graduation examination" as a final grade to enter the next stage of learning. Only those pupils who pass the examination can progress to the next level of education. Parents in China consider education to be very important, and so they encourage their children to obtain high scores in their examinations[12]. Exam-oriented education thus came into being, pushing students to learn the most amount of knowledge in the shortest period of time. Yet this approach to a large extent stifles students'

creativity and critical thinking, training students into thoughtless machines that can only test. Exams are used by schools as clear targets for students, so that students can acquire knowledge faster; yet this process forgoes the root purpose of acquiring knowledge in order to apply them to real world uses and create new knowledge. These are achievements that exam-oriented education cannot yield.

While various theories about the general definition of wisdom still remain, there is no doubt that the practice of standardized intelligence tests in most parts of the world is not a method suitable for any of wisdom theory. Attempts to measure wisdom so far include the National Association for Gifted Children (NAGC)'s creation of a theory that measures outstanding levels of aptitude (defined as an exceptional ability to reason and learn) or competence (documented performance or achievement in the top 10% or rarer) in one or more domains. Domains include any structured area of activity with its own symbol system (e.g., mathematics, music, and language) and/or set of sensorimotor skills (e.g., painting, dance, and sports)[13].

It is worth noting that an agreement can be reached on one of the points, despite the widely held view that those who intelligence is inborn: a significant body of work has shown that people have wide-ranging beliefs as to whether their own intelligence is fixed or can be altered[14]. Under such circumstances, education is seen as the method to elevate intelligence. Yet intelligence is different from wisdom, and despite advanced technology, it is still very difficult to change people's innate wisdom in any way. It can be said that fostering wisdom through education is not as simple as imagined. One of the very important reasons is that we seem to be unable to produce a perfect idea of what wisdom is, which undoubtedly affects the results of intellectual education. Both cognitive and psychosocial variables are malleable and need to be deliberately cultivated [15], but opinions on how to cultivate what type of intellect remain deeply polarized.

As noted above, many studies have demonstrated that, while far from being a certainty, those with high intelligence tend to have more productive and successful lives[16]. Given the emphasis of education in the country, "it's possible that no other country has as many exams as China." From school admissions and job recruitment to promotion in the civil service, exams are an inseparable part of Chinese life. Studies suggest there are currently 200 government-organized nationwide examinations and nearly 40 million people who appear for these exams each year, perhaps more, if local level tests (i.e., not at the national or provincial levels (is this right?)) are included[17]. The emphasis on basic knowledge far exceeds practical knowledge, which makes these public servants suspicious of their work ability. While indirectly related, it is possible that wisdom allows individuals to reach the top of exams, because intelligence gives them an advantage in many aspects of their studies. Yet whether such an approach to learning can in turn help the promotion of wisdom remains a question.

There are many reasons (both statistical and technical) why intelligence as measured by IQ and real life outcomes such as job success have low correlations; thus, strong statements about predictive validity have to be taken with cautious skepticism[18]. Educational measures still remain at the requirements for students' knowledge reserves and fixed routine proficiency, which results in intelligence tests being standardized and unified processes. To use these metrics to judge the level of human intelligence including wisdom, as mentioned above, is to perpetuate the existence of "smart fools".

4. The Lack of Real-life Scenarios

Despite the lack of an agreed upon definition, in general wisdom is often outlined as an individual's accumulation of experiences as well as values throughout time, and their behavior in different circumstances that reflect such experiences and values. The actions that individuals choose to undergo reflects the values and character of said person: thus their wisdom[19]. In most adolescents and young adults, the idea of wisdom revolves around the realization about oneself and the acceptance of themselves for their beliefs, values, and morals that define his or her approach and reaction to circumstances. As suggested by Shih-ying Yang, wisdom is manifested when one strives for common good by helping others. Wisdom's uniqueness among human qualities can be attributed to the fact

that these individual experiences and values lead to good judgement and contribute to the common good based on everchanging conceptions of societal norms. As a result, the understanding and cultivation of the Balance Theory of Wisdom, a theory coined by Robert J. Sternberg, defines wisdom as a “the application of tacit knowledge as mediated by values towards the achievement of a common good through a balance among multiple intrapersonal, interpersonal, and extrapersonal interests in order to achieve a balance among adaptation to existing environments, shaping of existing environments, and selection of new environments” [1]. Such a definition highlights the need for individuals to acquire more wisdom throughout their lives, as well as for them to cultivate wisdom in real life applications rather devoting their focus to academic grades or examinations. Despite their traditional appeal, it is questionable whether grades help students learn the material, much less obtain the wisdom needed to excel in life. After all, grades have little use in real life.

An improvement in wisdom in schooling may begin by focusing less on the necessity of letter grades. Traditional values of schooling revolve around the idea that those with good grades mean are often successful; however, scholars have suggested that this approach may backfire: “students who focus on learning instead of grades tend to get better grades while students who focus on grades tend to scrape by” [20]. Baker’s convincing argument, made two decades ago, can still be considered as valid today. In recent times, for instance, the possession of a 4.0 GPA or the equivalent in standardized tests are keys to enter universities of a student’s choice. This desire causes a chain reaction, such as a student who is focused on pleasing teachers and inquiring specifically about exam topics, instead of trying to learn concepts and the overall subject being taught. Yet many topics lack connection and applicability to society, and thus, the focus shifts from education aspects to the value of a letter grade or numerical value that determines academic ability. As mentioned by Carl Rogers, a significant learning experience is when one undergoes personal growth in a learning experience (Carl Rogers). In this case, a person should not only gain knowledge from the learning experience but also gain new perceptions about the current world. Therefore, in contrast to the customary way of learning at school, a new way of learning could potentially expand on the basis of knowledge and skills. “There was a three-month experiment done by Starr Sackstein where she had found that students are “deeply conditioned by grades [...] and that without them, [students] are left with a feeling called academic emptiness” [21]. The accessibility of grades as a criterion lends itself as one reason why society believes that it is related to success, student work can be judged by as another party. However, this merely promotes a focus on memorizing material for the sake of the letter, rather for the quality or content itself, due to social norms that put an enormous amount of pressure outside of school based on GPA or other measurable credentials. Instead, Sackstein’s approach “favored self-regulation, self-assessment, and self-advocacy” [22] removes the interests involved in pursuing grades, but rather encourages students to learn for themselves. Through a process of trial and error for the sake of learning for themselves, students have a better understanding of themselves and how they approach potential answers. As such, students are allowed to utilize their knowledge to real life circumstances that work for them, and not for the teacher or other peers. Laura Rediehs, an associate professor of philosophy at St. Lawrence University, emphasizes the vital issue of obtaining high letter grades rather than self-motivated learning by stating, “The fear-based learning that happens in a context of distrust may look effective at first, because fear evokes keen attentiveness, but such learning remains at the surface until the pressure is off, at which point much of what was learned promptly dissipates”. While grades often do garner short-term responses, it is clear in the long-term that students discard what is learned because they feel it is not applicable in their future. In short, such an educational process is a waste of time, and no wisdom is gained. Due to this process, students’ sense of wisdom is not improved, but rather they fail to “develop their subtle perceptual powers, or their depth of vision; it is not built upon respect, and it does not strengthen their character or expand their compassion” [23]. The bank of knowledge is not only about grades, but is rather wisdom cultivated from multiple intrapersonal, interpersonal, and extrapersonal interests that can be applied through numerous and various situations in their lifetimes.

Wisdom is not solely based on academic ability, and when students focus on letter grades, the learning process cannot help making good judgements in the future, especially if students continue in

their chosen career or major. Understandably, there exists a reason why letter grades are still used today: they are often a “concept of feedback that may be useful for students [in order] to improve their work” [24]. However, a mere grade letter feedback is very different compared to descriptive feedback that involves critique and discussion.

Techniques such as “self-reflection and student dialogue into the assessment process or evaluation process” [24] is lacking from modern educational curriculums. Students who are asked to reflect on what was wrong, allowing their understanding to cultivate wisdom rather than focusing on a numerical or letter grade they had obtained. One positive result is that students may be more likely to self-regulate their learning and aim to learn the actual material. Classes should incorporate difficult, real life scenarios into their lectures that complement their lesson plans – no matter which subject it may be — math, science, English, etc. While teachers should take a much more Socratic approach in their teaching, students will need to take a more active role in constructing their learning [25]. The study “The Complex Relations Between Wisdom and Significant Life Learning” conducted by Shih-Ying yang found that wisdom can be gained by learning from important life experiences. Real life experiences are especially beneficial as they foster the ability to integrate different perspectives, take actions that embody ideas, as well as envision and assess the impact of one’s actions upon others[26]. Indeed, wisdom is reliant on the trials and errors of life and the experiences gleaned. Exposure to different facets and niches in one’s lifetime cultivates the experiences that can help form wisdom, since as it stands, “wisdom includes many kinds of knowledge that complement more specific information about primary goals and how to accomplish them” [27]. The Berlin Aging Study, a research conducted by Paul Baltes and his colleagues at the Max Planck Institute for Human Development found that the Baby Boomers, who have lived through the aftermath of WWI both the great depression of the 1930s, the rise of the Nazis and WWII are people who are rated high on wisdom testing. By experiencing adversity themselves or learning about it from their parents' generation, baby boomers achieved high wisdom scores. Thus it can be argued that wisdom is the amalgamation of experiences within one’s lifetime and the application of those experiences to the improvement of their future situation, involving good judgment and positive consequences. In many cases, then, wisdom changes with age. Since it is impossible in theory that a child would experience the stated example, they would likely lack the judgement or ethical values needed to behave in certain situations, as well as the traits of sympathy and empathy that are applicable from said circumstances.

To compensate for the lack of life experience, schools should allow students to speak their mind and encourage honest answers to their thoughts. This would allow students to understand and hear their own thoughts. Instead of chastising or punishing them for their thoughts – as they are minors, after all – teachers, who are supposedly more wise through their experiences, should guide their students to look at alternative consequences or perspectives as a result of their decision making. When these conversations are held, schools should also allow teachers to encourage students to find a balance between their morals, values, and beliefs and the scenarios presented to them, a process of discovering a common ground that avoids extreme thought or action.

Though it is difficult to measure wisdom, such an amalgamation of facets that further the well-being of an individual to adapt to their environment can be agreed upon. It could be argued that the multidimension of wisdom makes it a rare quality in the world. Moreover, as mentioned before, wisdom is also rare due to the preponderance of pursuing intelligence as measured by quantifiable standards.

In contrast to wisdom, intelligence is the ability to cultivate and apply knowledge learned from various means. According to the Stanford Encyclopedia, intelligence is the practical efficiency of applying these facets, or in other words, “the idea of the success condition that one puts one’s knowledge into practice” [28]. Nevertheless, such a practice does not necessarily entail sound judgement or is moral correctness. Technological development and the improvement of living standards in the last century across many parts of the world has revealed a collective increase in human intelligence. Indeed, technology and the standard of living – in first world countries – have reached all-time highs. Yet, while the positive developments are remarkable, the negative aspects of intelligence have led to the tragic end of many innocent people and countries, such as poison gas in

Iran and the atomic bomb in Hiroshima and Nagasaki. Despite these tragedies, the world still increasingly emphasizes educational curricula that pursues intelligence, while discarding attributes of wisdom: different perspectives, a concept of “greater good”, among others. Wisdom is also a difficult concept because it calls for more individual introspection. However, this does not mean that an individual needs to “know it all”. In fact, “wisdom implies more than merely being able to process information in a logical way [but rather] their humility [which forms] a willingness to recognize the limitations of their knowledge” [29]. In other words, it is often the case that the average person feels as if they know everything with their newfound knowledge, but a wise person understands that the more information they obtain, the more questions they have. Finding a semblance of understanding of a balance between knowing enough to act, yet still in pursuit of more wisdom is notoriously difficult. In the scope of wisdom, that balance is always changing. As a subjective discipline, wisdom is often rendered secondary to the hard sciences and other realms that deal with pure knowledge. An everchanging process which does not guarantee clear answers often poses a challenge for individuals. Additionally, it is always difficult to be identify oneself with a way of thinking, only to be constantly adjusting that thinking throughout one’s life. This difficult pursuit may leave individuals feeling disheartened, or stubborn enough to retain the values they had.

In conclusion, wisdom is the amalgamation of experiences within one’s life. As Sternberg’s Balance Theory of Wisdom states, it is the process of applying those experiences to the improvement of one’s future situation. Wisdom involves good judgment and positive consequences, and often comes with extensive life experience. Through experiences and their own interpersonal, intrapersonal, and extrapersonal events, an individual may adapt to ever-changing circumstances. Experience is a necessary but insufficient condition: its possession does not mean they are wise, especially if their perspectives and beliefs do not align with social norms. Indeed, a constantly changing world means that ideals of “good” and “bad” change as well, making wisdom even harder to define and obtain. In short, wisdom is predicated on the desire to learn as well as to examine oneself. It is not the guarantee of wisdom coming with age, but rather the experiences the individual has accumulated that allows them to make good judgements later in life.

5. Distractions in Our World

In the wisdom balance theory (Sternberg, 1998), teaching for wisdom consists of 10 important factors (See Table 1).

Table 1. The important factors in teaching of wisdom. (Sternberg Robert J. Jarvin Linda, Grigorenko, Elena L. ,2009)

1.	Seek a common good
2.	Choose their own interests that align with others’ and higher order interests.
3.	Know the difference between long term and short term
4.	What are the positive ethical values
5.	Dialogical thinking
6.	Dialectical thinking
7.	Think carefully before you put forward your viewpoint
8.	Consider and integrate effective, motivational and cognitive aspects of situations
9.	Know that if someone nearly always acts on incomplete information, one’s decision making may be flawed.
10.	Make sure that one’s actions are effective.

An education system for teaching wisdom can be built based on the 10 important factors of wisdom. Firstly, the pursuit of wisdom involves knowing what is permissible and what is not. While adults generally have more free time and energy to pursue wisdom, minors who devote their time to exam-oriented education need their education curriculums to reflect the process of wisdom teaching. To

cultivate wisdom among children, it is suggested not to increase the amount of exam-oriented exercises and when tasks given at school are completed, to find alternative activities and exercises. More specific activities and their connection to wisdom education will be included in the discussion part of this essay.

Children, especially those younger than 12, are filled with curiosity about the world around them, and thus it is necessary to allow them to spend time practicing interpersonal communication, practical application and other skills. By allowing children to engage in independent thinking and action, children may improve their wisdom, whereas excessive help from parents will delay this natural development[30]. Research has shown that different education styles from parents yield certain personality differences[31]. As personality differences between children may result in differences in their ways of thinking, this thinking may change their wisdom.

Allowing children to spend time outside solves an important issue that plagues minors today as a result of technology. Internet Addict Disorder (IAD) often occurs concurrently with mental symptoms as well as personality trait disorders such as introversion and psychoticism. Adolescents with IAD consistently rated parental rearing behaviors as being over-intrusive, punitive, and lacking in responsiveness[32].

Such conditions directly contradict the concept of wisdom, which is an ability to balance competing interests and goals. An individual's sense of strong balance will not perform as well as it should if the goals in mind are not applicable to this balance. As individuals are not born with wisdom, so as to cultivate wisdom, people must spend more time in it. Yet individuals who should study to cultivate wisdom may also spend too much time on the internet and some of them have IAD. IAD is not only for people who are an addiction to the internet, the theories of it are also the same with video games addiction disorder. In this case, wisdom means knowing how to balance the positive effects of internet use without allowing it to become a disorder.

Under the coverage of internet social platforms, an endless stream of obscenities exist against children[33]. While most people pay more attention to the effects of speaking in real life, children may grow up and see private photos of themselves being commercialized: this may cause great harm to them, particularly instances of mental illness. Research has shown that mental illness may alter the level of intelligence found in patients; studies have demonstrated that those with mental illness and those who do not score differently on intelligence tests[34].

As a result of social platforms that encourage content creators, especially teenagers who indulge in virtual vanity (get fans by disclosure of personal information), there is a tendency for young people to waste energy on these social platforms, leaving them no time and energy to improve their comprehensive qualities, including wisdom as well as intelligence[35]. When these comprehensive qualities decline, the decline of wisdom will follow.

Research on the effect of video games — particularly the increasing negative attention given to video games in society — suggest that video games have become a harmful waste of teenager's time and energy [36]. Many video game genres in particular are harmful to children. An updated meta-analysis reveals that exposure to violent video games is significantly linked to increases in aggressive behaviors, aggressive cognition, aggressive affect, and cardiovascular arousal, as well as to decreases in helping behavior. Experimental studies reveal this linkage to be causal[37]. Moreover, violent video games increase aggression and aggression-related variables and decrease prosocial outcomes, while prosocial video games have the opposite effects[38]. Based on this research, we cannot deny that some video games are good for us, but if children are addicted to games, it is undoubtedly harmful to their physical and mental health, effects which will continue until they grow up and reveal themselves in their studies and careers[39].

6. Conclusion

In conclusion, in view of world events, we need wisdom in education to attain the common good and make the world a better place. However, wisdom's rarity lies in the fact that assessments of wisdom are subject to a lack of validity and lack of unified definition. Secondly, current education

focuses too much on standardized test, thus delaying the development of creativity and critical thinking. Since education systems are numbers-oriented, many students have lost their initial purpose of studying, preferring to achieve high grades instead of actually obtaining knowledge. Moreover, Real-life scenario incorporated with morality, ethic issue and value in our classes will help to improve wisdom by increasing the validity. Lastly, to improve wisdom, we will not only focus on schooling but also improve educational resources outside of the classes. As a far-reaching form of communication, media has the potential of serving as a good way improving wisdom as we are consistently surrounded by it. However, our current media pays too much attention on entertaining rather than educating. Therefore, we are still encountering many challenges and seeking for potential improvement.

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Development of Wisdom in Western Schooling

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Abstract. This article presents ways to improve wisdom in current education systems that heavily focus on knowledge instead of practical skills needed in society. First, past theories (including philosophical, implicit, and explicit approach) and measurements (including Self-reported scales and performance measures) of wisdom are presented to show how scientists used different ways to define such an abstract concept. Second, the importance of wisdom in individuals' life success and contribution to society is discussed. Third, the limitations of current education on fostering wisdom among students and teachers are exemplified. Finally, several programs of wisdom education are explained, including Sternberg's wisdom curriculum that provides specific instructions for different subjects, Project Wisdom which encourages students to reflect upon proverbs, and a Master of Teaching program that improves teachers' wisdom during their training. Despite these improvements, there are still several limitations that need to be addressed by future researchers such as the societal cognitive biases, the lack of empirical evidence, and need for a standardized measurement.

Keywords: Wisdom; Balance Theory of Wisdom; Wisdom Curriculum; Project Wisdom; Master of Teaching Program.

1. Introduction

The current school system can be characterized as knowledge-focused education [1]. Quizzes and tests commonly conducted in schools focus on the memorization of concepts learned in class, while standardized tests are aimed at evaluating language and reasoning skills. While this system of evaluation seems to cover a broad range of qualities that are essential for students to succeed in the future, they are not enough.

It must be pointed out that outside a school environment, an individual's performance as measured by society no longer pays much attention to grades or scores on exams such as the Scholastic Aptitude Test (SAT, the American college entrance exam). Indeed, one's success is more dependent on comprehensive abilities. As one method of measuring intelligence, Sternberg [1] proposed the Wisdom, Intelligence, Creativity Synthesized Theory (WICS). WICS proposed different components of intelligence for an effective leader: creative intelligence to generate new ideas, analytical intelligence to judge and validate new ideas, practical intelligence to implement ideas, and finally wisdom to achieve common good in a society. Among all these types, wisdom is the one which has been least emphasized for many reasons, such as its difficulty in being defined and measured especially in the school system [2]. However, wisdom is essential in achieving one's own life success and fulfilling one's duty to contribute to society. This article first provides a review of past theories that have attempted to explain the nature of wisdom, especially the Balance Theory of Wisdom; then it explores the significance of wisdom and the limitations of the current school system; finally, it will explain and discuss the limits of several programs that attempt to incorporate wisdom into existing school curricula.

2. Past Theories and the Development of the Definition of Wisdom

Psychologists have made numerous attempts to define the concept of wisdom as early as the 1970s [3]; yet the field of wisdom study itself can be dated back to the time of Ancient Greece, when the Platonic dialogues offered some of the first intensive philosophical analysis of the concept. Currently, major approaches to studying wisdom have been categorized into philosophical perspectives, implicit-theories, and explicit-theories. Among these, the philosophical perspectives do not form the underlying theories of our improvement of wisdom in education. Its components – *Sophia* (which is found in those who seek a contemplative life in search of truth), *phronesis* (which is the kind of practical wisdom shown by statesmen and legislators), and *episteme* (which is found in those who understand things from a scientific point of view) – are related to the seeking of truth, practical knowledge, and the understanding of sciences [4], respectively. Compared to the balance theory of wisdom developed through implicit and explicit theoretical approaches, philosophical approaches do not consider the purpose of applying knowledge and learning, as well as the process of actions [to achieve wisdom]. Thus, the focus of evolution in wisdom definitions will be on Implicit-theoretical approaches, Explicit-theoretical approaches, and ultimately the basis of our theory, i.e., the balance theory of wisdom. This section of the paper will introduce the implicit theories and how they construct a contour of explicit theories, discuss the contribution of explicit theories, and define wisdom as the balance between interests and actions with tacit knowledge as its core.

2.1 Implicit-theoretical Approaches

Implicit theories of wisdom are based on laypersons' conceptions of what wisdom is [4]. Though the account of wisdom from implicit theories is not definite from a psychological perspective, their purpose lies in an understanding of folk conceptions regardless of its validity. Since education involves both school actions and parental approval, implicit theories that lean on common people's viewpoints should be considered into our definition for improvements on wisdom in schooling.

One of the major early works on implicit theories was from a study by FIRST NAME _ Clayton [5]. In Clayton's study, pairs of words potentially related to wisdom were prepared, and three groups of adults with varying ages (young, middle-aged, old) were asked as subjects to rate these words on a scale. The results demonstrated that terms such as experienced, pragmatic, understanding, and knowledgeable, were highly scaled. Terms such as experienced, understanding and knowledgeable are also ideas that have been included in several theories of intelligence. One example is Cattell's theory of fluid and crystallized abilities, which emphasizes the notion of reflecting upon previous experiences and knowledge-based abilities. Similar concepts, noted in terms like "experience", "understanding," and "knowledgeable," are drawn into the folk's conception of wisdom, supporting the fact that intelligence and wisdom might be interconnected [6]. Moreover, the term that stands out among Clayton's study results (experienced, pragmatic, understanding, and knowledgeable) is "pragmatic," which suggests that a prototype of a wisdom definition should include the ability of skill-application. The application of knowledge and skills has been further accentuated in the following studies.

Following Clayton, Holliday and Chandler employed an Implicit-theoretical approach to understanding wisdom [7]. The analysis of data collected from their studies revealed five underlying factors of wisdom, partially validating Clayton's experiment as well as adding new ones: exceptional understanding, judgment and communication skills, general competence, interpersonal skills, and social unobtrusiveness [7]. Moreover, the factors of "communication skills", "interpersonal skills", and "social unobtrusiveness" offered a new dimension of wisdom, emphasizing one's interpersonal relations and role in society. Moreover, "judgmental skills" as revealed by Holliday and Chandler was also emphasized by Alfred Binet, in his intelligence tests further supporting the relation between intelligence and wisdom [8].

A decade later, Sternberg's study illustrated the relation between wisdom and intelligence through statistical analysis. His research suggested that the correlation between wisdom and intelligence was the highest in every occupation group except philosophy (the subjects of the experiment are professors from four different university departments, including art, business, philosophy, and

physics) [9-11]. With a result statistically significant enough to conclude a definite correlation, this Sternberg study, surpassed previous studies and demonstrated that wisdom is related to intelligence. Although implicit theories are mere beliefs formed on the basis of individual viewpoints, under their guise, the outline of explicit wisdom theories becomes visible, particularly factors such as knowledge-application, interpersonal relations, and social roles.

2.2 Explicit-theoretical Approaches

Explicit-theoretical approaches are a more formal type of theory compared with past implicit theories [5]. In 1990, Baltes and Smith gave adult participants life-management problems with the intention of measuring the pragmatic effects of intelligence [12]. Their study suggested that wisdom comprises five components: rich factual knowledge, rich procedural knowledge, life-span contextualism, relativism, and uncertainty. Along with the pragmatic aspects of intelligence as outlined by previous scholars, the study included relativism and uncertainty as part of the components [4].

Like implicit theories, explicit theories also explain wisdom by proposing categorizing traits. However, apart from the individual-centered traits such as “knowledge”, “judgmental skill”, or “intelligence” found in implicit theories, explicit ones consider the interaction between people and their environment. These elements, as well as implicit theories, would contribute to the development of Sternberg’s balance theory of wisdom, which is based on key points of balancing interpersonal relations and different environments.

2.3 The Balance Theory of Wisdom

Tacit knowledge is the basis of wisdom. To make wise judgements, one needs to complement tacit knowledge (implicit knowledge learning from experiences and practices) with explicit knowledge (formal body of knowledge that is learned). While both types of knowledge are relevant to wisdom, tacit knowledge is crucial in being the key cause of individual differences [4]. Thus, the balance theory of wisdom, which is the application of knowledge through balancing interests and actions, emphasizes the role of tacit knowledge. In this section, we will expand upon and discuss the importance of tacit knowledge as well as the definition of balance theory of wisdom.

2.3.1 Tacit Knowledge

As previous Implicit-theoretical and Explicit-theoretical approaches pointed out, one of the key determinants of wisdom is knowledge. Knowledge, moreover, can be further classified into explicit knowledge and implicit knowledge [4]. Csikszentmihalyi and Rathunde [13] made an analogy between a domain and a field to illustrate the difference between formal knowledge and tacit knowledge. In other words, a domain is the formal body of the knowledge one learns, namely the explicit knowledge, such as psychology as a subject. In contrast, a field is the “social organization for the discovery and transmission of knowledge,” referring to the tacit knowledge, i.e. how psychologists reach a conclusion and what their ongoing study is about [4].

Tacit or informal knowledge has three main characteristics: procedural-based, relevancy to attaining goals that people value, and acquired — for the most part — without direct help from others. Tacit knowledge is essential to life and our program of improvement on wisdom in schooling. For one, according to Ryle [14], tacit knowledge is a form of “knowing how” rather than “knowing that”, while others have defined it as action-oriented knowledge [4]. One important feature is that this characteristic helps people utilize factual knowledge in adapting to new environments. Furthermore, this type of knowledge is gained without direct help from others, though the process of obtaining it may be served by specific guidance. The acquisition of tacit knowledge could serve as a foundation for long-term personal development, enabling individuals to wisely cope with unexpected scenarios in the future. Thus, as it is potentially key in the formation of wise judgments and decisions, tacit knowledge may serve as the core notion of wisdom.

Ultimately, the employment of tacit knowledge is not for the seeking of one's good, but to balance the good with other people's needs to reach a common good, connecting to the balance theory which underlies our program of improvement of schooling in wisdom as theory basis.

2.3.2 The Balance Theory of Wisdom

Sternberg defined wisdom as the knowledge of balancing interests based on previous studies regarding the employment of practical intelligence and the notion of tacit knowledge. Unlike previous theories, either implicit or explicit, which proposed characteristics pertaining to wisdom, Sternberg's theory is a process-like conception by which people would learn to use the traits pointed out from past implicit and explicit theories to make the world a better place. Specifically, the balance theory of wisdom defines wisdom as:

The application of successful intelligence, creativity, and knowledge toward the attainment of common good through a balance among intrapersonal, interpersonal, and extra-personal interests over the short term, and long term through the mediation of positive ethical values by acting to balance adaptation to, shaping, and selection of environments [4].

This theory forms the basis of our projects on improving wisdom in educational curricula. To better support our Improvement of Wisdom in Western School project, several key points in Sternberg's balance theory definition must be made. Firstly, Sternberg's categorization of interests is interpreted as thus: intrapersonal interests fulfill one's own feelings, desires, and goals, such as enhancing one's popularity, learning more than others, making more money, and increasing one's power in society. Interpersonal interests are similar to the intrapersonal ones but are in relation to other people. Extra-personal interests, on the other hand, are contributions to the welfare of one's surroundings. Secondly, Sternberg managed to explain the difference between smart and wise, i.e. to apply one's successful intelligence, creativity, and knowledge is a form of wisdom. In classes, for instance, children should learn not only logical reasoning, but also practical skills that would allow them to apply insightful thoughts to reality. Thirdly, the purpose of employing intelligence and creativity is to realize the common good by balancing three types of interests; indeed even simple problems in real life situations at least some elements of intrapersonal, interpersonal, and extra-personal interests. Finally, Sternberg included three possible courses of action in the process: adapting, shaping of the environment, and selecting new environments. As Sternberg pointed out [9-11], sometimes adaptation is the best course of action under certain circumstances, but one needs to seek a balance between adapting and shaping. In other words, in addition to the changes that one may take to be better suited towards his or her surroundings, one will also alter the environment in the process. If neither adaptive nor shaping actions turn out to be effective, the ultimate act is to create a new environment.

2.4 Measurement of Wisdom

The broad, multidimensional nature of wisdom may make it seem abstract and unmeasurable, but scientists have developed a range of scales to quantify this quality. The two widely used types of tests are Self-reported measures and performance measures: both have their own advantages and disadvantages when it comes to measuring wisdom.

2.4.1 Self-reported Measure

Self-reported measures work by evaluating participants' agreement to statements reflecting different aspects of wisdom [15-16]; they tend to report the driving force behind wisdom as personality. An example of this approach is Ardel's Three-Dimensional Wisdom Scale which measures the cognitive (factual and procedural knowledge), reflective (ability to look through multiple perspectives), and affective (empathy) dimensions of wisdom [17]. Although scale is based on a robust theoretical foundation and has been proven to achieve an adequate level of validity and reliability, several limitations exist. Participants might not have a concrete understanding of their own wisdom, and unwise people might still rate themselves as wise. Moreover, most people are likely to overestimate their positive characteristics, while wise people might underestimate themselves, giving less positive ratings [15-16]. Moreover, participants might be influenced by the desirability bias. For

example, those from a culture which heavily emphasizes empathy might be inclined to rate themselves as empathetic [18]. Despite the limitations, self-assessed scales provide a convenient way to quantitatively measure wisdom.

2.4.2 Performance Measure

Performance measures tend to represent the core of wisdom as competence, asking participants to answer open-ended questions. A typical example of this approach is the Berlin Wisdom Paradigm. The test presents subjects with complicated life problems, such as preventing a friend from committing suicide [19]. In fact, Sternberg also developed a similar test that required participants to resolve a conflict by balancing interests [4]. Performance measures can more directly evaluate wisdom, but it also has some limitations. The test requires much more time, effort and expense because judges involved in assessing answers are trained extensively to ensure reliability [20]; moreover, intelligent participants might “fake” their wisdom by saying what the test wants them to say, or what judges would want to hear [15-16].

Since the two types of tests are based on different conceptions of wisdom, tests must be chosen in consideration of the environmental contexts as well as limitations of the assessments. The lack of assessment and measurement of wisdom programs in educational settings could result in ambiguous evaluations of the effects of wisdom teaching on schools. With limited resources and large numbers of students in general, schools would wish to teach more standardized and professionalized assessments and concepts to teach, like math tests with standardized answers; wisdom exams, however, are the exact opposite. Despite efforts, the broad and multidimensional nature of wisdom involving many differing opinions is relatively hard to quantify [21]. This issue will be further addressed in the discussion section.

3. Significance of Teaching Wisdom at School

Education is essential in preparing individuals for careers and establishing solid foundations for their future. Currently, most schools still focus on teaching knowledge to students, but yet wisdom should also be an indispensable part of education, considering its immense positive effect on individual success and the general improvement of society. Wiser individuals tend to experience enhanced personal development, and they would in turn enhance the personal development of others in their lives [19]. Thus, schools should bring wisdom into the scope of teaching. To do so would benefit each individual and create a chain effect that could bring positive effects into the school community and beyond, educating wiser future generations to build our world.

Knowledge is not enough to make wise choices that can improve our quality of life and behavior. [4] Table 1 [22] illustrates four principles of wisdom:

Table 1. Wisdom Principle 4 (WP4)

S is wise at t if at t	(i) S knows how to live well
	and (ii) S lives well

Note: S represents a person, t represents a period of time.

Wise people are more likely to discern their current situation and know how to make wise decisions based on their previous experience. When wise people face difficulties, they can detect their current status and make choices fast enough to achieve their goals and maintain inner happiness. They tend to know what they cannot know or cannot accomplish in a particular stage of their life. Wise people are also better at balancing their interests and the outside world, and better realize the value of their lives [23]. On the other hand, those with factual-based knowledge but who do not utilize it to meet their own needs would not be able to lead their lives well.

Wisdom involves critical self-reflection and an understanding of the unpredictability of human existence: wise people are aware of how much they do not know and cannot know [15]. With this

understanding, wise people do a better job in completing their tasks. Before trying to accomplish certain tasks, many would often hold false assumptions, believing they are easy to handle because they are not aware of the difficulties and what lies ahead. When they begin to encounter challenges, they might not know why they failed, and could quickly lose their confidence and patience. If one cannot understand and evaluate the difficulty and energy needed, then they will lose focus on their goal entirely by losing sight of their value and direction. However, wise people would know of their limitations and adjust themselves in order to succeed[24]. Secondly, wisdom allows people to actively learn, acquire, or ask for help from the authorities[25]. The “the frog in the well” metaphor illustrates this well, where those trapped with a narrow mindset arrogantly believe that the sky is only as big as they see it.

Wise people, especially those that hold leading positions in the society, are considered to make correct, reasonable, and fair choices that could lead to meaningful changes and a more harmonious world [4]. Students may only consider their interests and ignore others’ needs and desires if they are not being taught the importance of wisdom. Knowledgeable but unwise people may be harmful to society, especially if the children do not learn important lessons as they transition into adulthood[27-28]. In fact, wise people will find a balance between their own interests and the outside world’s interests to achieve the common good. The decisions they make are often not considered entirely from their own standpoint.

Besides, wise people will also know how their actions will affect others and society[4,10,11]. Those who do not consider the interests of others may do things at will, refusing to pay attention to their surroundings, and exemplifying no sense of guilt and humiliation. Even if a price is paid in the end, they will tend to believe that the trial and error costs are meager, and the lack of consideration before doing things will harm others around him and even society. School bullies, for instance, only consider their punishments once the teacher discovers their acts [29], yet they give no attention to how their actions would affect their victim’s mental state. Their bullied victim is not the only one negatively affected by such horrific acts: the school environment itself would become extremely toxic, creating an unhealthy imbalanced structure within the school’s social background, leading to more victims. Wisdom education could cultivate students’ sense of responsibility, as they will be guided to understand the motivations and consequences of their actions and be educated to not commit such acts in the future.

Based on the above benefits wisdom education can bring, it is crucial that schools impart knowledge and educate students to be more wise. The purpose of education is to train educated persons equipped with social qualities. If schools only serve to impart factual knowledge, students may not develop their full potential.

4. Improving Wisdom Education in the Western School System

4.1 Wisdom Education in the Current System

As previously mentioned, wisdom promises benefits to one’s life success and the improvement of society. As the primary learning and social space for young individuals, schools play a vital role in educating students, including fostering them into wiser individuals. Unfortunately, current school education systems across the West do not explicitly integrate wisdom development into their curriculum and environment [4]. Schools focus on what students know rather than teaching them to apply their knowledge [30]. This section’s focus is our discussion on analyzing the academic environment of a school.

A school is a place to gain knowledge. Indeed, in most people’s minds, schools evoke the idea of academic studies. However, this generalized view hinders its potential to be a place to develop wisdom in addition to a knowledge-focused education system. Thus, the next two paragraphs will analyze this from two aspects of the institutional level: the school itself and the teachers.

In examining schools as a whole, current course curricula tend to focus more on factual recall and superficial levels of analysis based on students’ coursework, using different tests to reinforce knowledge learned through books [31]. The most likely reason is that schools deliver results that

people hope for, measured with tangible assessments such as GPA (Grade-Point Average) and standardized tests (e.g., Scholastic Assessment Test & American College Testing). These measurements serve the practical purpose of serving one's ability to get into a fine college and find the kind of job he/she wants, standards by which people generally measure life success. Since most people expect such outcomes from education, schools might consider it unnecessary to develop characteristics such as wisdom [4]. In addition, schools are motivated to develop what will also benefit itself: for example, a school with a high average GPA and graduation rates is more likely to attract prospective students, which are attributes that can be measured through data and testing [32].

While teachers play essential roles in teaching wisdom, they can also hinder wisdom development. Teachers serve as links that connect school administrations and students, as well as playing a vital role in the entire teaching process. When facing academic difficulties, students tend to seek help from their teachers first. As William Arthur Ward said, "The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires [33]." Moreover, those who teach well can bring alive textbook knowledge, which may otherwise be rigid and immutable. The knowledge and truth behind each story and character may allow students to integrate different ideas on the whole story and further apply their understanding throughout their lives. Therefore, it is essential for teachers first to understand the importance of wisdom teaching. However, a study found that teachers are not necessarily wiser than the average population owing to the lack of wisdom training for themselves [34]. In other words, teachers may not know how to teach wisdom even if they desired to do so [31]. As mentioned earlier, the lack of societal demand for wisdom has resulted in a gap in pedagogy when it comes to cultivating wisdom. The lack of institutional support to impart broad and multidimensional concepts of wisdom means school teachers have little to no incentive to teach wisdom, nor would there be rewards for doing so [4]. The varied theories of wisdom mean that favoring one concept might raise potential confrontations for teachers on their practices [35].

Thus, the improvement in wisdom education should focus on not only the school system itself, but also on teacher training.

4.2 Past Research and Development

Many theoretical proposals and study programs have been implemented throughout the world that advocate for wisdom education. Understanding them could provide insight into the improvement of wisdom education through two aspects: teaching content and lessons, as well as teaching procedures. In this section, Sternberg's Sixteen Principles (See Table 2) of Teaching for Wisdom and Project Wisdom will be discussed in depth [4].

Derived from the balance theory of intelligence, Sternberg proposed 16 principles to guide wisdom teaching, shown in Table 2. [36]

The underlying fundamental principle governing these methods is that wisdom teaching is not *what* to think, but also *how* to think. The 16 principles serve as systematic measurements and organized guidelines that could be used as references in developing school education systems or improving existing curricula.

In addition, Sternberg also provided specific lesson content and procedural suggestions that could be incorporated into wisdom curricula based on the balance theory [4]. Sternberg focused his suggested improvements in the following four subject areas, which could be seen in Table 3 [4]:

Table 2. Sternberg's Sixteen Principles

1.	Teach students the idea that conventional abilities and achievements are not sufficient for a satisfying life.
2.	Demonstrate how wisdom is critical for a satisfying life in the long run.
3.	Explain the critical use of interdependence.
4.	Demonstrate wise actions because what you do is more important than what you say.
5.	Have students read about wise judgments and decision making so that they understand that such means of judging and decision making exist.
6.	Help students learn to recognize both their own and others' interests.
7.	Teach students to balance their own and others' interests.
8.	Teach students that the process to reach the end matters, not just the end.
9.	Help students learn the roles of adaptation, shaping, and selection, and how to balance them.
10.	Encourage students to form, critique, and integrate their own values in their thinking.
11.	Encourage students to think dialectically because the answer to an important life question can evolve over time.
12.	Teach students to think dialogically, whereby they resolve multiple points from a more integrative perspective.
13.	Teach students to search for and then try to find a way that benefits everyone, the common good.
14.	Encourage and reward wisdom.
15.	Encourage students to monitor events in their lives and their own thought processes about these events.
16.	Have students understand the importance to manage the pressures of unbalanced self-interest and small-group interest.

Based on the Balance Theory of Wisdom, Sternberg developed a test through an infused curriculum -- the Balanced Curriculum program, which integrated critical and wise thinking with eighth-grade history [37]. The program consists of two units -- "The Birth of the Nation" and "Slavery in America" [38]. The major focus of this program is to cultivate students' wise thinking as an addition to the textbook-based subject matter. In addition, it encourages students to think and behave like experts in the historical field by considering historical contexts according to their time periods. By doing so, Sternberg believed that students can develop their own ways of understanding the materials. Moreover, the Balanced Curriculum adopts different activities to foster several different types of abilities, such as being able to consider situations from different points of view within dialogues (dialogical thinking); the ability to resolve competing points of view from a more integrative perspective (dialectical thinking); as well as the ability to critically consider whether an action is wise or foolish, etc. [39] In this context, teachers serve as important role models and are equipped with material that would help them improve their curricula, such as student worksheets, presentation

materials, grouping suggestions, among others [38]. During the learning process, students are always encouraged to work in groups and exchange their views on primary sources. Overall, the program encourages using detailed historical cases to have students consider themselves as the ones who would have executed historical decisions. Within those decision-making processes, students can develop a comprehensive understanding of wisdom, and therefore, can make connections between what they have learned in their lives [36].

Table 3. Wisdom in Lesson Contents

1.	More diverse or even contradicting standpoints (e.g., imperialists and colonized nations on African colonialism) that evaluate historical events should be incorporated in history lessons.
2.	Science, Technology, Engineering and Math (STEM) lessons should not solely focus on facts but should emphasize that science is an ongoing process of discovery. Therefore, any theory can be challenged, and the students could learn how to think and apply scientific theories and methods critically.
3.	Literature classes should be evaluated in its historical context rather than applying a contemporary lens, which could arouse students to further resonate with the characters and their cultures during that time.
4.	Foreign language should be taught in their cultural context, in which the two factors intertwine, and could provide motivation for the student to learn these new languages.

For teaching procedures on how to best deliver the wisdom, five aspects, shown in Table 4, were proposed [4]:

Table 4. Five Teaching Procedures

1.	Students will be reading classic works of literature and philosophy to understand wisdom embedded in classic works, and will use this knowledge to reflect on their modern wisdom.
2.	Class discussions will be emphasized to reflect the student's wisdom learning and engage in conversations with their peers.
3.	Students reflectively to develop their own values.
4.	Critical, creative, and practical thinking for good ends would be emphasized rather than simply critical thinking.
5.	Teachers will serve as role models in the curriculum, and will take active roles in constructing wisdom learning.

Another education program that has been implemented and proven effective in school districts is called Project Wisdom, which is a character education program founded by Lesli Matula in 1992. This program aimed to help students make wiser decisions by delivering short messages from proverbs and maxims from all over the world through schools' public-address systems [37]. With a large collection of messages that can be accessed on an "Online Educator Resource Site", teachers and staff can integrate those materials into every grade level and courses. In addition, journal articles of different themes, such as "personal choice", are given to students for review each week [34]. The selection of journals can be tailored to fit different schools and course settings. Finally, students are encouraged to reflect upon the proverbs, maxims, and journal articles and how they may be applicable to real-life issues. To study the program's effectiveness, in-depth program evaluations in 2004 and

2013 reviewed surveys collected from over 913 participating schools [34,37]. The surveys showed that schools are positively affected by adopting the Project Wisdom program, where institutions see improvement in “school climates”; the study concluded that morale among teachers was raised, and incidents of students’ disciplinary violations decreased by increasing their “self-awareness, social awareness, and self-management” [34].

In addition to wisdom education for students, teachers also need to improve their wisdom to teach wisdom more effectively. Phelan, for instance, established a Master of Teaching program (MT) that was unconventional for being dedicated to training teachers [40]. The program was inquiry-based, learner-focused, and field-oriented.

Phelan’s program requires teachers to obtain field experience by interacting with schools, community, and workplace settings. This type of training allows the teachers to recognize the importance of context, requiring them to reach a balance between their general knowledge and the specificity of the situation [41]. Indeed, this emphasis on the influence of the environment on pedagogy is an essential part of wisdom. Moreover, teachers are required to do an imaginative rehearsal, where they would need to predict what learners might think when encountering a new topic and then design specific arrangements. This practice allows the teachers to build up empathy toward the students and, in turn, improve their wisdom. Finally, teachers are put into heterogeneous groups across fields in some units, allowing them to realize how different backgrounds shape different world views [40]. As a result, teachers become more open to different perspectives. These characteristics linked education training with the qualities and skills required for wise thinking, shedding light on the implementation of wisdom education in the current school system.

Previous research has provided a starting point for future attempts by showing the different aspects of wisdom that education systems can touch upon to improve overall current situations, as well as the importance of integrating the concept of wisdom inside and outside the classroom. Also, the establishment of the MT program has shown the necessity of teachers themselves serving as role models.

4.3 Discussion

Through reviewing the aforementioned three research proposals on improvement wisdom teaching, we summarized and synthesized their similarities into four points, which we believe would constitute a beneficial and comprehensive wisdom education program. The first three aspects can be concluded by applying creative, analytical, and practical wisdom as aligned with the WICS model mentioned earlier in this paper. The fourth aspect would highlight the importance of educating teachers to become wiser and serve as better role models for their students.

First and foremost, from a creative perspective, schools need to help students develop a wise use of knowledge so that individual abilities which maximize self-attainment would also benefit others’ attainments. According to Sternberg’s Balance Theory, those who are wise can balance and maximize self-interest with the interests of others in pursuit of common goods [42]. Conversely, a knowledgeable person can also be foolish when he or she uses knowledge in the wrong direction. Simply put, acquiring knowledge is insufficient. Fostering students with the wise uses of knowledge allows them to understand the importance of applying knowledge in a correct way. To simply transform knowledge into practical intelligence is also not enough. As mentioned in previous sections, wisdom specifically requires students to positively apply their abilities to create enduring and impactful changes in the world [37]. An example of this is found in the fifth procedural advice of Sternberg’s Sixteen Principles: the evaluation of knowledge from both sides to understand positive and negative uses of specific expertise [42]. Project Wisdom’s selection of proverbs and maxims from famous figures and inspiring stories could also incentivize students, motivated by inspiring stories, to apply their knowledge for the greater good [34]. Lastly, teachers should guide students to assess and utilize knowledge that could bring positive impacts.

From an analytical perspective, schools should not only help students to recognize their interests, but also teach them how to balance those interests involved in decision-making. Having students understand and balance their interests helps them develop a sense of their goals and the processes

involved in achieving them [4]. By teaching them to balance their interests, students could take into account comprehensive views in their decisions. High school students, in particular, face important life decisions for the first time as they transition into adulthood and prepare for post-secondary education. In this context, schools need to help students recognize their interests and guide them to make the most suitable decisions that balance their own intrapersonal aspirations and opinions, with extra-personal factors such as family expectations, peer relationships, and societal influences. In the Project Wisdom program, weekly journal articles given to students for review that include “Personal Choice” topics provide real-life scenarios with intricate and sophisticated options. The goal is to stimulate deeper thinking when balancing interests between one’s personal choices and the concerns of others [34, 37].

From a practical perspective, a successful wisdom curriculum should also cultivate virtues, turning them into habits that students would continue to accumulate in their daily lives. Indeed, values “are an integral part of wise thinking”[43]. Despite the fact that different cultures, nations, and ethnic groups have various views on what constitutes good virtues and values, specific universal values exist too, and should be taught to all. Those virtues include, for instance, respect for self and others, commitment to something greater than the individual, caring for other things and living environments, etc. To examine these values is essential for students to apply their practical knowledge in a positive direction towards a common good. Educating students on these benefits allow them to choose the positive uses of experience and their applications. These values would also have lifelong impacts on students too, as they should be encouraged and educated to be aware of these values in whatever they do. An example of this is the dialogical aspect of the Balance Curriculum, which emphasizes the use of various activities to cultivate student’s abilities in contemplating a situation or a historical event from the point of view of different groups of people [39]. Under such methods, students are encouraged to put themselves in other’s shoes and learn qualities such as empathy, sincerity, and compassion.

Finally, from the educator’s perspective, a wisdom education program should also consider training teachers and how to best evaluate the effectiveness of such a program. It is often the case that many teachers themselves are sometimes incapable of teaching wisdom because they have not reached the level of acting as role models. As ones who guide learning activities and attend to student’s social and emotional needs, teachers have to take on wiser roles in the education program [43]. The Master of Teaching Program (MT) placed heavy emphasis on interaction with environmental settings, the balance between general knowledge and the specific context, and an understanding of diverse worldviews and perspectives [42]. In addition, we suggest that it is also essential to show that teachers are irreplaceable examples in teaching students who serve as academic and social role models. If they understand their responsibilities and importance to students, teachers may gain a self-sustaining motivation that would allow them to excel beyond their primary duties of imparting factual knowledge. In such a scenario, they would communicate and resonate with students on a deeper level, and would also gain higher satisfaction in their careers. In terms of measuring wisdom in the educational setting, the performance measure seems to be more appropriate than Self-reported measures since Self-reported measures are mostly conducted among adults. Indeed, they tend to have more understanding of themselves than younger students [17, 21]. Despite the challenges in choosing assessments that best fit specific theories of wisdom and environmental contexts within schools, institutions must incorporate a set of measurement tools to assess their wisdom teaching.

5. Conclusion

The rise of complex societal issues in an increasingly polarized world has exposed the inadequacy of merely possessing academic skills when it comes to life success, which makes wisdom especially significant under the current social context. We provided a brief review of the nature of wisdom as well as its application in education. We discussed different theories of wisdom and found that Sternberg’s Balance theory was the most suitable to school systems, due to its emphasis on the process instead of characteristics of wisdom, and in hopes of reversing conventional ideas of intelligence that

merely add wisdom to the scope of intelligence. Furthermore, we listed several programs aimed at improving wisdom for both students and teachers. However, limitations remain for future research in this field, such as the lack of empirical evidence and effective measurements, as well as societal pressures that emphasize quantifiable results. Therefore, subsequent studies need to provide more statistical data, more standardized theories, measurement, and education programs as well as ways to minimize the effect of societal cognitive biases. It is our hope that this study can encourage more schools to implement the wisdom curriculum and help students become wiser people in the future.

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A Brief Talk on Human Wisdom and Education

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Abstract. As the crucial process that shapes people's values and perceptions, education bears the responsibility of directing society towards certain goals. In a world where increasing violence, conflicts, biases, and injustice occur, many may question whether current education systems are sufficient. Some may go as far to believe that education systems have not produced more peaceful, harmonious societies, but rather, the opposite. Indeed, for a long-time psychologist have been searching for methods that would obtain the universal goal of societal improvement. And this endeavor of the psychologists was centered around wisdom--a special, complex concept that many see as the key to solving societal problems. In this review, wisdom and its relationship with education will be explored through Sternberg's balance theory of wisdom and its implementation in schooling. Importantly, this implementation may inspire more desirable education systems that would ultimately nurture children who could lead society towards a better place.

Keywords: Sternberg's Balance Theory of Wisdom; Education; Wisdom; Educational Methods.

1. Introduction

Questions concerning moral judgment--right and wrong, good and evil--have intrigued humans for millennia. Some of human society's most important and urgent inquiries concerned questions on how to lead people toward the righteous path; often, raising intelligent individuals was thought to direct society to a better place [1]. Education from a young age was an important stage, since young people would be the ones who will lead the direction of future societies, and their minds would directly influence those of their offspring. Thus, the article "The Balance Theory of Wisdom" written by Robert Sternberg begins with the attempt to develop wisdom in schooling, so that young children could better navigate their lives as well as benefit society. This literature review will focus primarily on psychologist and psychometrician Robert Sternberg's theories of wisdom and approaches to developing wisdom in schooling, attempting to answer the question: *how can we develop wisdom in schooling?* The first section will discuss the concept of wisdom and the three approaches (philosophical, implicit theoretical, and explicit theoretical) to wisdom. Section two will explore the relationship between tacit knowledge, practical intelligence, and Sternberg's Balance theory of wisdom. Finally, section three will focus on the applications of Sternberg's balance theory of wisdom in an educational setting, using Sternberg's concrete schooling programs as references. These components will inform the varied nature of wisdom and methods to inculcate the quality: by teaching the students critical thinking (involving dialectical, dialogical, and reflective thinking), multiple points of view (in order to balance various interpersonal, interpersonal, and extra personal interests), knowledge application (relating to practical intelligence), and finally, realizing and achieving the ultimate goal - the common good. In short, this paper will lay out how wisdom development in schools may be fulfilled.

2. Section One : Wisdom Unveiled - The Concept of Wisdom: The Alternate Approaches and Sternberg's Views on Wisdom

This section will begin by exploring the different approaches to wisdom, followed by an explanation of psychologist Robert Sternberg's views on wisdom and the relationships between tacit knowledge, practical intelligence and wisdom. Finally, the section will introduce Sternberg's balance theory of wisdom, thus rendering a complete picture of the nature of wisdom.

Three different approaches to wisdom in the field of psychology: the philosophical, implicit theoretical, and explicit theoretical theories [2]. Philosophical approaches to wisdom are rooted in the

Platonic dialogues, which were believed to be the first comprehensive analysis of wisdom in the Western tradition [3]. The underlying structure of philosophical approaches comprised of three senses, as Robinson pointed out:

Sophia, which is found in those who seek a contemplative life in search of truth; *phronesis*, which is the kind of practical wisdom shown by statesmen and legislators; and *episteme*, which is formed in those who understand things from a scientific point of view [4].

Following Plato, Aristotle specified his views on the qualities of wisdom. Individuals are regarded as in possession of wisdom when they know more than the “material, efficient, or formal causes behind events; individuals who know the final cause” [4]. While philosophical approaches captured the concept of wisdom in a broad and relatively general way, implicit theoretical approaches on the other hand define wisdom based on people’s beliefs and their distinct opinions regarding the concept of wisdom. Indeed, implicit theories of wisdom have been the subject of numerous studies conducted by psychologists. In his investigations, Clayton asked participants to rate similarities between all possible pairs of words using scaled terms such as “experienced”, “pragmatic”, “understanding”, and “knowledgeable” [5]. Holliday and Chandler used principle components analysis to reveal the underlying factors of wisdom: exceptional understanding, judgment and communication skills, general competence, interpersonal skills, and social unobtrusiveness [6].

Table 1. Definitions of wisdom from different psychologists

Baltes and colleagues	Sternberg	Staudinger & Gluck
Wisdom is reflected in five parts	Explicit theory of wisdom	mastering the basic dialectics shaping human existence
a) rich factual knowledge	a) knowledge	a) deep and broad insight into self, others, and the world
b) rich procedural knowledge	b) processes	b) complex emotion-regulation (in the sense of tolerance of ambiguity)
c) life-span contextualism	c) a judicial thinking style	c) a motivational orientation that is transcending self-interest and is investing in the wellbeing of others and the world.
d) relativism	d) personality	
e) uncertainty	e) motivation	
	f) environmental context	

It can be said that understandings of wisdom vary from person to person and from era to era. However, it is generally true that different explanations of wisdom point to the multifaceted nature of the idea. Wisdom is not one, but rather, multiple things. Therefore, the context is closely tied to wisdom--in other words, wisdom manifests itself and finds different applications in different circumstances. For example, the philosophical approach defines an individual applies wisdom into practices related to government works as *phronesis*; on the other hand, the implicit theoretical approaches would use different words to describe the same kind of wisdom. Whereas the implicit theoretical approach is based on laypersons’ views on wisdom, the explicit approach is based on experts’ views on wisdom. Experts further explain the labels used to describe wise people, such as “experienced” and “knowledgeable” used in previous studies to represent wisdom. Although psychologists have specified the characteristics of wisdom, they have not provided the reasons for why these characteristics do represent wisdom and how these traits are measured. [1,7,8,9].

Table 1 shows the different views among psychologists toward wisdom. Some psychologists' definitions of wisdom share similarities, such as wisdom as being a general type of knowledge, for instance, Baltes' factual or procedural knowledge; Sternberg's knowledge about dealing with the contexts of environments and balancing among various interests; and Staudinger and Gluck's knowledge of mastering dialectics such as good and bad. The uncertainty and ambiguity of life as a context for wisdom is another similarity. On this point, Baltes specifically states uncertainty, Sternberg's uncertainty is manifested in the adaptation to, shaping of, and selection of new environments, and Staudinger and Gluck posit complex emotional regulation. However, the specific focuses of these psychologists vary, as well as how they categorize their processes.

3. Section Two: Tacit Knowledge, Practical Intelligence, and Sternberg's Balance Theory of Wisdom

To understand the core of wisdom, the concept of tacit knowledge must be explained. Derived from Sternberg's triarchic theory of intelligence [2] tacit knowledge is considered an important part of practical intelligence, defined as a quality which is "action-oriented, typically without direct help from others, and allows individuals to achieve goals they value" [2]. Sternberg and his colleagues viewed condition-action sequences as a form of understanding mental representations of tacit knowledge [2]. As an example, understanding the right time to act is a form of tacit knowledge, i.e., one would not deliver bad news to his or her teacher when the whole class just performed horribly on the last exam, and the teacher is having a headache, and it is Monday morning. In other words, Tacit knowledge concerns situations or contexts [2]. Tacit knowledge is also a key component of practical intelligence, or "the ability to apply various kinds of information-processing components of intelligence to experience for adaptation to, shaping of, and selection of environments" [2] [10].

Table 2. The characteristics of academic problems according to Neisser, Sternberg, and colleagues

a) tend to be formulated by others	b) intrinsically uninteresting for the most part	c) self-contained, in that all needed information is available from the beginning	d) disembodied from an individual's ordinary experience
e) well-defined	f) characterized by a "correct" answer	g) characterized by a single method of obtaining the answer	

Table 3. The characteristics of practical problems according to Neisser, Sternberg, and colleagues

a) unformulated or in need of formulation	b) personally interesting	c) lacking information necessary for a solution	d) related to everyday experience
e) poorly defined	f) characterized by multiple correct or at least "acceptable" solutions	g) characterized by multiple methods for picking a problem solution	

Tables 2 and 3 show the contradictory natures of academic and practical problems. The distinctions between the two are important to clarify, since a key component in the understanding of wisdom (according to Sternberg's theory) is that wisdom is not dependent on intelligence. In other words, one can be practically intelligent, but not wise. Therefore, academic excellence might mark one's high level of intelligence, but not necessarily wisdom. Indeed, conventional education focuses largely on

non-practical problems, which seldom, if ever appear in real life situations. Therefore, the purpose of conventional education is often inconsistent with real life needs for wisdom.

Thus, Sternberg's Balance Theory of Wisdom must be understood in this context, viewing wisdom as "inherent in the interaction between an individual and a situational context" [2]. Once more as previously discussed, the core of wisdom--tacit knowledge--is derived from practical intelligence. Therefore, wisdom to a large extent involves not a static store of information or knowledge within oneself, but rather is largely concerned with the self and situations that it confronts. thus, the distinction between wisdom and intelligence is clear: a wise person must take into consideration the common good as his or her goal, whereas an intelligent person does not.

4. Section Three: The Implementation of Wisdom in Schooling

Following the previous section on the distinction between knowledge and wisdom, this paper now turns to the practical aspects of implementing wisdom teaching in schools. As the world is undergoing more and more atrocious incidents, be it environmentally or socially, the emphasis on wisdom in education becomes increasingly urgent. The "tragedy of the commons" is a widespread phenomenon in the world today, where individual intelligent behavior may not hold true on a collective level [1]. In the case of forest depletion, for instance, individual economic from cutting trees becomes a collective drawback when considering consequences such as climate change, greenhouse gas increase, and soil erosion. Thus, it is ultimately a tragedy resulted from individually acting "smart" and collectively stupid. Therefore, an important goal is to utilize wisdom for greater good. Otherwise, one's possession of wisdom would have little importance if it does not lead to benefits. Thus, this section will discuss the application of Sternberg's Balance Theory of wisdom in educational settings, illustrating an important practical application of wisdom that could potentially help reach the goals considered as the common good.

It can be argued for several reasons that existing educational systems bring few benefits to society in any significant way, if not actually causing opposite effects at times. Indeed, education has "taken the easier, quicker route. It leads students rapidly and relatively smoothly--in the wrong direction" [1]. Specifically, to a large extent the high-stakes systems of testing has led students down the wrong path. The issue lies not in the tests themselves, but what they measure, which have little relevance to helping the students successfully navigate their lives as well as the achieving the common good. Conventional education systems tend to emphasize memory and cognitive skills, yet it is doubtful they are sufficient. In fact, one needs to learn to apply one's knowledge in dealing with various situations throughout life, instead of repeating actions based on a rigid set of information. As stated previously, there is no positive correlation between intelligence and wisdom, and the rise in IQ among the socioeconomic elite does not seem to lead to a more harmonious and happier society [1]. Moreover, development in accordance to conventional educational standards of memorization and analytical skills are insufficient to lead to successful lives and a more peaceful and harmonious society, primarily because intelligence is not merely these skills only. According to Sternberg, the development of these skills, in fact, might lead to "smart fools" who are susceptible to one or more of the following six fallacies [11] [11].

Table 4. The "smart fool" fallacies

a) unrealistic optimism	b) egocentrism	c) omniscience	d) omnipotence
e) invulnerability	f) ethical disengagement		

Table 4 shows the fallacies that smart people are prone to commit. Sternberg suggests that precisely because they think they are too smart to be foolish, they become fools. To alleviate these tendencies, the proposed integration of wisdom in schooling by Sternberg is explained with principles derived from the balance theory of wisdom. Firstly, teachers who teach with wisdom in mind will

explore with students the idea that conventional abilities and achievements are not enough for a satisfying life [1]. It is general true that satisfaction derived from life fulfillment is not something that conventional learning can help students achieve: only wisdom can. Although some may end up conventionally successful, they may still not be happy because they failed to live a fulfilling life [1].

Table 5. Six procedures for teaching wisdom in school settings according to Sternberg and his colleagues

Wisdom education procedures (Sternberg and colleagues)	Guideline-concrete actions	Reasons	Goals
Procedure one	Read classic literature and philosophy works	To learn from the wisdom of the sages	Explore and form students' own values
Procedure two	Application of knowledge	Apply the knowledge learned from textbooks to students' real lives	Understanding the purpose of knowledge, help students develop practical intelligence, dialectical and dialogical thinking
Procedure three	Value forming	Learn from the historic figures and reflect upon their actions and think of specific actions to improve the students' own lives as well as the community	Value forming
Procedure four	critical, creative, tactical thinking in the service of good ends	Think about the worst and best possible outcomes as well as the most likely outcomes when deciding, balancing various interests in students' daily lives and work towards the common good	Acquisition of different ways of thinking so to efficiently address/solve problems in the future and work towards the common good
Procedure five	Analyze the decisions in the service of the common good	Use procedure four to evaluate one's decisions	The realization and attempt towards reaching the common good
Procedure six	Role model	Teachers should be role models themselves	Teaching wisdom effectively

Table 5 shows the concrete steps that teachers can take to help their students become wiser. By acquiring these skills, students gradual learning wisdom by forming values. Under the guidance of these values, they may balance various interests within the context of specific environments to reach the goal of the common good--thus fulfilling the implementation of wisdom in schooling.

These principles are crucial to helping the students in successfully navigating through life and eventually achieving fulfilling lives. As they enter a real world whose problems largely concern complex contexts and involve various factors to consider, students may solve their problems in an efficient way while considering the interests of others and balancing competing interests. People face countless challenges when making decisions, and wisdom manifests itself in these processes. Therefore, wisdom as a quality is crucial in helping us attain satisfying lives. Moreover, the possible negative consequences of making wrong decisions will be reduced, and thus, society as a whole will benefit from wiser individuals.

Although a promising idea, actual implementation on a massive scale faces many problems. For example, there needs to be organized, wisdom-guiding/coordinating groups for teaching teachers how to engage students in wisdom. Such a mentor group would be extremely demanding in its requirement that those who guide must be wise people themselves. It may be feasible, too, that psychologists themselves are involved in the beginning stages of implementation. Secondly, as wisdom programs would require high levels of individual attention, the effectiveness of teachers in teaching wisdom according to strict syllabi may be in question, as many may not wish to devote extra work. Thirdly, it cannot be ruled that wisdom programs may gradually become robotic, parroting systems if their administration is not properly executed, and similar fallacies which already plague conventional educational systems may appear in new systems as well. [2]

5. Conclusion

It is certain that the path of wisdom inquiry has always been a difficult, challenging, yet awarding one. The definitions and applications of wisdom vary widely, from early philosophical approaches to wisdom, to modern psychological measures that gauge the depth of wisdom; from the development of tacit knowledge and practical intelligence to balancing various interests; and from the practical implications of wisdom to implementing wisdom in schooling. As the contributions from psychologists Sternberg, Baltes and colleagues, and Staudinger and Gluck offered explicit explanations on the concepts of wisdom, as clarified in Table one, and the differences in characteristics of wisdom and intelligence revealed in tables 2 and 3, and tables 3 and 4 explaining the smart-fool fallacies as well as the educational procedures that promote wisdom, it is evident that, eventually, the goal is to obtain the common good and direct societies towards peace and harmony through revolutionize the conventional education systems and implement wisdom in the new systems. Indeed, the path towards wisdom will surely continue to be inquired, debated, and explored. After all, human beings have the innate desire to reach their full potentials and thus live meaningful lives. Although life is often intriguing and frustrating, and human minds are often in an ambiguous and even at times contradictory state, the process of the search for wisdom will gradually--even without us noticing perhaps--fill the gaps and clear the mists in our minds, eventually bringing clarity, certainty, and satisfaction to our lives.

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The Influence of Walking on Creativity and its Individual Differences

-- Based on the Study of Teenagers with High School Students as the Main Body in Shanghai

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Abstract. Studies in the past have shown that exercise could improve creativity. However, it is not yet clear that what kinds of sports could be applied to the entire human population. Walking is the most common exercise that people will do voluntarily or otherwise. This research was designed to explore the relationship between walking and improvement in creativity of teenagers. Our independent variable is whether the participants walk or not. Participants are separated into two groups: A (experimental) and B (control) and they were asked to finish 4 questionnaires and a participant consent. Group A were asked to take a walk with a researcher in a vegetated park without taking any rest, while the Group B were asked to stay still at their place and wait. The experiments of the two groups are conducted in two different places, but both of them are forms of overseas education institutions in Shanghai. Four questionnaires include two forms of Williams' Test of Divergent Thinking from Creativity Assessment Packet (Chinese version), one Mindfulness Attention Awareness Scale (MAAS; Chinese version), one Big Five Inventory (BFI; Chinese version). Participants were asked to finish the participant consent form and one of Williams' Test of Divergent Thinking before walking or resting, then they were tasked to finish the rest of the questionnaire after the workout/rest has been completed. Results found that the duration of the exercise was critical to the effect it had on creative thinking – when the time they spent on walking was short, the influence on the divergent thinking performance of the participants was minimal.

Keywords: Creativity; Sport; Walking; Teenagers.

1. Introduction

Most researchers agree that creativity involves the development of novel ideas, products, solutions to problems, which are valuable and instructive to the development of individuals and/or social groups [1]. Theorists and Psychologists still have great difficulties to give an exact definition of creativity [1]. Creativity helps us to figure out how different people generate different ideas and their ways to incubate and apply them. Especially for educators and parents who aim to apply them at a practical level, and focus more on finding ways to help students to be more creative and generate more innovative thoughts. Thus, the initial purpose of this study is to explore the effective ways to improve creativity of teenagers. Since most researchers of our research team have had a education background in China and given the situation of pandemic was extremely hazardous for these type of conduct collective experiment, this research choose to explore the walking effect under the system of Chinese education.

1.1 Creativity

There are plenty of arguments around the definition and measurement of creativity [1]. Although almost all of researchers believe that creativity requires the ability of proposing ideas, developing ideas, or creating the value of solutions, researchers are not able to define exactly novelty and originality of creative ideas [1]. However, people are curious about the inner mechanism that explain how people generate new idea distinctly. If it is possible, they would try their best to improve this ability of human. Normally, researchers uses fluency, flexibility, originality, and elaboration to measure creativity. Torrance Test of Creativity (TTCT; Torrance 1966/1974) has been welcomed by researchers for more than forty years.

1.2 Mind-body Relationship

1.2.1 The Impact of Physical Activity on Creativity

Past researches have already proven that physical moment could affect mental states.. A number of studies have looked at the effect of physical activity on creative thinking, all of which involved intense physical activity [2-5].

The first research that realized physical activity was affecting creativity was when the first study related to the relationship between running and creativity was conducted in 1985, in a study by Gondola and Tuckman. They examined the effects of physical exercise (running for 20 minutes) on creativity using Consequences Subtests of the Kit of Reference Tests for Cognitive Factors (both before and after the physical exercise), matchboard task, multi-purpose task and Cognitive factor Reference tool test. The differences in the participants' task performance on the flexibility index of multi-purpose task and the originality index of Remote Consequences task were small but statistically significant enough to be investigated.

Gondola (1986) used the same creativity task to compare the effects of sprinting and long-distance running on creativity. After refining his experiment in 1985, forty-two subjects were divided into three groups: long-distance running, sprint and control group. The result found that sprinting and running boosted the creative performance on all three tasks. Since then, Gondola (1987) has found a relative significant boost to creativity from other forms of intensive exercise such as dancing.

In 1987, Steinberg et al. further expanded the range of physical activity and examined the impact of aerobic exercise (including Aerobic workout and aerobic dance) on creative performance and found that after aerobic exercise, subjects' performance on tasks based on fluency and flexibility indicators was significantly improved on more unusual tasks

In 2013, Colzato et al. discovered relationships between cycling and creativity according to athletes and amateurs and found that both modest cycling and intensive cycling promote convergent task performance (marginal significance) among athletes (defined in their study as having no less than three movements per week in the last two years). Both light and strenuous cycling promoted the performance of the convergent thinking task. But intensive cycling actually hindered non-athletes (the people who did not exercise regularly, less than once a week on average) in divergent thinking tasks. Strenuous cycling can hinder non-athletes' performance on divergent thinking tasks.

Researchers' level of understanding of the relationship between physical activities and creativity has become deeper as researches continued to be conducted. They started from simply "running", a wide and non-specific definition, to specifying the types of running, then to aerobic exercise. Then other researchers retested the latest findings of aerobic exercise by specifically examining cycling, a common exercise among aerobic exercise.

1.2.2 The Effect of Walking on Creativity

Walking as a exercise is a relatively controversial when the topic of creativity comes up. Regular walking is slow and is considered to be an aerobic exercise, while walking at a very fast pace, such as a race walk, is considered to be an anaerobic exercise. Schwartz in a study of theirs, the impact of walking on the state of creative was discussed, four experimental results consistently showed that walking (including both indoor and outdoor walk) relative to sitting, could promote more participants in multi-purpose tasks (the alternative uses task, divergent thinking) measurement and Barron symbolic equivalent tasks (Barron's equivalent task, measured analogy) on creative performance, but it could also hinder performance on distant associative tasks, which measures convergent thinking. Walking versus sitting promotes the subjects' creative performance on the multipurpose task and the symbolic equivalent task of Barron, but hinders the subjects' performance on the distant associative task (test of collective thinking).

First, in the study, indoor walking meant walking on treadmill, which is repetitive and monotonous, with no flexible change of direction. This to some extent is rather passive and sometimes at risk of injury. Moreover, some studies have found that when walking on treadmills, people take shorter step length and slower step frequency when compared with walking on the ground [6], and subjects prefer to walk on the ground [7]. So treadmill walking is not a substitute for or representative of ground

walking. Moreover, in Opezzo and Schwartz's study design, "outdoor walking" refers to walking along a preset route in the campus they lived in, which made their results likely to be affected by additional variables and made it difficult to determine whether it was the walking itself or other variables associated with walking jointly led to the differences in participants' creative performance. The results of experiment 4 showed that the subjects' novelty in the analogical task was improved under outdoor conditions compared with indoor conditions, which also indicated that the walking environment (location) was influential. Finally there are many forms of walking in life, such as walking in a race, walking at will, etc. Among them, walking at will is the most common in life, meaning that there is no direction and speed limit to walk at will. Do whether walking at will and walking along the route have different impact on creativity? If so, which one is better?

Walking promotes the subjects' creative performance on the multipurpose task and the symbolic equivalent task of Barron in comparison to sitting down, but it also hinders the subjects' performance on the distant associative task (test of collective thinking). Walking requires executive function to handle the dual task of thinking and walking at the same time, and this side effect of distraction allows more creativity to seep in.

1.3 Study Topics and Purpose of the Study

Although a number of studies have discovered that exercising could affect the performance on creativity, some questions remain unanswered, especially from the sample selecting perspective, as most previous studies used adults as subjects. Thus, this study was a pilot study designed to test whether walking might improve teenagers' creativity.

The background is focusing on the education system in China where teenager is the main population who receives education. The student population is a group of people that could gain the most benefits from improvement in creativity training. Previous studies have proved that some specific physical movements could improve the level of creativity in some ways. Walking is one of these physical movements that could positively affect creativity. However, the participants of these study did not cover the population of teenagers because 90% of the sample are male and all of them are under the system of international Chinese education and having standardized test training programs in Shanghai.

If walking has positively effect on the creativity test, then the inner mechanism of this relationship should studied and understood. In this study, Mindful Attention Awareness Scale and Big Five Inventory are utilized to measure individuality. Mindfulness, openness, and conscientiousness are considered as mediators which are able to reflect which group of teenagers are more likely to be benefited in walking. To explore whether the walk-creativity relationship is regulated by some individual differences variables: mindfulness, openness, and conscientiousness.

To sum up, in this study, we retest the walking effect on the sample of Chinese teenagers who have not been tested in previous studies and also explored whether mindfulness, openness, and conscientiousness as individual differences could potentially influence the effect. Our hypotheses are: 1. There was no significant difference in the total Williams score between groups A and B before departure; 2. After walking/resting, the Williams test results of group A were significantly improved, while the score of group B showed no significant difference.

In this study, the relationship between walking and creativity will be tested. The study aims to figure out if walking effect is applicable on sample of teenagers and whether there are certain individual differences that could determine the extent of this effect. Then the study could offer suggestions to certain groups to walk more or less while incubating new ideas.

2. Methods

2.1 Participant

20 students who spend their summer vacation in Shanghai (18 males and 2 females, aged 17.75 ± 1.33 years) took part in the investigation voluntarily. Informed written consents for all

participants were obtained prior to the experiment. Ethic consideration was approved by Joffrelab and Wisdom Academy.

2.2 Materials

In order to test whether the walking effect can apply to teenagers or not and explore the potential influence of individual differences on this effect, we use Williams' Test of Divergent Thinking from Creativity Assessment Packet (CAP; Chinese version), Mindfulness Attention Awareness Scale (MAAS; Chinese version), and Big Five Inventory (BFI; Chinese version) to quantify the level of creativity, mindfulness, openness, and conscientiousness of the participants.

Williams' Test of Divergent Thinking measures the participants' ability of divergent thinking by instructing participants to complete graphs and give a name to their productions. MAAS measures the attention and awareness which are intertwined and relatively constant features of normal functioning [8]. BFI measures the level of openness and conscientiousness of participants. The outcome of MAAS and BFI are used as concomitant variables.

2.2.1 Williams' Test of Divergent Thinking (Chinese Version)

Williams' Creativity Assessment Packet (1971) is a bundle of assessments, including Test of Divergent Thinking, Test of Divergent Feeling, and The Williams Scale. Although TTCT has been used for more than forty years and widely accepted, this test is not that suitable for this study because the most subjects are teenagers aged from 14 to 18 years old. Williams generates his tests from TTCT and J. P. Guilford.

In this study, Williams' Test of Divergent Thinking are divided into 2 sets of questionnaires. There are totally 12 figures that need to be completed from No. 1-12. The first set has all the odd No. figures (1,3,5,7,9,11), while the second set has all the even No. figures (2,4,6,8,10,12).

2.2.2 Mindful Attention Awareness Scale, MAAS (Chinese Version)

Mindfulness can be considered as an enhanced attention and awareness of current experience or present reality. This dispositional scale measures individual differences. The inspirations of items in MAAS come from: our personal experience and knowledge of mindfulness (and mindlessness), published writings on mindfulness and attention, and existing scales assessing conscious states of various kinds [8].

2.2.3 The Big Five Inventory, BFI (Chinese Version)

The Big Five Inventory (BFI) is a self-report inventory designed to measure the Big Five dimensions. It is quite brief for a multidimensional personality inventory (44 items total), and consists of short phrases with relatively accessible vocabulary [9].

In this study, we refer only to the value of openness and conscientiousness.

2.3 Procedures

First section of the experiment

First, 10 participants were randomly assigned a number and separated into two groups based on their number: A-1 group and A-2 group to finish the first Williams' Test of Divergent Thinking questionnaire and participant consent form. Then, the researcher gave them concrete instructions and suggested them to finish the two papers in 7 minutes. After everyone had finished their first questionnaire and participant consent form and had known the concrete instructions of walking, all participants were asked to follow the researcher to take a walk in a nearby park without communicating with each other. Walking took about 10 minutes. After walking, participants were in their original groups (A-1 and A-2). The researcher then gave them concrete instructions again and suggested them finish the two papers in 12 minutes and asked them to finish the second Williams' Test of Divergent Thinking questionnaire, MAAS, and BFI.

Second section of the experiment

10 participants were randomly assigned a number, then separated into two groups: B-1 group and B-2 group to finish the first Williams' Test of Divergent Thinking questionnaire and participant

consent form. Then, the researcher gave them concrete instructions and suggested them finish the two papers in 7 minutes. Then all these participants were asked to sit in their seats without moving around and communicating with each other. The rest took about 10 minutes. After resting, participants in both groups (B-1 and B-2) were given concrete instructions again and suggested finish the two papers in 7 minutes and asked to finish the second Williams' Test of Divergent Thinking questionnaire, MAAS, and BFI.

Table 1. The Schedule of Two Groups Tests for Divergent Thinking

Group	Pre	Post
A-1 (walking)	odd	even
A-2 (walking)	even	odd
B-1 (resting)	odd	even
B-2 (resting)	even	odd

3. Results

In this study, we use ANCOVA to test whether walking has impact on the results from Williams' divergent thinking test. Interdependent variable is whether the participants had walked. Dependent variable is the sum of score from post Williams' divergent thinking test. Covariables are the scores of openness, conscientiousness, and mindfulness.

A one-way ANCOVA was conducted to determine a statistically significant difference between walking and resting group on the scores of post Williams' divergent thinking test controlling for scores of pre Williams' divergent thinking test, openness, conscientiousness and mindfulness.

3.1 Data Analysis

Table 2. A one-way ANCOVA

Covariates	Dependent Variable	<i>F</i>	<i>p</i>	η_p^2
Pre Williams' divergent thinking test	Post Williams' Divergent Thinking Test	.033	.858	.002
Openness				
Conscientiousness				
Mindfulness				
Pre Williams' Divergent Thinking Test	Post Williams' Divergent Thinking Test	.443	.514	.025

Result shows that there is no significant difference between group A (experimental group) and group B (control group) before walking or resting $F(1, 17) = .033$, $p = .858$, $\eta_p^2 = .002$. There is no significant difference between pre- and post-index without adding covariables into calculation, $F(1, 17) = .443$, $p = .514$, $\eta_p^2 = .025$. Thus, the addition of covariables is not able to contribute to any meaningful conclusion here.

4. Discussion

This pilot study attempts to investigate whether walking can improve teenagers' creativity and test how individual differences can affect the walking effect. The study uses Williams divergent thinking test, Mindfulness Attention Awareness Scale (MAAS), and Big Five Inventory (BFI) to test participants' performance on divergent thinking test and their individual differences in openness, conscientiousness, and mindfulness. All the scales and Williams' divergent thinking test provided are the Chinese version. We had randomly chosen 20 students as participants. 90% of them are receiving high school education at the time, while the other two were college students.

We use ANCOVA to do the data analysis and find that there is no significant difference both between and within A and B group, which shows that walking has no influence on the participants' performances on Williams' divergent thinking test.

Given the limitation of this pilot study, the sample size is not big and representative enough and the experimental control of this study is also problematic. During the experiment, participants are not strictly monitored to be completely silent. 90% of the participants were male. If we assume the sample size is enough and the experimental control is appropriate, the external explanations of the absence of this walking effect could be: the sample itself is different and the influence of experimental environment.

The mentioned studies previously in literature review, the participants of all the studies were adults, including college students. However, in our study, our participants were mostly teenagers, and about 90% of them were receiving education in high school. Most high-school students lacked exercise in their daily school life. The exercise of walking could be changed into a more intensive type of exercise for the teenagers. The difference of the sample itself could be the factor leading to the effectiveness of walking. In the study related to the influence of cycling on the creativity of athlete and non-athlete conducted by Colzato et al. (2003), the researchers discovered that intensive cycling hindered non-athletes' performance on divergent thinking test.

Second, due to Covid-19, people are forced to stay at home for several months in China so that high-schoolers lacked the opportunities to do exercise which was probably a factor why walking had no effect on their performance on divergent thinking test.

As for the influence of experimental environment, the temperature of the experiment day was above 30 Celsius, most of the participants are wearing facemasks, and the walking pace was relatively fast than usual, it is possible that this kind of short-distance walking could be considered as intensive anaerobic exercise. In this study, our participants were clearly not athletes, they had no professional and frequent physical training. Perhaps, the 10-minute walking were intensive sports to participants. Here, we could consider that this type of walking belong to intensive exercise. In 1987, Steinberg et al. further expanded the range of physical activity and examined the impact of aerobic exercise (including Aerobic workout and aerobic dance) on creative performance and found that after aerobic exercise, subjects' performance on tasks based on fluency and flexibility indicators was significantly improved on more unusual tasks. However, walking, could be considered as a form of anaerobic exercise if the walkers lacked oxygen and walk in a relative fast speed.

The results of the study challenges most of the pervious studies on the relationship between walking and creativity; however, at the same time, it also supports a few studies' conclusions if we assume the walking done here could considered as an intensive or aerobic exercise to the participants. The outcome can show that: First, staying at home for too long may reduce the influence of bodily movement on creativity, and being quarantined at home for several months could be an important factor that hinders the effectiveness of walking. Second, perhaps high-schoolers in China are lacking exercise as their daily lifestyle so that walking here has changed into an intensive exercise to them. Third, this can probably support the conclusion that anaerobic exercise is not going to improve participants' performance on divergent thinking test.

The meaning of this study may embody in the part that it probably points out a common problem in Chinese education, which is the lack of opportunities to exercise. Nevertheless, this result could still be used to encourage people to exercise more, especially through the means of aerobic sports.

5. Conclusion

The result shows that the walking has no effect on the performance on Williams' divergent thinking test. Openness, conscientiousness, and mindfulness cannot be considered as the effective covariables that enhance the significant differences between experimental and control group. The results indicate that walking effect cannot apply on teenagers in Shanghai so well, especially high-schoolers who lacked physical exercise.

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The Relationship between Exercise Persistence and Exercise Motivation, Exercise Attitude and Subjective Exercise Experience of College Students

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Abstract. Physical exercise can improve people's mental health and physical health, regular and effective physical exercise can improve people's sub-health condition and have important impact on the individual physical and mental development. This research lays the foundation for improving college students' persistence by studying the relationship between exercise persistence and exercise motivation, exercise attitude and individual subjective experience of college students.

Keywords: Exercise Persistence; Exercise Motivation; Exercise Attitude; Subjective Exercise Experience.

1. Introduction

The report of World Health Organization (WHO, 2002) states explicitly that inadequate physical activity or sedentary lifestyle have become one of the top 10 causes of death, disease and disability around the world. In 2014, the National Health Commission announced Action Plan for Promoting National Health Quality (2014-2020), it pointed out that "implement promotion actions of national health quality, meet the health needs of the people, advocate the establishment of scientific and health view, promote health equity, create health culture, and it is of great significance for promoting the all-round, coordinated and sustainable development of health and family planning cause and the economy and society."

In order to mobilize the enthusiasm of all walks of life to care for, support, and participate in mass exercise, improve national physique and national health level, establish and strengthen the system of mass exercise work that adapts to the socialist market economy, the General Administration of Exercise of China has made the "National Fitness Program" and the "Olympic Honor Program" two big strategic decisions, and promote the "national health" to the height of "the cause of the society and the nation", and mobilize people across the country to actively participate in exercise and fitness activities. Especially when the 2019-nCoV epidemic is rampant all over the world in 2020, health has become a common topic all over the world.

A large number of studies have shown that regular and effective physical exercise is beneficial to the development of people's mental and physical health. Regular and effective physical exercise can improve people's sub-health condition; physical exercise can maximize the functions of all parts of the body, can further promote the growth and development of the body; can make people feel comfortable and spiritual, feel spiritually happy in daily life, people's physical and mental conditions are inseparable; physical exercise has the effect of tempering the will and regulating emotions; physical exercise can make people feel comfortable and happy.

To sum up, physical exercise not only has a huge impact on people's physical health, but also has significant impact on people's mental health. Therefore, we must attach importance to physical exercise and actively participate in physical exercise.

As national fitness rises to national strategy, the physical health condition of college students is a key point in national education, it is the hope of the motherland's development and affects the country's future, with the rapid development of social economy and the increasing pressure of study and work, and the mental pressure on college students also grows. In recent years, the physical quality of college students gradually become worse, and improving the physical ability of college students has become an issue that more and more people pay more attention to. Therefore, how to improve the

exercise persistence of college students and then improve their physical and psychological qualities have become the problems to be solved urgently.

But the current situation is that although college students all know that it is important to adhere to effective exercise lifestyle, it can improve many of the mental and physical health problems faced by modern civilized society, most of them are still young, apart from their daily physical education courses, they do not regularly participate in physical exercise activities, even if participating in physical exercise activities, the withdrawal rate is relatively high.

Therefore, this study focuses on college students' attitudes towards exercise during exercise, their exercise experience and their exercise motivation, explores the impact on the exercise continuity, in order to study the factors that affect the exercise continuity in the early stage, this study puts forward some suggestions for increasing college students' exercise time and improving national health.

2. Research Methods

2.1 Research Object

This study obtains 129 samples from a university in Kunming. Finally, there are 121 effective answer sheets that entered the statistical analysis, and the recovery rate reaches 94.5%.

2.2 Tool

2.2.1 Exercise Motivation Scale

This scale is compiled by Zhang Li in Beijing Sport University and is divided into two dimensions: participation tendency and avoidance tendency, these two dimensions can be combined into total exercise motivation. The reliability test results of this scale show that the Cronbach's alpha is 0.72, which basically meets the requirements for internal consistency. [1]

2.2.2 Exercise Attitude Scale

Mao Rongjian followed the compilation program of the standard speech psychological scale (2003), and compiled the "Exercise Attitude Scale." The test results of structural formula model: $X^2/df=3.67$, NNFI=0.93, CFI=0.94, AGFI=0.87, RMSEA=0.06, it shows that this scale has good structure validity. The Cronbach's alpha of each subscale also meets the requirements for internal consistency. [1]

2.2.3 Subjective Exercise Experience Scale

There are totally 12 items in this scale, and the internal consistency reliability of each dimension is: positive happiness $\alpha=0.86$, psychological trouble $\alpha=0.85$, fatigue $\alpha=0.88$. The test results of the structure validity: $X^2/df=1.44$, CFI=0.89, AGFI=0.87, RMSEA=0.06, it shows that this scale has good structure validity. [1]

2.2.4 Self-edit Scale

Zhang Binbin (2010) proposed to use exercise intensity, length of each exercise, continuous exercise time, and exercise frequency four aspects judge whether the exercisers' exercise behaviors are consistent with exercise persistence. The specific standards are as follows: (1) Participate in physical exercise at least 3 times a week; (2) The intensity of each exercise should reach medium or higher intensity; (3) The length of each exercise should be 30 or more than 30 minutes; (4) The time of continuous exercise should be more than 6 months. Individuals who meet the above four conditions and conduct physical exercise, their exercise behaviors are determined as having exercise persistence [2].

2.3 Data Processing

Data is analyzed and processed with SPSS22.0.

3. Research Results

3.1 Analysis of the Results of College Students' Exercise Persistence Time

Table 1. Test of gender difference in exercise persistence time of college students

variable	boy students		girl students		F	P
	M	SD	M	SD		
exercise persistence time	4.42	1.269	3.55	1.603	12.409	.001

It can be seen from Table 1 that exercise persistence time boys have persisted in exercise for more than one year on average, while girls have persisted in exercise for more than half a year on average. As can be seen from the above table that $P < 0.01$, it shows that boys who can persist in exercising have significantly longer time than girls, and there is a very significant difference.

Table 2. Test of the difference between college students' exercise motivation and whether they persist in exercise

variable	keep exercising		no keep exercising		F	P
	M	SD	M	SD		
participation tendency	11.3191	1.3296	10.1429	1.6714	9.214	.003
avoidance tendency	2.2553	1.0258	1.5714	1.4253	21.345	.000
exercise motivation	21.0638	1.9605	20.5714	2.9240	25.989	.000

It can be seen from Table 2 that there are significant differences between whether students can persist in exercise and their overall performance of exercise motivation, that is to say, students who persist in exercise have stronger exercise and participation motivation than students who do not persist in exercise.

Table 3. Test of the difference between college students' attitudes towards exercise and whether they persist in exercise

variable	keep exercising		no keep exercising		F	P
	M	SD	M	SD		
behavioral attitude	33.3404	2.96431	28.6429	2.5271	.834	.363
behavioral cognition	28.9574	1.59242	27.1429	2.7448	21.700	.000
objective attitude	53.5532	3.33962	48.6429	8.5254	1.990	.161
behavioral habit	42.0213	3.09345	34.5714	3.02372	1.352	.247
behavioral intention	29.5957	2.09618	28.4286	2.54484	4.836	.030
emotional experience	38.5532	2.53838	37.7143	3.29823	7.747	.006
behavioral control sense	26.6786	2.16117	26.5319	1.44209	5.843	.017
subjective standard	18.2128	1.24324	22.0000	3.88730	43.600	.000

As can be seen from Table 3 that in the 8 subscales of the "Exercise Attitude Scale", the index of $P < 0.01$ has three dimensions: behavioral cognition, emotional experience and subjective standards, it shows that there are significant differences in whether students persist in exercising in these three dimensions, it can also be seen that the students who persist in exercising are significantly higher than the students who do not persist in exercising in the depth and richness of the result cognition and the emotional experience of exercise, Moreover, the students who do not persist in exercising are significantly more affected by the outside world than those who persist in exercising. The $P < 0.05$ index has behavioral intention and behavioral control; it shows that there is difference in whether students persist in exercising in these two dimensions, that is to say, students who persist in exercising are more willing to exercise than those who do not persist, furthermore, they have stronger autonomous control ability for exercise.

Table 4. Test of the difference between college students' exercise experience and whether they persist in exercising

variable	keep exercising		no keep exercising		F	P
	M	SD	M	SD		
positive happiness	17.7447	1.69081	18.4286	5.62684	208.373	.000
psychological distress	6.8511	1.53775	8.1429	2.85079	13.206	.000
fatigue	13.7021	1.29374	14.7143	4.76762	151.031	.000

It can be seen from Table 4 that in the 3 subscales of the "Exercise Experience Scale", $P < 0.01$ shows that there is significant difference between whether students can persist in exercising and positive well-being, psychological distress and fatigue, it can also be seen that psychological distress and fatigue degree of the students who persist in exercising are significantly lower than that of the students who do not persist in exercising, but their experience of positive happiness is significantly higher than that of the students who do not persist in exercising.

Table 5. Correlation analysis of college students' exercise length and their exercise motivation

variable	exercise time
participation tendency	489**
avoidance tendency	.029
exercise motivation	314**

It can be seen from Table 5 that the length when students persist in exercising is significantly positively correlated with their tendency to participate in exercise and their exercise motivation, namely the higher the participation tendency, the stronger the exercise motivation, the longer the students can persist in exercise, and the stronger the exercise motivation.

Table 6. Correlation analysis of college students' persistence in exercise and their exercise attitude

variable	exercise time
behavioral attitude	646**
behavioral cognition	433**
objective attitude	.608**
behavioral habit	790**
behavioral intention	360**
emotional experience	.265**
behavioral control sense	-.025
subjective standard	-.496**

It can be seen from Table 6 that Mao Rongjian's (2003) "Exercise Attitude Scale" divides exercise attitude into 8 subscales for measurement, it can be seen from the research that college students' exercise length show significant positive correlation with behavioral attitude, behavioral cognition, objective attitude, behavioral habit, behavioral intention and emotional experience, it can be seen that the students who persist in exercising for a longer time have more affirmation for their own exercise, and have more positive cognition for the exercise results. They believe that exercise is individual need, an automated behavior mode, and they are willing to participate in exercise to a greater extent, and plan to make more efforts for this. Moreover, individual can experience more positive emotional experiences when participating in exercise. The study also found that the exercise length of college students is significantly negatively correlated with subjective standard; people who have an important influence on the individual have less support for participating in exercise, the longer the student persist in exercising.

Table 7. Correlation analysis of college students' persistence in exercise and their subjective exercise experience

variable	exercise time
positive happiness	176
psychology distress	-.299**
fatigue	-.048

It can be seen from Table 7 that in the three dimensions of subjective exercise experience, psychological distress is significantly negatively correlated with students' persistence exercise, it shows that the more serious the distress, the less students can persist in exercising.

It can be seen from the research results that exercise motivation is an important condition for exercise persistence, because exercise motivation more determines whether students participate in physical exercise or avoid physical exercise. Therefore, in order to promote students to participate in physical exercise, it is necessary to stimulate their exercise motivation and make them feel the effects of exercise. How to stimulate sports motivation and demonstrate exercise effect? This requires them to have correct understanding for exercise, and moreover, actively conduct effect with the exercisers' family or friends, so that they can understand their own progress, have the confidence to continue exercising, and reflect the exercise fun in the exercise.

More guidance and exercise are given to the participating students to promote cognitive change, so that they can obtain good exercise experience, and cultivate positive sports emotions are also very important for students to persist in physical exercise. Because students are young and in good health, they are easy to ignore their health, we should actively improve their health awareness and bad living habits, constantly improve their level of health idea, in promoting the formation of students' exercise persistence, we should insist on establishing health idea and promote habit formation, to better promote the formation of their exercise persistence.

4. Conclusion

Physical exercise is that exercisers take "exercise motivation" as the basic condition, they produce the need for physical exercise behavior in accordance with their own cognition of physical exercise, combine the cognition of the value of physical exercise behavior, analyze the results of participating in physical exercise, start exercise behavior, constantly rely on own evaluation and cognition of exercise in the exercise, and the influence of important others around, and constantly adjust own maintenance of exercise behavior. "Exercise motivation" is the prerequisite and key factor for exercisers to start and maintain physical exercise behavior; the individual attitude towards physical exercise and subjective experience conversely promote and adjust the exercisers' persistence time in physical exercise, when physical exercise is internalized as one of individual behavior habits, it is easier for individual to establish the healthy lifestyle, moreover, they can also feel the pleasure brought by physical exercise behavior.

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Teaching Reform of Machine Design Foundation based on Engineering Practice Teaching

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Abstract. The course, Mechanical Design Foundation, is a closed-book-examination, main and compulsory course for mechanical engineering major in some engineering academies in China. In this paper, a curriculum design of mechanical design foundation course for mechanical engineering major is proposed. The teaching contents and teaching objects as well as teaching modes of the mechanical design foundation course for mechanical engineering major are analyzed in order to improve the teaching quality. The new curriculum design would help to promote students' learning enthusiasm and initiative effectively and improves the teaching effect of mechanical design foundation course.

Keywords: Engineering Practice; Machine Design Foundation; Teaching Reform.

1. Curriculum Teaching Status and Existing Problems

The course *Machine Design Foundation* is a compulsory examination course for the major of mechanical engineering in universities. This course is an important turning point from the theoretical and systematic scientific and cultural courses and professional background courses to the first practical training courses with strong practicality. It plays a transitioned role in teaching, so the degree of knowledge of the course directly affects the learning of subsequent courses.

In recent years, many universities have launched comprehensive and in-depth teaching reforms on mechanical courses [1-7]. Among them, the mainstream of reform is to reform the classroom teaching of the core main course of mechanical engineering specialty through computer-based information technology means, which belongs to the teaching reform based on information technology [1]. It is characterized by integrating content in the original knowledge structure, new technologies and new methods as well as CAD [2, 3]. Meanwhile, some new teaching modes are develop continuous: small-class teaching [4], teaching discussion classes, simultaneous courses in different places, flipping classes [5], MOOC [6], micro classes, online-offline teaching [7] and so on. However, based on the characteristics of the wide caliber and thick foundation of *Machine Design Foundation*, the course is still lacking in the engineering practice teaching link closely related to practical applications. The cultivation of open thinking and practical skills is still insufficient, and it is specifically reflected as:

1.1 Attentions of the Students

Different from mechanical engineering majors of the local universities, many students in non-engineering major feel that they have little relationship with machine in the majors they have learned. thus, they relax their demands on themselves, and cause their own slackness.

1.2 Difficulty of the Course

The course *Machine Design Foundation* is based on the theoretical basis of a series of pilot courses such as *Mechanical Drawing*, *Physics*, *Engineering Mechanics*, *Metal Technology*, and *Mechanical Practice*. It has a comprehensive professional background. The course is also the synthesis and application of the aforementioned pilot courses. Therefore, for some students who have weak foundations or inadequate pilot courses, it is more difficult to understand and apply the knowledge.

1.3 Learning Interests of the Students

Although in some of the pilot courses, the students already have contact and understanding of some mechanical mechanisms, general machine tools and common equipment. However, due to the professional positioning, in the process of rising from perceptual knowledge to rational knowledge, this course involves many theories, concepts, and formulas. Therefore, some students find the content boring, lack of interest, and low enthusiasm for learning.

Therefore, according to the current status and existing problems of the course teaching of *Machine Design Foundation*, the reform and optimization of the course teaching should be carried out based on the reform of the teaching objectives, teaching content and teaching methods in order to adapt to new requirements and new goals in the engineering practice teaching, further meet the post-holding teaching needs of students.

2. Setting Teaching Goals based on Engineering Practice Ability

Combined with the OBE (Outcomes-Based Education) teaching concept in terms of teaching objectives [8] and based on the connotation characteristics of learning outcomes-oriented [9], the teaching objectives are adjusted to be oriented to post-holding ability and engineering practice task ability. It is no longer limited because of the students' mastery of textbook knowledge and the emphasis is on ability development. Therefore, the teaching objectives of this course are set to three levels as follow.

2.1 The First Level Goal: Knowledge Ability

Through the course learning, students will understand the general laws of mechanical design and its new development and new trends. They will understand the working principles and structural characteristics of commonly used mechanisms and general parts, and lay a solid theoretical foundation for the subsequent first training courses.

2.2 The Second Level Goal: Use Ability

Pay attention to the training goal of engineering practice skills. We will train students' ability to observe and summarize and to discover problems, analyze problems, solve problems, and transform practical engineering problems into basic theoretical problems for research. And we pay attention to innovation and collaboration to cultivate.

2.3 The Third Level Goal: Position Ability

We will highlight the cultivation of learning ability, practical ability, thinking ability and innovative ability so that students have the basic ability to analyze and study the structure and working principle of engineering practice equipment. They will have the ability to discover, analyze and solve actual problems by comprehensive use of professional knowledge and skills in the army.

3. Optimizing the Teaching Content based on Engineering Practice Equipment

According to the positioning and requirements of the mechanical engineering professional talent training program for the course, on the one hand, it pays attention to the connection between the content of other courses of the discipline. On the other hand, it pays attention to the logical relationship of the content of the course itself. So the course can meet the overall requirements of the discipline self-consistent logic and knowledge system is formed to facilitate students' understanding and mastery. So the course is divided into two knowledge modules: mechanical principle module and mechanical design module. It is a total of 68 class hours, of which 60 class hours are taught in theory and 8 class hours in practice.

We emphasize engineering practice teaching and engineering application and focus on teaching the structural characteristics and working principles of service equipment and main battle equipment by weakening and cumbersome derivation, theoretical design methods and theoretical models, and

strengthening engineering applications and professional skills and dynamically adjust and optimize the teaching content of the course.

3.1 Content Reform of Mechanical Principle Module

Degree of freedom of planar mechanism: Firstly, taking the detonation robot as an example, it will dynamically update the teaching content of the degree of freedom of the planar mechanism. It focuses on explaining the practical significance of the degree of freedom of the project. Secondly, it will adjust the teaching hours of the structure of the planar mechanism. The teaching focus is inclined to the constraint analysis of the kinematic pair. Thirdly, based on the method of calculation the degree of freedom of the planar mechanism, it will supplement the practical application of the truss structure and the anti-terrorist assault vehicle and anti-riot armored vehicle.

Planar linkage: Firstly, taking the rescue platform as an example. It will focus on the condition that the hinged four-bar mechanism has a crank so that the students can master the engineering skills of measuring dynamics by static ways. So it will cultivate the professional awareness of students in reading, recognizing and using pictures. Secondly, it will set the modeling analysis teaching of the crank slider model and the anti-riot armored vehicle internal combustion engine's main body mechanism. Thirdly, it will weaken the graphic design of the planar mechanism and strengthen the practical skills training such as structural selection based on the mechanism design.

Cam mechanism: Firstly, taking browning heavy machine gun as an example to train students' ability to analyze and convert the two types of engineering problems. Secondly, it is necessary to supplement the combined analysis of the mechanism motion to help students understand the three types of motion laws of the cam mechanism follower and the way to avoid rigid impact and flexible impact. Thirdly, we will adjust the teaching content of the cam contour graphic method and focus more on the analysis and solution of problems of using equipment such as mechanism self-locking and motion distortion.

3.2 Content Reform of Mechanical Design Module

Gear drive: Firstly, the teaching hours of characteristics of displacement gear transmission have been reduced. The teaching focus is inclined to the geometric characteristics and transmission characteristics of generalized and standardized gears. Secondly, the content of the helical gears and bevel gears have been dynamically adjusted. More emphasis is placed on engineering application and weakening the theoretical design method. Finally, aiming at the gear failure mode, the previous knowledge is connected in series to help students master the force analysis method of the equipment transmission system in engineering practice.

Threaded connection: Firstly, the strength check and design calculation of the threaded connection were deleted based on the engineering application. And it will focus on explaining the structural manufacturability of the connected parts and the allocated method of bolt; Secondly, the pretension and anti-loosening measures of the threaded connection were added. We will train students' skills to repair and maintain equipment in friction anti-loosening, mechanical anti-loosening, and material anti-loosening. Finally, the teaching objectives of this chapter were adjusted to enable students to master the application occasions and selection basis of spare parts in equipment management and equipment support positions.

Shaft system: Firstly, some teaching contents of engineering practice such as the shafting structure of surface ships were added and the teaching contents of sliding bearings were deleted. The teaching focus of rolling bearings was weakened and they were integrated into the shafting structure. Finally, the teaching requirements of the shaft design method and shafting's structural manufacturability were reduced. More attention is paid to the engineering application of bearings, shafts and shafting so that students will analyze the structural characteristics of parts and components with weapons and equipment.

3.3 Coping Strategies for the Main and Difficult Content

The important content is that the connection and application of previous knowledge, and the difficult content is that the establishment and analysis of mechanical models.

On the one hand, the combination of multimedia teaching and traditional blackboard writing and teaching aids teaching is used to enhance the intuitiveness of teaching and enhance the learning effect of students in the teaching process. On the other hand, the combination of theoretical teaching and engineering practice will guide students to apply the basic principles of mathematics, natural sciences and engineering science. Students will adopt modern design methods to conduct institutional analysis, synthesis and simulation to achieve the integration of previous knowledge and methods of modeling analysis, which will lead to the breakthrough of key points and the resolution of difficulties.

4. Teaching Methods Reforming

4.1 Forming a Closed Teaching Loop based on “3S”&“3L”

During the course implementation, the teachers should pay attention to the “3S”: pre-class prepared session, in-class exchange session, and after-class summary session. According to the teaching requirements in engineering practice, teachers should overall grasp the teaching activities such as teaching process design, teaching content arrangement, teaching implementation process, teaching counseling materials, teaching log filling and teaching effect evaluation, etc. In specific teaching activities, teachers will adopt a variety of teaching methods such as theoretical lectures, case analysis, practical operations, and multi-level assessments are used to focus on explaining the commonality and differences of military and civilian equipment and technical characteristics of the two types of equipment. Teachers should pay attention to the use of case teaching of equipment and task towed, discussed, heuristic teaching and other teaching methods. And teachers must learn how to integrate theoretical knowledge into practical applications to improve students' initiative and enthusiasm for learning and ensure the quality of teaching.

By introducing the status and function of the course, the course framework, the teaching content and the reference materials, the students can have a basic understanding of the course as a whole and understand the learning method of the course. During the learning process, teacher will guide students to observe various equipment used in the engineering practice and parts to increase perceptual understanding. Besides, teachers will also guide students to participate in various equipped practical exercises used in the engineering practice to deepen their understanding of memory. Finally, teachers will help students to do “3L”: pre-class learning, in-class learning and after-class learning to train students' ability to use professional knowledge and skills to discover, analyze and solve actual problems in the army.

4.2 Exchanging Teaching Subjects

Pre-class implementation: Students can conduct self-directed learning through online courses, data review, group discussion etc. combined with engineering practice equipment on the basis of task traction. They will learn together to solve difficult problems in the teaching process, thereby deepening understanding.

In-class implementation: The teacher changes from the subject of the lecture to the object of the lecture and from the lecturer of knowledge to the imparter of the method. The students changes from the object of the lecture to the subject of the lecture and from passive learning to active learning. Furthermore, it improves students' participation and interest in learning and improves the communication efficiency and teaching effect of teachers.

After-class implementation: Students plan their learning content, learning rhythm, style, and way of presenting knowledge independently. Teachers use teaching methods and collaborative methods to meet the needs of students and promote their personalized learning, and further develop students' professional skills in the engineering practice.

4.3 Extending the Teaching Time and Space

In view of the key and difficult problems in the teaching process, the time for teachers to answer students' questions was expanded from in-class to extra-curricular and the space for teachers to answer students' questions was expanded from offline to online with the help of WeChat platforms, online classrooms, online courses and other communication media, which improved the teaching efficiency. And it will avoid the accumulation of difficult teaching problems and weak links, which in turn helps to improve the learning effect of students.

A mutual assistance group was established between the students aiming at the problem of uneven theoretical basis and practical experience of the students. The students recruited from the troops explain the operation and equipment characteristics for the students recruited from the senior middle school. And the latter teach the former the learning methods and learning experience. They will learn from each other's strengths and weaknesses and communicate with each other.

Through the expansion of communicating time and space and the mutual assistance learning of the group, the binary communication mechanism of teacher and student is extended to the ternary mechanism of teacher and student and student to further effectively solve the problems of the teaching process.

4.4 Drive Mechanism

Achievements drive: Based on the achievements driven, the typical, new, and new concepts of engineering practice equipment and the award-winning works of the military-mechanical innovation competition will be introduced into teaching. The innovative achievements can help students master the dynamic trends of professional development and the application prospects of engineering practice equipment.

Interest drive: Based on interest drive, we will give full play to the cohesive role of the mechanical innovation design club. Then we will integrate students of different majors and different grades and form an interest group in mechanical innovation design. Most importantly we will cultivate the spirit of the students' teamwork and encourage students to actively engage in the second class in their spare time Innovative practice activities of equipment or its main parts.

Competition drive: Based on competition driven, we will take the opportunity of the National University Machinery Innovation Design Contest. Through the group discussion, plan report, preliminary competition selection, college selection and other implementation links in order to promote learning to use and using to learn. We will insist on promoting teaching and learning through competition to increase students' interest in learning and cultivate students' innovative spirit.

5. Conclusion

For the practical teaching of *Machine Design Foundation*, the curriculum reform ideas were proposed from the three aspects of teaching objectives, teaching content and teaching methods. We hope to apply the improved plan to the course teaching practice and provide a certain theoretical basis and method basis for training professional practical talents majored in mechanical engineering. Follow-up, the reform of this course envisages how to better match with online teaching, network teaching and new media platform teaching. Further exploration is needed to make up for its deficiencies and continue to reform and innovate.

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The Application of Micro-course in the Teaching of Engineering Drawing

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Abstract. This paper analyzed the superiority, pertinence and applicability of micro-course in solving difficulties encountered by cadets in learning engineering drawing course. Based on the teaching practice of micro-course, the author puts forward a new teaching idea and creates a new teaching mode. It has some effect on improving cadets' learning autonomy and changing the traditional teaching mode of full-class. The micro-course video makes the abstract and intricate engineering drawing course more straightforward and more intelligible. Moreover, it makes the teacher's teaching process become efficient, students' learning become more active.

Keywords: Engineering Drawing; Micro-course; Cadets.

1. Introduction

Military university is a crucial place to train military and national defense cadets for the country. The construction of first-class military universities is a comprehensive and complicated project. The quality of the construction of military university directly affects not only the quality of personnel training but also the direction of military development. Further, it affects the effectiveness of the development process of the whole national defense. At present, we are in a period of opportunity for development, and at the same time, it is also a prominent period of contradiction. Therefore, we must accurately grasp the current stage characteristic of military universities. With President Xi's comprehensive promotion of deepening the comprehensive reform of national defense and the armed forces, how to train the military cadets needed by the modern armed forces has been a new challenge facing the training and teaching mode of military university. For this reason, the military university teachers must boldly innovate the effective model that adapts to the military school teaching in the new period. It is critical to follow the law of military education and adhere to up-to-date teaching methods [1-4].

Engineering drawing course is a major compulsory examination course of professional background required by commanding students in military university. Due to the abstract and practical characteristics of the engineering drawing course, it needs a totally different thinking way and study method from the other courses which need to calculate or recite mostly. In the past teaching process, there were some issues such as less class hours, large knowledge capacity, and full classroom which limited the quality of this course. From the author nearly five years of teaching experience, the traditional teaching way was not effective ideally. Therefore, it is imperative to apply new teaching methods.

Reference [5] put forward a systematic research on the WeChat platform system of micro-course, completed the overall design of the micro-course system, and summarize the research focus and current problems of the micro-course system-based on the we-chat platform.

Reference [6] developed a Micro-course teaching encoding system. It explores pre-service teacher's TPK(Technological Pedagogical Knowledge) structure and characteristics in micro-courses from teaching links, prospective students' cognition level, teaching medias and TPK.

Reference [9] proposed a cognitive model that enables a quantitative analysis of cognitive time, accuracy, and efficiency in both types of teaching methods. This model could be used to inform the calculation of cognitive efficiency, micro-course design, and evaluation. The experimental results indicated that micro-courses improved cognitive efficiency, with an average improvement of 157.51%.

Taking into account the above considerations, this paper aims to introduce the new teaching method, micro-course of Engineering Drawing, in order to improve the teaching effect.

The remainder of the paper is organized as follows: In Section 2, the particularity of teaching object and Rigid and backward teaching methods are introduced. In Section 3, applicability analysis of micro-course in Engineering Drawing are recommended. In Section 4, the design idea of micro-course of Engineering drawing is described in details step by step. In Section 5, the paper is conclude.

2. Cadets Analysis

2.1 The Particularity of Teaching Object

Different levels. Cadets are young soldiers promoted or local youth admitted to a military university by selection and examination respectively. Due to the large differences in living environment and learning levels before admission, the ability to accept knowledge is totally different. However, Engineering Drawing course is relatively abstract. It is difficult to learn this course and the process of accepting new knowledge is relatively slow for cadets with poor foundation.

Less extracurricular learning. In military university, cadets follow a strict management system. Compared with local college students, most of cadets' energy and time are spent on physical quality training. So, they lack time for independent learn. Moreover, due to the particularity of the management of the military university, each cadet has regular tasks such as official dispatch which often delays the daily class study. However, Engineering Drawing is a course combining theory with practice. It is difficult to consolidate knowledge and form a knowledge framework if cadets lack active thinking and practical operation after class.

Lack learning motivation. Since the cadets have little employment pressure, and the specific work they will do in the future is uncertain, they tend to lose the learning goal after entering the military university. It leads to the phenomenon that they do not pay attention to the Engineering Drawing course, and they cannot establish a correct learning attitude. As a result, they lack the subjective initiative to learn this course. The author summarized the rules of the cadets' learning Engineering Drawing course as: Easy to understand. Easy to think. But easy to make mistake.

2.2 Rigid and Backward Teaching Methods

With the continuous advancement of education reform, the teacher-oriented teaching mode in traditional classroom is gradually fading away, developing into a student-oriented innovative teaching mode. It takes the students' actual acceptance of knowledge as the guide, pays attention to the students' feelings of learning, and effectively improves the students' subjective initiative in learning. However, in most of the current teaching process of engineering drawing, due to the more teaching content and less teaching hours and other characteristics, teachers often use knowledge injection, large number of exercises and other teaching methods. It is not uncommon for teachers to take classes from the book. The reasons for this situation are not only the lack of talent view and quality view, but also the lack of awareness of cultivation of ability while implanting knowledge. Although some faculty members work hard and pay efforts in class-preparation, trying to "give everything they have", things go awry. Because the main way of learning is still memorization for students. Students passively accept the knowledge taught by the teacher. Given more free time, many students are at a loss for active learning. The reasons for this phenomenon are the insufficient guidance of the students' self-study learning methods, the lack of flexibility and innovation in the teaching structure and teaching methods of the teachers [7-8]. Teaching organizations focus on the results of students' acquisition of knowledge, but ignore the ability of students to acquire knowledge. There are still many teaching methods to impart students' textbook knowledge, but few teaching methods to develop students' self-study ability. As a result, the teachers are tired and the students are lazy. The independence, creativity and application ability of the cadets are restricted, which makes our teaching effect away from the needs of today's army teaching development. Inheritance is emphasized and innovation is rare in teaching process. Students lack the systematic training of scientific thinking and scientific method, as well as the development and connection of vertical and lateral thinking. From the above analysis,

the traditional teaching methods are limited in stimulating students' learning enthusiasm and cultivating their creative thinking, and the reform of teaching methods and teaching means have becoming a major issue.

Based on the present cadets learning and teacher teaching analysis, it is crucial to change the traditional way of teaching mode of Engineering Drawing. The author explores the micro-course of Engineering Drawing course, try to apply it in military universities.

3. Applicability Analysis of Micro-course in Engineering Drawing

Engineering Drawing course is a compulsory basic course for cadets of command majors in military universities. Based on national standards, it teaches cadets to draw and read drawings, and cultivates their spatial imagination and analytical ability. In view of the particularity of cadets' teaching objects, the traditional teaching mode relies on the description and explanation of slides in the teaching process, which hardly make cadets pay attention for a long time. In addition, part of the content of the course is complicated, so it is difficult to establish a logical system to stimulate students' interest in learning. Because of the above characteristics of Engineering Drawing course, it is necessary to carry out effective cutting and integration.

The micro course has the characteristics of short class hours, many teaching methods and infinite replay according to the needs of cadets in military universities. With the update of educational development form, micro-course has become an important part of higher education application in military universities. Based on the study of cognitive psychology, Ming Lv has published paper about Efficiency model of micro-course study based on cognitive psychology in the college [9]. His study divides the learning process of micro-courses into three stages: knowledge acquisition, search and analysis. A comparative cognitive experiment was conducted in which students were randomly assigned to either a micro-course or a traditional textbook method group. Micro-course is a teaching video for the purpose of explaining a certain knowledge point, a short and concise video for the form of expression, and a teaching video for the purpose of learning or teaching application. It has the characteristics of short teaching time, concise teaching content and flexible learning methods, and is more suitable for the actual learning situation of cadets

In view of the problems encountered by students in this course, some knowledge points of this course can be listed separately, to make a micro-course within 10 minutes. In this way, it overcomes the problem of shorter concentration and duration during cadets' learning, improves the students' learning interest, and makes learning not easy to generate learning fatigue.

Compared with the traditional teaching method, the application of micro-course in Engineering Drawing is consistent with the cognitive characteristics and learning rules of military cadets, which helps to improve the teaching effect. Therefore, the introduction of micro-course as a multimedia-assisted teaching method can improve students' understanding of the theoretical knowledge related to the course.

Based on the advantages of micro-course and disadvantages of Engineering Drawing course in military universities, we make the practicable designing idea of it.

4. Designing Idea

4.1 Idea of Topic Selection

In the topic selection, micro-course should try to highlight the characteristics of short and pithy.

Based on the characteristics of Engineering Drawing itself, which is boring, abstract and difficult to understand, three aspects should be considered in the process of topic selection.

Focus on teaching practice. In view of the relatively tedious knowledge points of cadets while Engineering Drawing, we can record corresponding micro-course, and reasonably classify and combine the trivial knowledge points, to effectively improve the teaching effect.

Focus on teaching effect. Since cadets follow strict management system in school, they have less time for after-school learning and fragmented time for collecting after-school fragments. For difficult

knowledge that is difficult to digest in class, they can watch micro-course videos after class to strengthen students' consolidation and understanding of knowledge.

Focus on teaching feedback. The engineering drawing course focuses on testing students' spatial imagination, so most of the assignments are in the form of drawings. In the process of reviewing the homework, we can make the problems easy to get wrong into a micro-course, to help students avoid mistakes in future study.

4.2 Design Ideas

Create a logical thread through problem traction and introduce examples. In this paper, the linear projection is taken as an example to introduce the design process of micro-course. The specific implementation structure of the micro-course of Engineering Drawing is shown in Fig. 1.

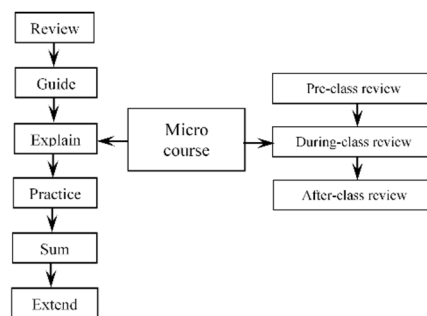


Fig 1. Structure of micro-course of Engineering Drawing

Review and introduce. Review what you have learned about the drawing method of lines of plane solid surface. Make cadets review the specific steps methods to draw it. Introduce the intersection from a common using device, ball valve, which cadets could see it everywhere such as in taps or in fire hydrants. Ask cadets do they ever think of the question that why you rotary the switch, you can turn on them? Ask some questions at the beginning of the micro-course is helpful to their full attention. Then ask cadets how to draw the engineering drawing for ball valve parts. Guide cadets to think ball valve parts such as the stem is a cylinder truncated.

Explanation and summary. Firstly, try to explain the theory knowledge step by step with distinct pictures. Secondly, practice timely in the middle of different theory knowledge. Thirdly, set some errors deliberately in your solving problem course. It would be an efficient way to test cadets if they understand what you have explained before. If they couldn't digest that knowledge in the short time micro-course video, suggest them lookback the video more times. Furthermore, due to the cadets' strict management system in school, they have less spare time for learning, and less spare time for fragmentation. It is difficult to digest in the classroom difficult knowledge, so cadets can watch the micro-class video after class, to strengthen their knowledge consolidation and understanding.

Ask and extend. You should think of an interesting question at the end of the micro-course to extend more knowledge. The question includes what we learn in the micro-course video and what we will learn in the next micro-course video. The principle of raising the question is to make them think actively. For example, after learning the intersection lines of cylinder and cone, you can raise a question: How to find the intersection line of a sphere? They are similar, but not totally same.

4.3 Steps

According to the design content, multimedia tools such as mobile phones and computers can be used for micro-course recording.

5. Teaching Evaluation

We chose 2 classes with different teaching methods to compare their performances. The test results are shown in Fig. 2 and Fig. 3. We recorded the class-performance, homework quality and scores of

final exams of each class, and we found the new class using micro-course video showed better in most way than the class with traditional full-classroom teaching methods.

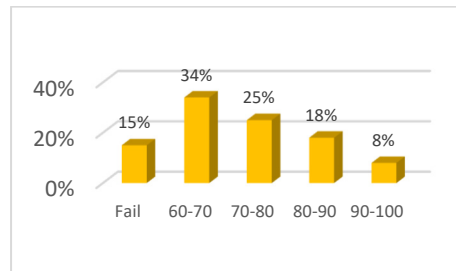


Fig 2. Engineering drawing scores of the class with traditional teaching mode

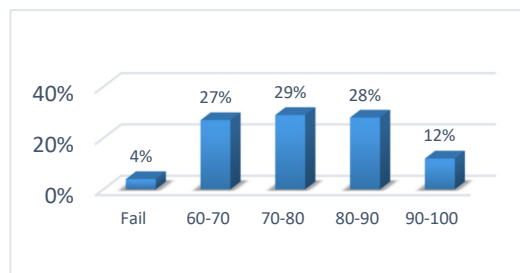


Fig 3. Engineering drawing scores of the class with micro-course teaching mode

6. Conclusion

To sum up with the implementation of engineering drawing micro-course, we found three main advantages.

Firstly, cadets' autonomous learning ability has been improved distinctly with the help of micro-course video.

Secondly, the different knowledge level of cadets has been weakened since they can learn knowledge from micro-course videos according to their own needs.

Thirdly, engineering drawing course, as need of lots of stereo parts, is more convenient to be shown clearly in the video.

The application of micro-course of engineering drawing effectively facilitates the majority of students to learn after class, making the teaching become efficient, students' learning become active, highlighting its superiority and reality, it is worth carrying out the teaching from beginning to end.

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Analysis on the Current Situation and Prospect of E-sports Education of Colleges and Universities in China

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Abstract. With the rapid development of science and technology and the Internet industry and the popularization of various single-player games and online games, E-sports has gradually become a form of cultural entertainment loved by young people. Colleges and universities have a large number of E-sports audience groups, and have the responsibility and potential to promote the development of E-sports. This paper conducts a basic explanation for the connotation and extension of related concepts on E-sports, introduces the development of E-sports in China, and explains the necessity of E-sports in colleges and universities. This paper systematically analyzes the obstacles encountered in the introduction of E-sports into college physical education courses, explores the path and suggestions for the development of E-sports in colleges and universities, namely change traditional concepts, strengthen the correct guidance of public opinion, and correctly guide students to deal with the connection between games and reality; set up the E-sports course, innovate the construction of discipline system, and combine the complete theoretical knowledge with technical practice; strengthen the supervision and management of E-sports, carry out efficient community and alliance activities, and promote the healthy and orderly development of E-sports in colleges and universities.

Keywords: E-sports; Colleges and Universities; Curriculum Reform.

1. Introduction

E-sports was recognized as a new major by the Ministry of Education in 2016, it means that E-sports become part of formal education. For a long time, E-sports in the public cognition mean doing no decent work. In recent years, the competitive and educational nature of E-sports has been continuously discovered, the educational significance of E-sports is gradually reflected, and this situation has improved. In 2003, the General Administration of Sports of China officially recognized E-sports as the 99th sport. In 2017, the International Olympic Committee also officially recognized the "sports" status of E-sports, these show that E-sports represent a broad market with great prospects. As a special leisure lifestyle, E-sports have gradually become an important part of college culture.

2. The Concept of E-sports

E-sports is confrontational electronic game sport between people in a virtual environment created by information technology and under the rules of sports competitions, it takes information technology as the core, software and hardware equipment as the medium, it is a sport that reaches the competitive level, this can be regarded as the official beginning of the "E-sports theory", because neither the industry nor the academia has clarified the attributes of its sports before this. In addition, from the extended dimension, E-sports are the cultural and economic phenomenon that exists in society; it infiltrates or attaches cultural elements to products and services, meets people's specific cultural and artistic aesthetics and spiritual enjoyment at the same time, has the characteristics of diversified business operations, has become an emerging industry phenomenon. Therefore, from the perspective of extension, E-sports are the complex of cultural, virtual, popular, and competitive nature.

The world's first video game tournament was held on October 19, 1972, the racing game is "Spacewar", the venue was the Stanford Artificial Intelligence Lab in Los Altos, California, this laboratory is one of the few areas in the world where the game "Spacewar" can be run, this event was put together by Stewart Brand, the rules of the game "Spacewar" are very simple: player control the spacecraft and use weapons to destroy another player's spacecraft, need balance between skill and luck, Spacewar requires players to master certain operating skills. At that time, computers began to show great potential to change society, and as far as the organizers were concerned, nothing seemed to embody that potential more than video games.

3. The Necessity of Developing E-sports in Colleges and Universities

After nearly 50 years of development, E-sports policies, regulations and development strategies formulated around politics, economy, culture, technology, etc. promote its continuous innovation and change; the industrial chain built around major events and E-sports stars has been further expanded in breadth and depth. At present, our country has formed a complete industrial chain covering game manufacturers, game agencies, advertisers, E-sports events, E-sports clubs, media, E-sports audiences and regulatory authorities, the development of E-sports sports has entered golden age.

The talent demand dividend is forcing the reform of college physical education curriculum. In the past ten years, the E-sports industry has been nothing more than a niche vertical market, it survived by relying on long-term accumulated social relationships and low-end cooperation models. However, with the improvement of relevant national policies and regulations, the cross-border investment of Internet giants and other capitals, the industrial chain of computer software and hardware, telecommunications networks, and media involved in E-sports has entered the fast lane, the situation is very gratifying. According to relevant data, the market penetration rate of E-sports is increasing year by year. Of course, the rapid development of the entire industry will inevitably lead to rapid changes in the system of human supply and demand.

At present, the number of employees in E-sports is relatively scarce, but according to the current speed and efficiency of talent training, it is far behind the industry's development speed. Therefore, as the main force in the reserve of professional talents, colleges and universities urgently need to incorporate E-sports into formal education and teaching, and cultivate talents of different disciplines and levels related to it, and the reform and innovation of physical education curriculum can be just as a starting point for trial implementation.

4. The Current Situation of E-sports Education in Colleges and Universities

At present, more than 50 colleges and universities in China have opened E-sports sports and management majors or majors related to E-sports sports and management, including many well-known universities, such as Communication University of China, Nanjing, Shanghai University of Sport, Sichuan Film and Television University, etc. In the future, many colleges and universities are vying to establish E-sports majors. It can be said that the E-sports majors in colleges and universities are very popular now.

Although these colleges and universities have opened E-sports majors, the E-sports majors offered by various schools are different due to local differences or differences between schools. Let's take the above three well-known universities as examples. These three universities also reflect the current status of most domestic universities in E-sports majors. In June 2017, Sichuan Film and Television University and Chengdu E-sports Association signed an agreement to open the E-sports sports and management major; it formally enrolled students in September 2017. The undergraduate admissions major of Communication University of China, Nanjing in 2017 was art and technology (E-sports analysis direction), and Shanghai University of Sport opened the major of broadcast host (E-sports commentary) in 2018. By carefully comparing the E-sports majors offered by these 3 colleges and universities, we found that except the major names opened by the Sichuan Film and Television University is the same as the major names announced by the Ministry of Education, the other two

schools are all majors that are biased towards a certain direction of E-sports, it shows that the current level of understanding of E-sports in domestic universities is not very high., but if we make use of the advantages of some local areas, or combine the advantages of own school's teachers, set up E-sports major in a certain direction is a relatively safe approach, it also represents the current attitude and status quo of most colleges and universities for opening E-sports majors or related majors.

In addition to the above-mentioned colleges and universities, many colleges and universities have also opened E-sports majors or related majors, such as Shandong Lanxiang College, Nanjing Zhongshan College, Zhejiang Institute of Media, etc. The development of E-sports majors has been unstoppable. On the one hand, due to the clear guidance of the government's development plan, the government plans and guides the standardized and professional development of E-sports sports to traditional sports. The relevant policies of the Ministry of Education are also continuously promoting E-sports education to become professional. Under the premise, most colleges and universities will open E-sports majors along with the mainstream. On the other hand, due to the increasingly professional and standardized development of E-sports, coupled with the emergence of professional E-sports equipment, venues, and event broadcasts, the huge commercial value brought by the E-sports industry chain is hard not to be impressed; these have had a huge impact on the construction and employment of E-sports majors in colleges and universities. The colleges and universities which offer E-sports major are shown in Table.1.

Table 1. Some colleges and universities which offer E-sports major

school	major name	qualification	enrollment	length of schooling(year)
Communication University of China	digital media art	undergraduate	20	4
Communication University of China, Nanjing	art and technology (E-sports analysis)	undergraduate	40	4
Nanchang Institute of Science and Technology	E-sports sports and management	college degree	62	3
Sichuan Film and Television University	E-sports sports and management	college degree	83	3
Sichuan University of Media and Communications	E-sports sports and management	college degree	60	3
Geely University of China	E-sports sports and management	college degree	60-100	3
Hefei Gongda Vocational and Technical College	E-sports sports and management	college degree	100	3
University for Science & Technology Sichuan	E-sports sports and management	college degree	30	3

Of course, new majors will have new problems. The development of E-sports in China started relatively late, lack a national-level E-sports association for unified management, and can play a role in the formulation of industry standards and supervision and management, which can better promote E-sports towards a healthy direction development. In addition, as an emerging major, whether it is the selection of textbooks, the reserve of teachers, the development of the curriculum system, the formulation of the employment system, etc., it takes time to slowly accumulate, without the guarantee of this whole set of systems, rashly adding new majors will bring huge risks.

In this regard, compared with domestic undergraduate colleges and higher vocational colleges, we will find that there are very few undergraduate colleges offering "E-sports sports and management major", most undergraduate colleges choose to either not open, or use the school's own resources to open E-sports related majors. Because the curriculum system of undergraduate colleges emphasizes theory, E-sports is an emerging sport, the curriculum system has not been fully established, the talent training plan is not mature enough, the reserve of experienced and excellent teachers is insufficient, there are too few books that can be selected as teaching materials, these are unsolved problems for the four-year undergraduate E-sports major. However, higher vocational colleges are different, the curriculum system of higher vocational colleges is more practical, and the direction of talent training in higher vocational colleges is more biased towards multi-functional and compound talents, these characteristics are more suitable for the establishment of E-sports majors. When the E-sports major were added in 2016, The Ministry of Education has also clearly stated that the target is a higher vocational school. Therefore, higher vocational colleges may be more active than undergraduate colleges in the pace of opening E-sports majors.

Since the E-sports major has just been established, the textbooks are very scarce; the textbooks of E-sports major generally cover the following contents:

E-sports event director: E-sports event director analyzes the work contents and job responsibilities of the E-sports event director, and supplements the explanation with detailed actual cases, provide students with a professional E-sports event director career introduction, provides strong theoretical support for students who are interested in directing E-sports events in the future.

E-sports club operation and management: E-sports club operation and management mainly introduce the concept and structure of E-sports clubs, explains students to the management mechanism and operating mode of E-sports clubs in plain text, and gives suggestions on the future development trend of E-sports clubs based on the current operations of E-sports clubs.

E-sports event operation and management: E-sports event operation and management system sorts out the entire operation process of E-sports events from preparation to post-match evaluation, and manages the competition, market, finance, human resources, and risk of E-sports events, gives the detailed explanation on the management of competition, market, finance, human resources, risk and other aspects of E-sports events., so that students have comprehensive and detailed understanding for the operation and management of the E-sports event.

E-sports sports psychology: E-sports sports psychology is based on the theory of traditional psychology, combines the reality of E-sports, applies the laws of psychology in E-sports to help relevant practitioners use psychological theories and laws, better adjust the psychological state of E-sports athletes.

5. The Problems of E-sports in Colleges and Universities

The level of awareness is not yet mature. Social factors and own factors constitute the cognitive deviation of E-sports. Due to the influence of traditional cognitive concepts, E-sports have been criticized as "e-opium" by mainstream values and related media. However, E-sports and online games are fundamentally different. E-sports are the new sports event that integrates sport and modern information technology; it has the same sports attributes as traditional sports, namely cultural, popular, athletic and confrontational nature, it is a sports competition subject to national standards. Moreover, participants can obtain multi-faceted improvements such as thinking ability, mental ability, collaboration ability, teamwork ability. As the carrier that nurtures their professional and industrial development, colleges and universities will surely formally introduce E-sports into physical education courses.

There is a lack of cultural cultivation on campus and lack of competitive exchanges between schools. E-sports have become more prosperous after more than ten years of development. Although the country is gradually formulating relevant laws and regulations, the support of policies and funding are far from meeting the basic conditions for the development of campus E-sports. At present, the development of E-sports in colleges and universities is still in a gray area. Most colleges and

universities have insufficient awareness and attention to this sport, and have not opened or even considered opening related theoretical and practical courses. Moreover, the E-sports clubs established by universities are not yet mature, and their propaganda and participation are far inferior to other clubs, and their own unique E-sports culture has not yet been formed. In addition, due to the lack of school support and outreach sponsorship, the inter-school E-sports events are single, the organization is immature, the rules are not rigorous, the time is unstable, the exchange experience is far from enough, and the campus E-sports activities are not fully developed.

The necessary protection, supervision and management are the prerequisites for the healthy development of E-sports in colleges and universities. Currently, the main place for college students to participate in E-sports activities is Internet cafes. Internet cafes is for the purpose of profit, while carrying out various competition activities and meeting the psychological needs of students, often turn a blind eye to supervision. Coupled with the insufficient social experience of college students, the ability of self-control and the ability to distinguish right from wrong is relatively poor, and cause E-sports participants in an unconscious and unprotected state. Therefore, increasing the protection, supervision and guidance of the interests of college students from all walks of life in society can truly promote the healthy development of E-sports in colleges and universities.

The employment direction of E-sports major can be divided into six categories: the first category is the E-sports skill, including the training of professional players, data analysts, coaches and other positions; the second category is the referee, training professional referee talents; the third category is event activity direction, training talents in event organization, management, operation, etc.; the fourth category is sports medical care, including E-sports rehabilitation, physiotherapy, psychological counseling, etc.; the fifth category is video categories, including game video production, program director plan, etc.; the sixth category is E-sports media and marketing.

In recent years, Chain's E-sports have developed rapidly, and a relatively complete and mature industrial chain has been formed. The development of the E-sports market requires a large number of professionals to invest in the operation of the industry, by improving the technical level of E-sports, the entertainment and appreciation of E-sports; so that leading the development of the E-sports industry and increase the overall industrial scale. According to statistics, the demand for E-sports professionals in China in the past five years has reached nearly 2 million, it can be seen that E-sports professionals are very scarce, and the entire talent market is basically blank. Therefore, the students of E-sports major have good employment conditions.

6. The Countermeasures to Develop E-sports in Colleges and Universities

The negative influence of traditional cognitive concepts on E-sports is deeply entrenched. Schools and related media should strengthen the positive energy dissemination of E-sports, combine appropriate academic activities and classroom teaching, guide students to understand and recognize the charm and value of E-sports, Eliminate the misunderstandings and blind spots of traditional cognitive concepts in the understanding of E-sports, and correctly guide students in school to deal with the connection between games and reality, so that E-sports can be accepted as a formal physical education curriculum.

As a teaching and research unit, colleges and universities have certain advantages in financial support, teacher team construction, and event venues. Offering E-sports sports courses and innovating the discipline construction system, not only can the concepts of happy sports, sunshine sports, and lifelong sports be implanted in the curriculum, but also replace the traditional test-oriented sports thinking, so that students of different physical constitutions can choose more courses. Moreover, E-sports fully integrate sports and games, so that students can develop mental abilities and teamwork skills during physical exercise. In addition, as an incubator for professional talent training, colleges and universities can discover talented E-sports players and send them to E-sports clubs. They can also invite outstanding retired athletes to the school for lectures or discussions to promote the combination of students' theory and practice.

The colleges and universities should strengthen the supervision and management of E-sports sports, establish the complete internal supervision organization, implement the school-based E-sports management methods, conduct correct guidance and supervision, and supervise each other with other colleges and universities, Standardize and improve college E-sports sports. The second is to establish a vigorous campus E-sports club and effective inter-school E-sports league, which is not limited to competitions, and can organize diverse club activities and alliance exchanges to enhance mutual connections. In addition, colleges and universities can refer to the commercial operation mode of large-scale E-sports competitions, tap the commercial potential of college E-sports sports leagues, hold a certain scale of college E-sports sports leagues, establish special E-sports websites for publicity, and strengthen cooperation with newspapers and online media to attract the participation of sponsors.

7. The Development Prospects of E-sports Education in Colleges and Universities

Today is an era of great information development. The decline in computer hardware and software costs has provided conditions for the popularization of E-sports. With the rise of online live broadcast platforms and the mobile viewing of E-sports events, more and more E-sports are being watched. The users of the domestic E-sports industry will continue to expand and usher in the era of universal participation; it is an opportunity for college E-sports majors. In the future, by establishing the theoretical system of E-sports in colleges and universities, we can determine the development direction of E-sports in colleges and universities, clarify the development focus of E-sports in colleges and universities, formulate the development plan of E-sports in colleges and universities, improve the organizational structure, and establish excellent and efficient E-sports management team and so on, will further promote the standardization and professionalization of E-sports in colleges and universities, and the future development of E-sports in colleges and universities will be bright.

8. Conclusion

E-sports, as an emerging sports competition, currently lack talent reserves in China. In order to develop E-sports, colleges and universities should pay attention to E-sports teacher training and textbook compilation, increase publicity, and strengthen the organization of brand-effect events, strengthen the cultivation and training of professional talents. With the advent of the information age, relevant government departments have increased their investment in E-sports, active dissemination and promotion of various media, the gradual standardization of E-sports events and industries in our country, and the continuous improvement of the E-sports industry chain, the development of E-sports in colleges and universities will definitely get better and better.

As a new major, at present, the E-sports major is somewhat out of touch with the needs of the job market in teaching settings, it will take time for college students in E-sports major to be recognized by the market. The college students in E-sports major need to find their own employment direction in the process of study or internship. Colleges and enterprises can train students in E-sports major through school-enterprise cooperation and industry-education integration, start from the existing major system, students can systematic learn related theoretical knowledge and special practical skills training to deepen their understanding for major and industries, this will not only meet the needs of the E-sports job market, but also broaden the employment opportunities of students in E-sports major.

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Research on the Training Mode of Primary and Middle School Principals based on Action Learning

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Abstract. This paper is mainly based on the "Action Learning method" to establish a more scientific and effective training model for primary and secondary school principals. Starting from the current problems encountered in the school, we organize principals to carry out group learning activities to guide principals to find correct ways and methods of self-improvement while putting forward countermeasures to solve the problems. finally grow into an excellent principal with solid theory, rich experience, outstanding ability and efficient work, and grow into an educator-type principal.

Keywords: Action Learning Method; Primary and Secondary School Principals; Training Mode.

1. Introduction

For a long time, principal training has been constantly reformed and explored, from ordinary knowledge indoctrination, to ability enhancement, and then to today's special study and discussion. For primary and secondary school principals, training is not only an effective way to enrich theoretical knowledge. it is also an important guarantee to achieve professional development goals. On the other hand, we should also see that the current training of primary and secondary school principals is still faced with many difficulties and challenges, especially how to turn the training results into work results, how to improve the training methods and so on. Action learning method has made great achievements in the training practice of public officials and senior executives. This paper attempts to use the action learning method to promote and improve the training of primary and secondary school principals, to provide new theories and methods for the training of primary and secondary school principals, and to put forward specific countermeasures and suggestions for improvement.

2. Overview of the Training of Primary and Secondary School Principals

2.1 Understanding of Training

Most primary and secondary school principals in our country attach great importance to training and think that they need to constantly improve and upgrade in order to be competent for the management of the school. Even if some primary and secondary school principals do not take this seriously, they do not completely deny the training work, and the reason given is that they are busy and do not have more energy to participate in the training. This can see the difficulties in the current training of primary and secondary school principals, on the other hand, it also reflects the urgent need to improve and improve the training curriculum of primary and secondary school principals.

2.2 The Purpose of Principal Training

The main purpose of most primary and secondary school principals participating in the training is to improve their professional quality and constantly improve school management. 88.9% of primary and secondary school principals with this kind of training motivation account for 63.3% of primary and secondary school principals. The main purpose of participating in the training is to improve their theoretical quality and working ability; 40% of the principals said that the main purpose is to enrich their legal and policy literacy. From these data, we can see that the motivation of most primary and secondary school principals to participate in training is to enrich professional theory, improve work level and management ability. In addition, motivation for improving academic ability ranks fourth,

which accounts for nearly 1/3. It can be seen that the president began to realize the importance of academic research, which is inextricably related to the new curriculum reform [2].

2.3 Understanding of Teaching Methods

Teaching method is also an important part of the training of primary and secondary school principals, which has been widely concerned by principals. 75.6% of the principals said that the teaching method should be a combination of theory and practice. Most principals (96.7%) think that case teaching is more appropriate, which shows the importance of case teaching training. Most principals think that the training methods that are easy to accept are: case teaching method, combination of theory and practice, special problem discussion, expert lecture. Generally speaking, most principals have accumulated some educational management experience and professional knowledge, and they already have problems to be solved before training, hoping to find better solutions and ideas through "practice, discussion, cutting-edge theory" and other ways.

3. The Training Model of Primary and Secondary School Principals based on Action Learning

Adult learning has the following characteristics: active learning, empiricism, problem analysis, self-improvement, etc., while the requirements of action learning theory for learners are classified into the following points: reflection, action, subjectivity, operability and so on. It is not difficult to see that the above two have a great agreement, so action learning theory provides sufficient theoretical support for the training of primary and secondary school principals. As adults who have been working in the front line of educational management for a long time, principals cannot copy children's teaching methods into principal training, such as theoretical learning and inquiry. The headmaster occupies a leading position in the training process, so he should take a variety of measures to stimulate the enthusiasm of learners, focus on the practical problems of the participants, and put forward effective countermeasures and suggestions to improve the training effect. Based on the theory of action learning, this paper establishes a set of theoretical models for the training of primary and secondary school principals, which provides useful theoretical basis and guidance for related research [3].

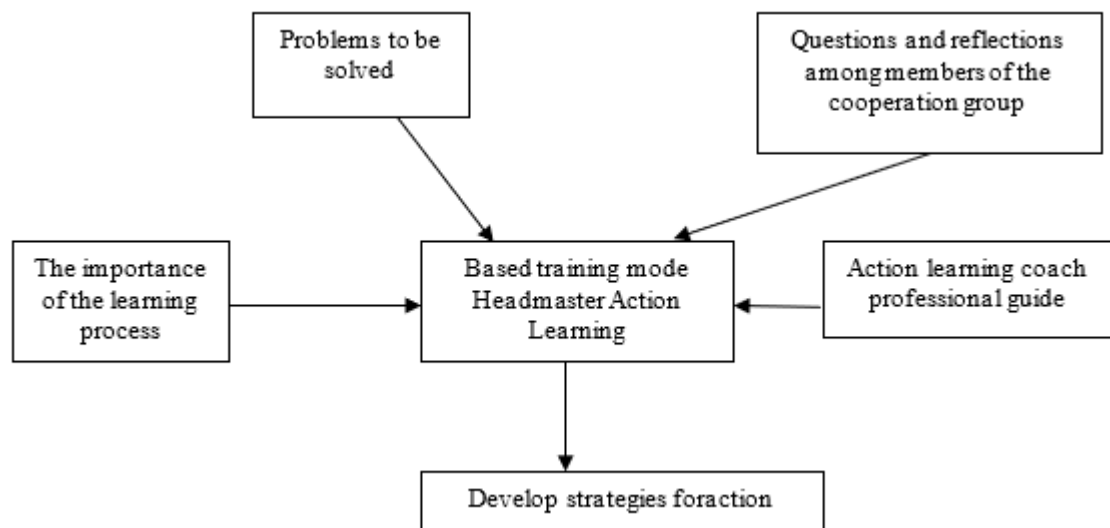


Fig 1. The elements of the training model for primary and secondary school principals based on action learning

3.1 Problems to be Solved

Generally speaking, primary and secondary school principals have rich experience in teaching management, which lays a good foundation for their continued promotion. Using the prior knowledge and experience we have acquired, we can better find out our own development problems and carry out research around these problems, which is the basic idea of action learning theory. Ravens defines a "problem" as a problem or difficulty that needs to be solved with the help of and using a variety of prior experience. The answer is not unified, there are a variety of ideas and countermeasures to solve the same problem, which needs to give full play to the collective wisdom and draw effective conclusions through systematic thinking. Principals should prepare all kinds of questions before the training in order to clarify the purpose and direction of the training.

3.2 Questions and Reflections among Members of the Group

Primary and secondary school principals will be formed into a number of action learning groups, which is not only the content of the pre-training work, but also create conditions for primary and secondary school principals' self-reflection. According to the spirit of action learning theory, the number of group members should be controlled reasonably, and it is usually appropriate to control the number of group members at 4-8. At the same time, it is necessary to ensure that group members have different backgrounds to create conditions for group thinking and dislike. The theory of teachers' professional development founded by Posner also provides theoretical support for principal training. Primary and secondary school principals usually have rich teaching experience and work experience, and they should reflect and summarize their own teaching ideas, methods and measures in the process of development. In the process of professional development, primary and secondary school principals constantly acquire and accumulate work experience through theoretical study and working practice, on the basis of which they reflect and summarize, preserve the excellent experience, eliminate inappropriate methods, and constantly revise the direction and path of professional development in the future. Through the integration of work experience and reflection results, continue to promote their own professional ability and quality. Therefore, in the process of action learning, how to use the principals' self-reflection and summary is directly related to the final training effect [4].

3.3 Pay Attention to the Learning Process

Solving school teaching problems is beneficial to improve teaching quality and has obvious short-term effect. From a long-term point of view, only by popularizing and popularizing teachers' learning achievements can we maximize the short-term development achievements of the school. Therefore, compared with the short-term benefits brought by solving the problem, whether the primary and secondary school principals are formed into action learning groups, or single-problem action learning is carried out in the school, it has a long-term positive effect on individuals and organizations in the process of action learning. Action learning attaches great importance to the learning effect of individual and team. Through the organization of group study and discussion, the hidden problems will be transparent and raise awareness, which is a very efficient way of learning. Therefore, any problem encountered in the process of school development is not so much a difficulty as a better development opportunity, we should grasp the favorable development advantages brought about by solving the problem.

3.4 Develop a Strategy to Take Action

Problem-solving is not the only purpose of learning. In the process of problem-solving, primary and secondary school principals should make use of various opportunities to share learning results. Some action learning groups express their own unique views and integrate different ideas from their own point of view. For the problems that may arise at present and in the future, it is very necessary to find out the connection between the measures to solve the problems. In the process of managing the school, it is necessary for primary and secondary school principals to make continuous summary and reflection, to seek the root causes and real causes of the problems, and to grasp the correct direction of development to avoid serious interference caused by general affairs.

3.5 Professional Leadership of Action Learning Coaches

The activities of the action learning group should be professional, which requires the participation and intervention of a special coach, who can correctly guide the discussion and learning activities of the group members. At the beginning of the activity, professionals from different fields can be invited to participate in group activities, and with the continuous progress of action learning, capable team members can replace coaches. The main task of the action learning coach is to reasonably control the relationship between learning activities and problem-solving, guide primary and secondary school principals to acquire the necessary knowledge and summarize the ideas of problem-solving. By throwing out a variety of questions, to help primary and secondary school principals learn to correctly treat other people's views and ideas, and re-examine the problems, make objective evaluation, and learn to scientifically plan the development of the school. and get a way of thinking that is conducive to improving the level of management.

4. Suggestions on the Training Model of Primary and Secondary School Principals based on Action Learning

4.1 Improve the Macro Management Mechanism

When organizing and carrying out the training activities for primary and secondary school principals, the provincial educational administrative departments should adhere to the principle of "level-by-level training and level-by-level management" and focus on some more important problems encountered in the training of primary and secondary school principals. for example, formulate school development plans, training management systems, training materials and so on, give clear guidance, and at the same time give education authorities more room for independent choice when formulating training programs and training measures. The competent departments of education at the municipal and county levels should, in the light of the educational development in their respective regions, refine and classify the training policies, requirements and instructions of their superiors, and put forward feasible operational opinions and suggestions to promote the smooth development of the training of primary and secondary school principals.

4.2 Vigorously Improve the Standardization Level of Principal Training Institutions

The standardization of primary and secondary school principal training institutions is directly related to the professional development of primary and secondary school principals. The standardization of training institutions for primary and secondary school principals mainly includes two categories: the construction of hardware facilities and the construction of software facilities. The standardization of training institutions belongs to the category of the former. The basic level of hardware construction has a great impact on the role of principal training institutions, and it is also an important material condition to ensure the effect of primary and secondary school principal training. However, in the case of uneven economic development in various places, it is obviously impossible to unify the standards of training institutions for primary and secondary school principals. The construction of headmaster training institutions can only be carried out step by step and in a regional manner. Therefore, the provincial education authorities should proceed from the actual situation in various parts of the province, formulate different standards according to local conditions, improve the operability of standards in various prefectures and cities, and provide effective guidance for the construction of training institutions for primary and secondary school principals. In addition, it is necessary to establish a scientific evaluation mechanism for the construction standards of principal training institutions, bring it into the main assessment of local education departments, and standardize it through the system, to continuously promote the construction of principal training institutions. At the same time, it is also necessary to avoid the blind and disorderly development of the standardization of primary and secondary school principal training institutions. Education authorities at all levels should promote the sharing of local educational resources, so that different principal training institutions can share the best local training resources and equipment. In addition,

it is also necessary to vigorously promote the construction of headmaster training bases in order to enrich the educational functions of primary and secondary school principals training institutions and improve the training level.

4.3 Strengthen the Effectiveness of the Training of Primary and Secondary School Principals

At present, the training of primary and secondary school principals has also exposed many problems, such as formalism, superficialize, and the training effect is not good. The enthusiasm of the students is not high, the enthusiasm for participation is low, the assessment is in vain, and they do not play the due role of training and promotion. The training effect is not ideal and the training resources are seriously wasted, which leads to the criticism of the training of primary and secondary school principals. This is the responsibility of all parties, and the training side, the competent authorities and the evaluation institutions are to blame. If an objective and effective training mechanism can be established, the above problems can be effectively avoided. Therefore, it is urgent to establish a scientific and reasonable evaluation system of principal training effectiveness, which is an important guarantee to improve the effectiveness of training.

4.4 Establish a Faculty Talent Pool

First-class training teachers is an important guarantee to improve the quality of training. The primary and secondary school principals who take part in the training have different knowledge, experience and working background, and their training motivation varies from person to person. they have different understanding and understanding of training, and their training needs are also different. Therefore, in addition to constantly improving the professional structure of training teachers, it is also necessary to strengthen the construction of full-time and part-time teachers. In view of the diversity of training objects, different training motivations and different assessment standards for primary and secondary school principals, this puts forward new requirements for the training of teachers, which must be a combination of full-time and complementary advantages. Therefore, it is urgent to build a contingent of modern training teachers. Training teachers can be selected from different fields such as universities, government, society, enterprises and so on, and all personnel with training qualifications can be included in the talent pool. Before formulating a teacher training plan, select appropriate trainers in the talent pool according to the training content; you can also choose candidates who meet their needs according to the requirements of the trainees. This can not only form effective incentives for trainers, but also improve the training enthusiasm of principals and ensure the smooth realization of training goals [5].

5. Conclusion

Action learning method is a more effective training method, around the specific teaching work, under the guidance of theory, continuous improvement and development. In this process, constantly improve the headmaster's ability of self-thinking and reflection, strengthen the ability of action planning, through communication with other colleagues, constantly summarize and form new work experience, and achieve their own professional development.

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Research on the Application of Case-based Teaching Model in System Engineering Courses

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Abstract. System engineering course is a major, compulsory and examination course of equipment support (management science and engineering) major in some military academies. In this paper, the exploration and application of case-oriented teaching mode among the undergraduates majoring in equipment support (management science and engineering) is studied, hoping to improve the students' ability to analyze and solve problems by the teaching mode of deriving knowledge points in case teaching.

Keywords: System Engineering; Case-oriented; Curriculum Construction.

1. Introduction

With the progress of science and technology, the application of unmanned intelligence technology in war, and the development of new forms of war such as man-machine combination and joint operations, the army has an increasingly prominent and urgent demand for new types of military personnel, and higher requirements are put forward for training personnel in military academies. Equipment support (management science and engineering) is to train equipment support personnel with management science and engineering background. In the new environment, equipment support management personnel need to have a holistic view, understand the system thinking, know the methods and means.

System engineering course is a backbone, compulsory and examination course of Equipment support (management science and engineering) in Military academy. It is a science that studies the common laws of large-scale complex systems as a whole. It mainly teaches the systematic thinking, methodology, working procedures and technical means needed to analyze and deal with all kinds of complex system problems. The purpose of this course is to enable students to master the ability to analyze complex problems from a holistic perspective with the basic ideas of systems engineering, and to learn to apply the methodology, procedures and techniques of systems engineering to solve general systems engineering problems. At present, the course of system engineering mainly focuses on the four aspects of system thinking, methodology, working procedure and technical means, and each part introduces some common methods and makes use of cases to supplement the explanation.

The content is comprehensive and systematic, but the background of complex system cases is usually complex, and the ideas, methods and techniques used are not single applying the old teaching mode. In addition, a large amount of background and auxiliary content is needed to explain, and it is always difficult to explain the problem clearly, or distract the students' situation, when explaining a knowledge point. In the process of listening, students tend to summarize a series of ideas, methods and techniques that are not very clear, and it is difficult to summarize the main content of this class.

2. Curriculum Construction

Integrity is the core and most important attribute of system engineering, and it is also the foothold and starting point of applying system engineering thinking to solve problems. It is necessary to take a holistic view of the system in System engineering curriculum construction. The teaching contents of the whole course are connected in the way of case guidance. Organically link and unify the related knowledge points in the preceding and subsequent teaching contents to form a complete knowledge chain. At the same time, the integrity and relevance of knowledge must be guaranteed, so as to improve students' ability to grasp the overall content structure of the course and to comprehensively

apply it in practice, so as to improve the teaching effect. This method is effective to help students to connect knowledge points, complete the combining of knowledge system, deepen the understanding of knowledge points, and improve students' ability to analyze and solve problems.

2.1 Organization of Course Content Structure

The main contents of systems engineering course include the basic ideas and methodology of systems, the procedures for dealing with general complex systems engineering and the technical means required. The content of systems engineering course was arranged according to the order of the knowledge points, whether it was used for students' self-study or teachers' teaching, which made the imparting of knowledge not so easy, in the old teaching system. In order to cooperate with the new case-based teaching mode, it is necessary to rearrange the teaching content of the main course.

The systems engineering course has many contents, including qualitative analysis and quantitative methods. For example, the "fourth edition system engineering" teaching material which is written by academician Wang of Xi 'an Jiaotong University, the content of the third chapter has explained the structure model, the principal component analysis and cluster analysis model and state space model and system dynamics simulation model, the content of the fourth chapter and the fifth chapter has correlation matrix method, analytic hierarchy process (AHP) and fuzzy comprehensive evaluation method, etc., the content is independent to each other.

First of all, we should make clear the logical relationship between the course contents and its status in the training program. By discussing and sorting out the teaching content, the teaching team can clarify the main modules of the teaching content and the knowledge points of its branches, as well as the logical and hierarchical relations among the knowledge points. Revise the syllabus, teaching plan and teaching plan according to the sorted teaching content. The purpose is to make the relationship between the teaching content more clear, and can make students more easy to understand the similarities and differences between the knowledge points and the logic of the overall knowledge chain. In addition, the logical view between the knowledge points can be established to assist teachers and students in learning.

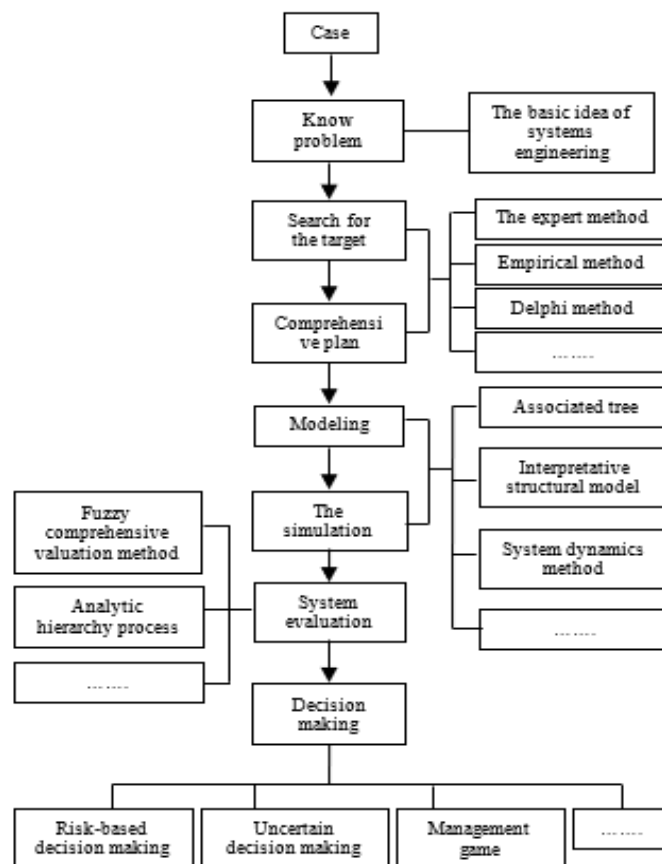


Fig 1. Content chain

A number of classic cases were selected as the basis of the tandem teaching content. According to the view of system, the process of system analysis is adopted to understand, study and solve complex system engineering problems. In the process of teaching, the teaching contents are connected in series according to the "process of dealing with complex system problems, which is based on the guidance of cases and the process of "understanding the problem - seeking the goal - comprehensive scheme - modeling - optimization or simulation - system evaluation - decision". The teaching content is not independent from each other anymore, and is connected together through cases. This new content arrangement makes it easy for students to understand the content.

2.2 Revision of Syllabus and Evaluation Criteria

The classic and appropriate cases are selected to build a case database by collecting of data, discussing among experts. Then the logical view is drawn according to the teaching content discussed by the expert group. According to the knowledge points and logical views drawn in different cases in the case bank the course outline is revised and the teaching plan is made. The teaching objectives is revised, like that how to change the old teaching objectives of mastering knowledge points into the new teaching objectives of improving students' comprehensive ability to analyze and deal with problems, and the new teaching requirement is put forward, the teaching content framework is updated, the proportion of practice hours is increased, the bibliography and resources for after-class study is expanded.

At the same time, the evaluation indexes of theoretical teaching and practical teaching are determined, the hierarchical relationship between the evaluation indexes is determined, the mapping relationship between the evaluation indexes and the teaching objectives of the curriculum syllabus is defined, and a hierarchical curriculum evaluation system is established.

2.3 Reform of Examination Methods

A new test mode of separation of examination and teaching was set up by establishing a test question bank. At the same time, in order to make the teaching team can promote each other, other innovative assessment methods are explored. An examination method is proposed to assess students' ability to master knowledge points and apply theoretical knowledge comprehensively. Students' overall mastery and application of the course can be tested. In the examination paper, cross-chapter questions should be designed to test students' ability to understand and use knowledge horizontally. At the same time, the control over the daily learning process should be strengthened, and the cross-chapter case study report should be submitted to the teacher for review as one of the important bases for daily evaluation.

Reasonable assessment criteria must be established to evaluate students' learning based on theoretical assessment and homework completion. Integrated design assignments are done in groups, and the assessment and evaluation should be combined with the completion situation and refer to the division of labor and workload. In the course assessment, the proportion of each part of the assessment content is as follows:

Theoretical content assessment (30%), comprehensive application practice (30%), innovative design (20%).

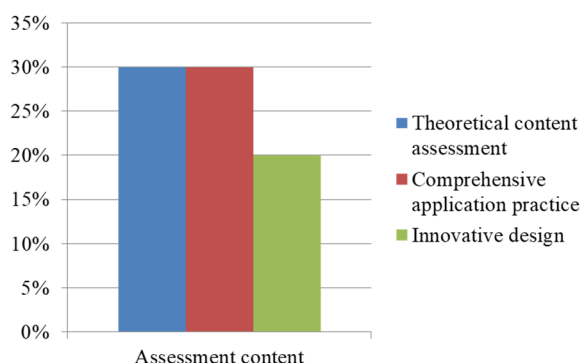


Fig 2. The proportion of each part of the assessment content

2.4 Reform of Teaching Methods

Case teaching is a critical reflection aims to develop awareness and ability and to promote learners fully understand the importance of teaching in the form of complexity, variability, diversity and other attributes of education management [1]. It is easy to explain the teaching content clearly, but some contents are not easy to be understood and mastered by students, such as the definition of the system, the basic ideas, the basic process of system engineering and so on, through this traditional teaching form. It is difficult to improve the teaching quality if learners have a series of well-known problems such as weak sense of participation and low enthusiasm for learning. In order to improve the pertinence and effectiveness of system engineering courses, it is particularly important to apply the case teaching which has been widely recognized in business administration courses and law courses to the teaching of system engineering courses.

Else, the autonomous learning model is introduced into the teaching of system engineering courses. For example, the teacher can design a theme. Students will study independently after class by collecting information and summarizing the main points. Then, students can elaborate their own views on this topic in class, or they can set up study groups to finish the big assignments and tasks assigned by the teacher. Teachers are mainly responsible for guiding students to choose appropriate learning methods, monitoring students' learning process, summarizing students' speech content and adding knowledge points that are missing. By forming a learning team, students' ability to work in a team and apply theory to practice can be improved.

In addition, Appropriate course knowledge points were selected as the pilot, through the application of micro-class teaching, MOOC, flipped classroom and other new teaching models. In and out of class and online and offline blended teaching mode is developed and improved on the basis of the existing teaching mode. The positive promoting effect of the network is brought into play, the initiative of students' autonomous learning is promoted, and the teaching level and teaching effect is improved.

2.5 Achievement of Teaching Results and Objectives

The course content and teaching mode have been reformed, and the teaching effect needs to be monitored. By setting large assignments, course design and comprehensive experiments that span and run through the whole course content and knowledge points, students are tested on their mastery of various teaching knowledge points and their comprehensive application of knowledge points. In addition, the acceptability of in-class quizzes, mid-term quizzes, comprehensive case studies and other teaching results are understood, and the mastery of the knowledge points in the course and the ability of practical application are tested. The key content of the study goal achievement analysis report has been improved and the system has been implemented.

At the beginning, practical projects with medium difficulty were designed which integrate multiple knowledge points of the course content. In the middle of the course, the more classical and complex practical projects that need to be combined with multiple methods will be added. Teachers are mainly responsible for the guidance and inspiration of practice, so that students can think independently about designing innovative schemes and evaluating methods, deepen the understanding of different teaching contents in the practice process, and master the advantages and disadvantages of different methods, which can be flexibly applied. Comprehensive applied practice projects are generally carried out at the later stage of the course, aiming at cultivating students' innovative spirit and ability by making full use of various teaching resources inside and outside the school. The comprehensive applied practice project is innovative, which puts forward higher requirements on students' design and innovation ability, and also provides a more independent platform for students.

2.6 The Construction of the Faculty

Higher demands were put forward for the faculty under the new case-oriented teaching model. For higher education, a quality teaching team is essential if the teaching effect is to be optimized. The existing teaching team lacks the teaching experience and knowledge of the new teaching mode, and

has not gone through systematic learning and training. Especially, young teachers lack teaching stability and teaching experience, and may not be competent for case-oriented teaching reform. Through the construction of teaching team and the formulation of corresponding incentive policies, teachers are promoted by professional development. The teaching ability of the teaching staff is improved by providing training opportunities for the teachers in the course. Teachers' knowledge will be expanded and their practical ability will be exercised. Through rational use of off-campus resources, for example, teachers will have more opportunities to go to the grass-roots units and practice in enterprises. The teaching ability of teachers can be improved by means of expert group listening, peer watching and demonstration teaching. Excellent course groups have been formed by building excellent courses.

3. Conclusion

In combination with the above course construction ideas, the following problems should be solved in the course construction process:

- (1) A rich curriculum case database should be established for students to analyze.
- (2) By improving the personal ability and teaching level of teachers to sure that they can be competent for the teaching mode of case-based.
- (3) The experimental course is designed based on analyzing the course modules and realizing the reasonable combination of course modules.

Based on the teaching model of case introduction, the teaching contents are connected in series. Teachers should make a comprehensive summary and reflection on the pre-class learning and classroom learning. For example, students' feedback and discussion in class, questions raised by students and the completion of homework after class, practice, etc. To know the students' mastery degree can timely find out the problems in the implementation of the case teaching mode, timely adjust the follow-up contents dynamically, and improve the teaching effect.

The teaching effect of "separating and solving, merging and integrating" can be realized, and the students' understanding of course content the system engineering course can be improved, and the comprehensive ability can be trained and improved.

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Exploration on the Practice Mode of Innovation and Entrepreneurship Education for Graduate Students

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Abstract. National colleges and universities gradually formed a distinctive innovation and entrepreneurship education personnel training mode and system, and the corresponding results, but mostly innovation entrepreneurship education to undergraduates, graduate students education training goal and the way is different from undergraduate education orientation, through the analysis of the characteristics of postgraduate innovative entrepreneurship education, as well as the positioning of the postgraduates' innovation entrepreneurship education in fuzzy, low and professional education alignment, imperfect system, lack of teachers, combining the reality of WHUT, explore graduate student innovation and entrepreneurship education practice mode, constructing innovative entrepreneurial graduate education ecological system, To provide a good external environment for the cultivation of innovative talents, internal and external interaction, the formation of synergy, comprehensively improve the quality of innovation and entrepreneurship talent training.

Keywords: Graduate Student; Innovation and Entrepreneurship Education; Practice Mode.

1. Characteristics of Graduate Innovation and Entrepreneurship Education

The innovation and entrepreneurship education in colleges and universities mainly aims at cultivating students' entrepreneurship spirit, entrepreneurship consciousness and innovation and entrepreneurship ability, and aims at cultivating talents with pioneering personality and entrepreneurship basic quality. The orientation of postgraduate education is the education and training of high-level talents. Postgraduate education is becoming more and more diversified in terms of training mode, types of talents and degree types. The characteristics of postgraduate innovation and entrepreneurship education mainly include the following aspects.

1.1 The Educational Goals are more Closely Related to Social Needs

Undergraduate innovation and entrepreneurship education is positioned as "enlightenment education", with the main goal of cultivating innovation awareness and entrepreneurship, and planting the seeds of innovation and entrepreneurship in students' minds through enlightenment education [1]. Graduate student innovation entrepreneurship education target not only stay in pioneering consciousness, but development need to combine more closely with the current social reality, and aims to provide effective solutions to solve important social problems or technical means, is helpful to explore development trend of the future society, especially the engineering graduate student's experiment research, such as invention patent achievements can be applied directly into society.

1.2 In Terms of Educational Content, the Degree of Integration with the Major is Higher

After undergraduate study to master the basic knowledge, learning is the depth of the longitudinal study of the postgraduate stage, research field, research direction more differentiation, therefore, the graduate student's learning more systematic, professional, cutting-edge and innovative, and of the profession, higher spent are generally in this major innovation in the field of entrepreneurship research and exploration.

1.3 In Terms of Education Mode, Practice Experience Teaching is the Main Teaching Mode

Undergraduate innovative entrepreneurship education course, after a series of undergraduate training and learning, students in basic knowledge, basic skills and have a certain foundation, have more need of experience at the postgraduate level and practical application of knowledge, in practice

to complete the knowledge the active construction of innovative undertaking and implement innovative entrepreneurial ability to ascend.

2. Problems in Graduate Innovation and Entrepreneurship Education

2.1 The Orientation of Postgraduate Innovation and Entrepreneurship Education is Vague

With the advancement of innovative entrepreneurship education in recent years, more and more universities begin to pay attention to innovation and entrepreneurship education, has opened many innovation entrepreneurship system, innovation entrepreneurship education as an independent professional or academic field, and many colleges and universities set up the institute of entrepreneurship. However, these are mainly targeted at undergraduate students, but seldom involve graduate students. As a result, many universities have formed a complete system of undergraduate innovation and entrepreneurship education, but there are faults in the graduate stage, no matter system mechanism, resource platform, faculty, etc. Mainly because the graduate students innovative entrepreneurship education has not been included in the training system, not form a relatively mature theoretical system and framework, although in some colleges and universities, as a graduate student has carried out some creative work, but is only limited in some aspects, such as some only pay attention to innovative entrepreneurial class competition, some only pay attention to the graduate student research papers, there are only some academic activities, and lead to graduate innovative entrepreneurial enthusiasm is not high, only focus on their scientific research work, think learning task is to research of the postgraduate stage, only need to meet the graduation requirements. Therefore, the marginalization and vague orientation of graduate students' innovation and entrepreneurship education lead to the low degree of attention paid by universities to graduate students' innovation and entrepreneurship education.

2.2 The Integration of Postgraduate Innovation and Entrepreneurship Education and Professional Education is Relatively Low

Due to many colleges and universities graduate student innovation entrepreneurship education wasn't in the cultivation of the postgraduate program and system, not make the appraisal mechanism of graduate student innovation entrepreneurship education, leading to a graduate student of colleges and universities innovative entrepreneurial activity performed by the administrative department, but the graduate student's scientific research activities are teacher guide, therefore the execution of graduate student innovation entrepreneurship education and professional education disjointed situation. Many postgraduate cultivation of graduate students cognitive remain to assist the supervisor in the scientific research project research, thought the graduate student is in the process of scientific research in the field of professional learning. Although the research is to graduate students innovative consciousness and innovative ability of exercise, but due to the heavy scientific research tasks, course diversification level is not high, graduate students real own innovation and the opportunity to put into practice is less. The graduate student under the value orientation of graduation requirements, formed only in order to complete the scientific research task, to achieve the value pursuit of graduation requirements. The executive department of graduate students' innovation and entrepreneurship education is not integrated enough with professional education, which leads to the weak consciousness of innovation and entrepreneurship and the lack of courage and courage of innovation and entrepreneurship [2].

2.3 The Practice System of Postgraduate Innovation and Entrepreneurship Education Needs to be Improved

The practice teaching of innovation and entrepreneurship for graduate students is an important link to cultivate students' practical ability and innovation ability, and an important way to improve students' social professional quality and employment competitiveness. Innovation and entrepreneurship education can only strengthen students' innovation and entrepreneurship awareness through a variety of innovation and entrepreneurship practice activities in the process of "practice-

cognition", cultivate their firm faith and indomitable will, and use learned professional knowledge and innovation and entrepreneurship theory to transform into their own innovation and entrepreneurship skills. However, the practical teaching of graduate students in many universities mainly comes from the resources of tutors, and they seldom participate in the on-campus practical teaching platform and off-campus practical training base, which results in the relatively single innovation and entrepreneurship practice activities. Therefore, it is urgent to improve the practice system of graduate students' innovation and entrepreneurship, take the overall development of graduate students as the orientation, run innovation and entrepreneurship activities throughout the whole process of graduate education, improve the enthusiasm and universality of graduate students' participation in innovation and entrepreneurship activities [3].

2.4 Insufficient Teachers for Postgraduate Innovation and Entrepreneurship Education

The key of innovation and entrepreneurship education lies in the faculty. At present, the faculty of innovation and entrepreneurship for postgraduates in most colleges and universities in China mainly come from teachers engaged in professional teaching or counselors and administrators engaged in student work. As the innovation and entrepreneurship education involves a wide range of areas, strong practicality, strong intersection and connection between disciplines, which puts forward higher requirements and standards for the quality of teachers in innovation and entrepreneurship education. Graduate student innovation entrepreneurship education in the professional education by professional teachers often instill some innovative entrepreneurial knowledge, or by a counselor or administrative departments to introduce relevant publicity and simple, these are unable to meet the needs of students to innovative entrepreneurial knowledge, difficult to provide effective help student to carry on the innovation of entrepreneurial way. Therefore, it is necessary to build a teaching team of innovation and entrepreneurship education with rich theoretical knowledge of innovation and entrepreneurship education, some experience in entrepreneurship, and solid professional foundation combined with full-time and part-time teaching, to provide talent support for graduate innovation and entrepreneurship education.

3. Exploration on the Practice Mode of Innovation and Entrepreneurship Education for Graduate Students

In recent years, under the background of the national innovation-driven development strategy and mass entrepreneurship and innovation, Wuhan University of Technology attaches great importance to postgraduate innovation and entrepreneurship education. Under the constant exploration, the university has gradually formed a multi-level and All-round postgraduate academic science and technology innovation activity system.

3.1 Establish a "Quaternity" Education Practice System for Graduate Students' Innovation and Entrepreneurship, and Form a Good Brand Effect

School is formed by "excellence research cup" graduate academic science and technology culture festival as the lead, focusing on academic, innovation, entrepreneurship and culture " quaternity " graduate student innovation practice of entrepreneurship education system, formed the good brand effect, graduate students for the school provides a high starting point, large scale, more innovative undertaking in the field of communication platform, promote the intersection of disciplines, broadening the graduate student's academic vision, inspire the graduate student's innovative thinking, improve the quality of graduate education in an All-round way.

1) *Academic activities*, mainly includes lecture and study style construction of the scientific ethics, the professional academic BBS, academic salon, give priority to in order to graduate independently carry out academic exchanges and research activities of a series of academic activities, and at the same time, actively give play to the role of teacher and the expert's guidance, to help graduate students expand their horizons, wisdom, improve the innovation ability.

2) *Innovation activities*, with "China Postgraduate Innovation & Practice Competitions" as the blueprint, and connecting with the actual situation in our school, held on the basis of the "1 project + 5 competitions" innovation activities, namely, independent innovation research fund graduate students freedom exploration project, graduate student energy engineering competition, Postgraduate professional degree case competition, graduate student digital technology competition, graduate student electronic design competition, graduate student mathematical modeling contest, etc. through innovation activities to further promote the cultivation of creative consciousness and practical ability of graduate students and inspire the enthusiasm of the graduate students to participate in the competition.

3) *Entrepreneurial activities*, including entrepreneurial BBS, such as "Partner of WHUT" entrepreneurship challenge, outstanding entrepreneurial practice, give full play to the connecting the bridge between students and the society, strengthen students business communication with the outside world, through the interpretation of the relevant business policy, visit the pioneer park, visit the innovation enterprise and practice from the operation level to enhance students entrepreneurial awareness, improve the ability of practical application, provide entrepreneurial guidance.

4) *Cultural activities*, including essay solicitation activities with the theme of "little stories between me and my tutor", table tennis league, graduate graduation party, badminton league, basketball league, etc. Innovation and entrepreneurship education emphasize the comprehensive cultivation of students' knowledge, quality and ability. Therefore, the school actively develops the second activity class to enrich the after-school life of graduate students, stimulate their youthful energy, and show the energetic spirit of graduate students.

3.2 Build a Shared Practice Platform for Innovation and Entrepreneurship based on the Discipline Department, and Integrate Innovation and Entrepreneurship Resources

Relying on the school building materials construction, transport, automobile industry three industry characteristic background, school integration of resources, college of materials science and engineering graduate students in Wuhan area BBS, in Wuhan university of ship and ocean engineering academic BBS, college students racing team development the three BBS as the lead, hold multi-disciplinary professional graduate academic BBS, offer graduate student academic exchange platform, the academic science and technology innovation initiative.

To integrate existing resources, promotion of disciplines cross fusion depth, cultivate emerging interdisciplinary, WHUT to form a set of six discipline departments, which department is in accordance with the properties, besides across college is given priority to with academic functions, promoting multidisciplinary cross fusion depth of academic institutions, organizations of interdisciplinary and emerging disciplines of academic communication is one of the main function division. Discipline department is made for the school graduate student innovation entrepreneurship education has provided the very good practice platform, strengthen discipline attribute the same communication and contact between graduate students, strengthen the innovation of entrepreneurship education and professional education alignment, to focus on the advantages of the institute, better integrate resources to provide creative services for graduate students, build the production with the integrated service mechanism. For the unit with the discipline department, for example, to carry out professional BBS, professional competition, academic lectures, sharing, and mining emerging interdisciplinary academic science and technology innovation activities, improve the masses of the graduate student's nationality, arouse the enthusiasm of graduate students, and strive to achieve full coverage, full participation, to graduate students in academic science and technology of rich and colorful cultural activities you'll learn, stimulate creativity, innovation, to show the new look of graduate students. School based on a " Partner of WHUT " entrepreneurship challenge this platform, service for the graduate student's innovative business practices, the industrialization of achievement of the graduate student's innovation, the actual technical demand of the society into the graduate student's innovation task, hatching high-tech start-ups of graduate students and formed from solo to coordinated development pattern of graduate entrepreneurship, cultivate a group of graduate students of science and technology pioneers.

3.3 Taking Various Innovation and Entrepreneurship Competitions at Home and Abroad as Carriers, We Will Expand the Channels for Innovation Entrepreneurship Education

Innovation and entrepreneurship competitions have a great influence on improving the basic quality of graduate students, enhancing the comprehensive professional ability, and cultivating graduate students' innovative and entrepreneurial thinking and divergent thinking. Through competition training, graduate students can stimulate their own innovation potential on the basis of professional learning, improve the quality of entrepreneurship, enhance the spiritual realm and ideal pursuit, and finally improve their overall quality. "China Postgraduate Innovation & Practice Competitions" on national strategic demand and economic and social development as the guidance, adhere to the "for graduate students as the main body, guided by the demands of national strategy, supported by industry enterprises to participate in" mode of operation, make production-study-research cooperation innovation platform, has become a graduate students to cultivate innovation spirit and innovation consciousness, improve the practice ability of platform, become units of graduate education, improve the quality of graduate education and graduate student innovation atmosphere, a powerful fulcrum for graduate student innovation entrepreneurship education reform. On the basis of "China Postgraduate Innovation & Practice Competitions", and connecting with the actual situation in our school, depending on the three major industries, the six discipline departments to undertake corresponding course contests, such as graduate student energy engineering competition, Postgraduate professional degree case competition, graduate student digital technology competition, graduate student electronic design competition, graduate student mathematical modeling contest, etc. The graduate school is responsible for the school innovation practice guidance expert database and early mobilization work. the college is responsible for the school team, including topic selection, audition, centralized simulation training, concise participating experience, etc. The practice of innovation and entrepreneurship education has achieved good results by tapping the high quality resources in the department. Since its implementation in 2019, the university has made historic breakthroughs in the "China Postgraduate Innovation & Practice Competitions". At the same time, the school formed a contest of WHUT graduate student innovation practice series directory, guide the graduate students are encouraged to attend all kinds of innovative entrepreneurship competition both at home and abroad, and widen the graduate creative ways to exercise, the school graduate student obtain the related competition results for innovative entrepreneurial activity after last provides a good demonstration effect.

3.4 Strengthen the Team Building of Experts and Graduate Students, and Strengthen the Core Strength of Innovation Entrepreneurship Education

High-level teachers of innovation and entrepreneurship education are the core force to promote the in-depth development of innovation and entrepreneurship education and the fundamental guarantee to train high-quality innovation and entrepreneurship talents. On the one hand, the school of professional instructors actively carry out the innovation entrepreneurship education, improve the professional tutor's emphasis on innovation entrepreneurship education and cognitive, the innovation entrepreneurship education through the invest a lot of money and necessary resources, to recognition of the winning works under the guidance of teachers, and a calculation is made to guide work, as a condition of the promotion and assessment excellent, improving the professional teacher's enthusiasm, attract different mentor to form expert database of subjects, such as: Experts in entrepreneurship, management, technology, art and other fields provide technical guidance and support for the innovation team, so as to meet the multi-level and diversified demands of innovation and entrepreneurship activities. At the same time, entrepreneurial mentors with entrepreneurial background and practical experience are introduced to guide students in entrepreneurship, and well-known venture capitalists, senior management talents and outstanding alumni are invited to serve as entrepreneurial mentors to guide students in practical work. It has set up a teaching team of diversified innovation and entrepreneurship education combining full-time and part-time, theory and practice.

Students, on the other hand, also is the main body of innovation entrepreneurship education, cohesion is not problem for graduate students and undergraduate students, the school implemented

the continuous training in the undergraduate innovation entrepreneurship education system, set up undergraduate innovative undertaking the core team, according to the graduate students from different schools, the graduate matriculate quality present situation, the initial stage, the innovative entrepreneurial activity by undergraduate team with graduate students, after graduate accumulated experience, a graduate student innovation entrepreneurship core team, and make the continuity of the training team, formed a good tradition of mentoring.

3.5 Strengthening the Ecosystem of Graduate Students' Innovation and Entrepreneurship Education and Providing All-round Support

To establish a scientific, flexible and adapt to the contemporary science and technology development, social development and the innovation of the students' individual development entrepreneurship education ecological system, not only can ensure the smooth operation of the entrepreneurship education graduate student innovation activities to develop and run, drive the realization of the function of scientific research and social services, and provide a clear direction for innovation entrepreneurship education system and the ways and means to reform. Innovation, entrepreneurship education is one of the government, schools, and social groups such as synergy education systems engineering, involves the education teaching, practice platform, teachers, social support, such as content, in this complex system, school as connecting the government, teachers, students, society and family ties, plays a vital role.

Through the establishment of the organization, first of all, the school attaches great importance to the formation of school, multi-sectoral coordination mechanism, teachers and students actively participate in the long-term work, each school also set up innovative entrepreneurial team specializes in the college, including innovative entrepreneurial incentive mechanism, application of projects, activities, etc., and create a strong innovative entrepreneurial culture atmosphere on campus. Second, school full use of the local government policies, to seek government support founded the college students' innovative business incubator, provide practice base for students to innovative entrepreneurial activity, to the students' positive publicity of the government's preferential policies and measures such as tax incentives and credit financing policy, guide the students' innovative entrepreneurial. At the same time, enhancing university-enterprise cooperation, seeking enterprises and units, organizational support for graduate study of innovation and entrepreneurship practice activities to provide direction , project support, practice guidance, financial support and so on various aspects of support and services, establish a long-term stable cooperative relations with the enterprise, achieve a win-win effect.

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Research on the Strategies of Improving the Quality of College Student Party Members from the Perspective of New Media

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Abstract. With the rapid development of digital technology, network communication technology and mobile intelligent terminals, new media represented by platforms such as Weibo, QQ, WeChat, Headline and other platforms have risen rapidly, which has brought new opportunities and situations to the training of college student party members. The article explains the connotation and value of improving the quality of college student party members. From the perspective of life growth, it explores the use of new media to build a college student party member's training strategy centered on the red gene navigation, positive energy field navigation, and Self-discipline and Self-purification. It creates a soul for the college student party members, leads the way to "talent", stores energy for success, and further effectively improves the quality of student party members' training.

Keywords: Strategies; New Medias; College Student; Party Members.

1. Introduction

With the rapid development and wide application of new media technology, it has become an important tool for college students to communicate and exchange, and has also become a living environment to grow up, which has an important impact on their values, ways of thinking, personality development, mental states and behavior patterns. General Secretary Xi Jinping emphasized at the National Conference about the College ideological and political work, which relates to the fundamental question of training what kind of people, how to train people, and for whom. Doing a good job of ideological and political work in colleges and universities should keep up with the times and change with the situation. We must use new media and new technologies to make our work alive, promoting the integration of traditional advantages of ideological and political work with information technology, and enhancing the sense of the times and appeal. College student party members are the advanced members among the students. They have a wide influence in the college student population and are the key minority in the ideological and political education of college students. Therefore, we should adapt to the development trend of new media, constantly explore new strategies for the cultivation of student party members, and effectively improve the quality of student party members' training which are new and urgent tasks on college ideological and political work under the new situation, and lead the improvement of the quality of ideological and political work in colleges and universities.

2. New Medias bring New Situations to the College Student Party Membes' Training Work

2.1 New Medias bring New Dilemma to the College Student Party Membes' Training Work

New media space information dissemination is out of order. The wide application of new media technology has made the dissemination of information break through the limitations of speed, capacity and region, showing the characteristics of massiveness, interactivity, immediacy, sharing, decentralization and hypertext. Different political ideologies, cultural concepts, thinking patterns, moral behaviors, and lifestyles intermingle and intersect in the new media space. Some of these messages are positive and some are negative, such as Western individualism, egoism, utilitarian and Unhealthy ideological trends such as doctrine and fascism are bound to adversely affect the cultivation of ideals, beliefs and values of college student party members.

New media discourse platform is in the disorder management. Under the new media environment, the identity boundaries between information publishers and receivers are weakened. Everyone is both a communicator and a receiver. Everyone can find, collect, read, produce, and disseminate all kinds of information anytime, anywhere, and as they like. At the same time, due to the low entry barrier for information release on the new media platform, it lacks of strict review procedures, and lack of effective supervision, screening, filtering and verification, so the channels of information sources are widened but chaotic, and the content of information is expanded but the true and false are difficult to distinguish. Issues such as the lack of strict control of information dissemination in colleges and universities, the ineffective control of discourse power, and the inadequacy of normative system construction cannot fully meet the needs of high-quality training of college student party members in the era of new media.

The media literacy of the new media operation team is insufficient. In the new media environment, it is already the normal work of the university's new media operation team to edit the content of documents, consult information, publish notices, and communicate with smart terminal devices such as mobile phones. The "no one does not network" space has already become an important platform for college students to study, live and socialize, and it is also favored by student party members. It is an important position for colleges to strengthen the ideological and political education of student party members. Due to the frequent spread of online rumors, frequent online violence and frequent online public opinion, the university's new media operation team also has some problems such as uneven staffing, poor professionalism, inadequate system protection, and insufficient role manifestation. Their use of the new media concept thinking, technical level, information processing efficiency, and public opinion handling ability cannot fully meet the needs of developing high-quality student party members.

2.2 New Opportunities for the Training Work of College Student Party Members under the New Media Environment

New medias have expanded the work carrier of student party building. The interactivity and decentralization of new media have greatly enriched the forms of student party building. For starting daily ideological education activities, you can use the new media platforms such as Weibo, WeChat, and QQ Space to provide an interactive communication platform for party building workers and student party members to promote mutual listening and understanding. You can also set up an internet party branch, establish a party branch WeChat group, open a party branch WeChat official account, create a party construction website, build an online ideological and political online course by MOOC or Micro Class, shoot a party branch micro-film and put out a party branch dynamic H5 animation and some other ways to expand the form of student party building work. It also provides an effective way for mobile student party members to participate in organizational life at all times for short-term overseas study exchanges and internship training practices, which is conducive to promoting the student party building work fully covered.

New medias have improved the effectiveness of student party building work. Compared with the traditional media, the new media has changed the way of one-way information dissemination, and can serve the student party building work in various ways. In terms of timeliness, the new media can give a full role to the advantages of breaking the limitation of time and space, and comprehensively propagate the party's historical knowledge, the latest theoretical achievements, social current affairs focus, domestic and international situations and policies, etc. It is conducive to accept the "first comes first" education, consolidate the ideal and belief foundation of student party members Marxism. For the convenience, student party members can take full uses of the new media platform's large capacity, fast retrieval, and strong sharing advantages, and use the information of pictures, audios, and videos in the platform to arrange fragmentation learning, so that the education of party members has been transformed from instructional centralized irrigation to autonomous precision drip irrigation, continuously improving its ideological level and strengthening the effect of party building.

New medias have enhanced the vigor of the student's party building work. Under the background of the strict party governance, new media can be used to promote the reform and innovation of the

student party building work. For example, the establishment of a party member information management system can realize the intelligentization of the entire process of party member management. The whole process of networking and automation is achieved by party member mobility, party member evaluation and evaluation, and party member statistics and analysis. It is also possible to construct a student party building supervision platform to promote democracy within the party, so that all student party members are subject to supervision, and the purity and advancement of party members will always be maintained. At the same time, it is also possible to build a live broadcast platform for student party building characteristics activities, or an online display platform for student party members' advanced deeds to realize benign interactions between party organizations and party members, party members and party members, and party members and the masses and to enhance the vitality of student party building work.

3. Improving the Connotation and Value Connotation of the College Student Party Members' Training Quality

Doing a good job in the education and management of college student party members under the new situation, is effectively improving the training quality of college student party members. For consolidating the party's long-term ruling organization foundation in colleges and universities, maintaining the party's advanced nature and purity, and implementing the spirit of the National Education Conference, it promotes the comprehensive reform of higher education, trains socialist builders and successors for the comprehensive development, and ensures that the cause of socialism with Chinese characteristics prosperous and succeeding. It has also a great and far-reaching significance.

3.1 Improving the Quality of College Student Party Members is an Inherent Need to Realize the Innovative Development of College Party Building Work

The college student party members are the elite among college students, are the youngest and most active fresh blood and reserve forces in the Communist Party, with higher ideological awareness, better learning ability and stronger plasticity, which is the future party successors and the national construction backbone. Continuously improving the training quality of student party members is an important part of college party building work, which is conducive to giving full play to the vanguard model role of student party members and the fighting fortress role of student grassroots party organizations, and is conducive to enhancing the overall effectiveness of college students' ideological and political education. Therefore, it helps strengthen and improve the ideological and political work of colleges and universities in the new situation, focus on the key group of "student party members", and explore the new concepts, new methods, new carriers, new ways, new models and new institutions to start the party building work of college students in the new media era. Precise policies constantly improve the quality of student party members in colleges and universities and it is the focus and goal of promoting innovation of party building work in colleges and universities, as well as the internal requirements and objective needs for achieving high-quality development of party building in colleges and universities.

3.2 Improving the Quality of College Student Party Members is an Inevitable Requirement for Deepening Comprehensive Reform in the Field of Higher Education

With the continuous promotion of various reform measures such as the full credit system, flexible school system, and large-scale enrollment in colleges and universities across the country, students' self-awareness and differentiated needs are constantly increasing. Traditional professional and class concepts are gradually weakening. The collective consciousness is becoming weaker and weaker, and the model of student party branch formation based on majors and classes has been unable to effectively meet the objective needs of comprehensive reform and development of higher education. Strengthening the education and management services of college student party members and comprehensively improving their overall quality are the historical mission and important

responsibility entrusted by the party to higher education under the new situation. Higher education workers must stand at the strategic height of the future and destiny of the party and the country, fully recognize the importance and urgency of improving the quality of college student party members, take the opportunity of advancing education reform, make overall plans, coordinate thinking, and adhere to socialism. In the direction of running a school, we must continue to take root in China's land to run education, continue to deepen education reform and innovation, focus on improving the quality of talent training, strive to run a satisfactory education for the people, and respond to the new expectations of the party and the people.

3.3 Improving the Quality of College Student Party Members is an Urgent Task of Cultivating the Time Newcomers in Charge of National Rejuvenation

College student party members are the vital force and reserve force for the vigorous development of the party, and are related to the success or failure of the socialism with Chinese characteristics building. With the continuous advancement of economic globalization and the continuous deepening of China's reform and opening up, the international political, economic and cultural landscape has profound changes. The major countries in the world are competing for new advantages in international competition and discourse. Various cultural thoughts are constantly communicating, blending, and confronting, and Western hostile forces continue to penetrate China's ideological realm. Under this background, how to adapt to the profound changes in world conditions, national conditions, and party conditions, helps further strengthen the building of college student party members, educate and guide student party members to firmly establish the great ideal of communism and the common ideal of socialism with Chinese characteristics, and plant patriotic feelings. It is an urgent task for the new period to enhance the "four consciousnesses" and enhance the "four self-confidences", so that they consciously shoulder the important tasks of the period to realize the great rejuvenation of our country and become the pillars that can be used with great responsibilities.

4. Strategies by Using New Media to Improve the Quality of College Student Party Members

If the student party members are regarded as a kind of living body endowed with a "special mission", then their gestation and growth cannot be separated from specific genetic genes, special growth environments and unique immune systems, so that they can grow into Chinese characteristics qualified builders and reliable successors of socialism, which plays a central role in the journey of the great rejuvenation of our country.

4.1 Relying on the New Media, Constructs the Red Gene Pilot Project and Casts Souls for Student Party Members

Genes are the basic genetic units that control biological traits, and support the basic structure and performance of life. It directly determines the shape of life. Therefore, as a student party member who inherits the Marxist beliefs, it should be implanted with a red gene. The red gene is the spiritual core formed and developed by the Chinese Communists in the great practice of long-term revolution, construction and reform. It is the noble belief of every Communist and deeply rooted in the blood and soul of the Chinese Communists. The "Implementation Outline for the Project of Improving the Quality of Colleges Ideological and Political Work " clearly points out that the theme education activities of inheriting the red gene and taking on the important role of rejuvenation should be carried out, and a series of stage plays based on the revolutionary pioneers should be organized and arranged, such as some online works with connotation of revolutionary culture. In the era of new media, building the red gene pilot project in depth creates the soul of the student party members and requires universities, teachers, and students to coordinate and play three roles.

Colleges and universities should fully rely on new media to tap red education resources and become the designer of the red education concept. It is necessary to actively create a batch of red educational and cultural products that are conducive to the promotion of new media, such as red

character micro-videos, red relic H5 animations, etc., and inject red genes into the blood of student party members to promote their firm belief in Marxism, socialism and communist beliefs.

Colleges ideological and political educators should be good at using new media to tell the red story and become a communicator of red culture. We must pay more attention to the research and study of red historical materials, communicate extensively with student party members, and pass red history and red stories to the depths of their hearts. They should also be good at using hot cases on the Internet to guide the education of student party members and integrate red culture into their souls.

Student party members should use the new media to consciously shoulder the red mission and become a practitioner of the red spirit. Let all kinds of red genes take root in the new media network space, thrive and strive to create an online cultural environment where all student party members respect the red spirit, and consciously become the active bearer of the red mission, the active inheritor of the red culture, and the innovation of the red spirit practitioners.

4.2 Taking Advantage of the New Media to Build a Positive Energy Field Navigation Project to Guide the Student Party Members

Fully constructing an online and offline positive educating, guides the healthy growth of student party members, which is necessary to take advantage of the new media and plays a good role in three roles.

Give full play to the leading role of the new media concept in cultivating and practicing socialist core values. The core values of socialism are the soul of my country's cultural soft power and a compulsory course for the cultivation of student party members. The rapid development of new media, open communication concepts, advanced operation modes, and novel ways of thinking have profoundly affected the formation and practice of the values of college student party members. Colleges and universities must establish new media concepts, strengthen systematic research on new medias, and master new medias' laws of communication, operation, change, development, and application to promote student party members become a benchmark in the practice of socialist core values.

Give full play to the role of new media platforms in promoting and shaping typical models. Typical and role models are forerunners, guides, and pioneers. They have a strong role in demonstrating and guiding the growth of student party members. Colleges and universities should actively form campus new media publicity matrix groups to fully use the new media platform's open, shared, equal and instant comprehensive advantages. We can actively promote the self-improvement star of Chinese university students who have an important influence, the touching Chinese characters of the year, the models of the times, pioneers of reform, and other advanced characters. They can also create typical characters and advanced deeds on the campus into the fresh online cultural works, and propaganda throughout the space and time and inject positive energy for sustainable development into the new media environment, which promotes student party members to transform their vanguard role into self-conscious behavior.

Give full play to the role of new media technology in integrating and synergizing various educational resources. In the final analysis, the resources of teaching, scientific research, logistics, medical treatment, venues, cultural landscapes and other resources of colleges and universities must serve talent training. Colleges and universities should give full play to the unique advantages of new media technology beyond time and space, actively integrate all kinds of educational resources, and build a comprehensive intelligence The service platform coordinates all parties to build and share together, paving the way for breaking the barriers of various educational resources and physical spaces, and providing a new pattern for the formation of a full-fledged, full-process, and full-fledged education to promote the full growth of student party members.

4.3 Innovate New Media, Construct Self-discipline and Self-purification Escort Projects, and Store Energy for Student Party Members to Succeed

Every living body is always faced with the invasion of various viruses, and their health must rely on a unique immune protection system. In the new media period, the network environment in which

student party members are located also has different forms of "viruses". Having effective antibodies and immunity to different viruses is the key to the success of student party members from adults and talents. Under the new media environment, the cultivation of student party members must be based on the present and take a long-term perspective, not only to pave the way for their success, but also to store energy for their success. This requires us to innovate the use form, operation mode and management of new media model and build three platforms.

Build a new media party building learning Self-discipline platform. Party members of college students come from different regions, and the learning experience and growth environment in the middle school period are quite different. It urgently requires colleges and universities to innovate the content and form of party building education in the process of training them. Therefore, it is necessary to give full play to the advantages of fragmented learning of new media and the characteristics of selective information reception, to develop new media products such as party building APP. It implements personalized and precise education, meets personalized needs, and enhances the awareness of Self-discipline and Self-discipline. Excavate the value of the big data function of the party building APP, conduct a comprehensive research and analysis of the reading content, time, duration and habits of the student party members, select the content with preferences, and push it accurately, so that the new media learning platform truly becomes the spirit of student party members.

Build a new media party supervision and evaluation platform. Building a networked assessment system through new media, it mobilizes ordinary students to conduct real-time online assessment of student branch work and student party member performance, and improves the efficiency of assessment. Setting assessment weights and define integral rules through the network system, we can realize scientific assessment and evaluation based on student party members' political life and the performance of education, social work and other aspects, and we can also affirm advanced, spur backward or even dealt with unqualified party members. We should strengthen the supervision of student party members' daily words and deeds by opening an online complaint desk, reporting mailbox, leadership mailbox, etc., prompting them to take online seriously complaints, doubts and criticisms, and acceptance of all-round, multi-level and continuous supervision by the masses. It is conducive to raising the sense of mission responsibility of student party members, as well as enhancing the Self-purification and self-immunity functions of student party members.

Build a new media ecological environment beautification platform. Since the new media has become the survival environment for student party members, college ideological and political education workers should actively participate in environmental construction and environmental protection. First of all, it is necessary to strengthen the construction of new media on campus, constantly enrich its content and connotation, focus on enhancing the ideological, educational, service, interactivity and convenience of new media, and enhance the attractiveness, coverage and service of new media on campus. Secondly, it is necessary to strengthen the construction of campus laws and regulations related to new media, improve the service capabilities of campus new media, and provide assistance for student party members to perform their duties. Finally, we must focus on building a politically reliable, decent style of management team that is dare to act and proficient in new media, and it encourages them to dare to speak out, and be good at speaking out against virus invasions such as online wrong thoughts and remarks, and continuously improve the ability of student party members to beautify the new media ecological environment.

5. Conclusion

Under the new media ecological environment, social groups are increasingly diverse in thinking and value orientations are different. College student party members are faced with new opportunities and challenges. College ideological and political educators must actively adapt to this new situation and changes, and insist on student party members training as a fulcrum and maximize the unique advantages of new media to coordinate and coordinate various educational elements and resources. We should actively improve the new strategy of student party member training with the core of red gene piloting and positive energy navigation, Self-discipline and Self-purification. In order to make

student party members grow the soul, become talented, and successfully energy storage, we should constantly improve the quality of student party members, and concentrate on cultivating qualified socialist builders and reliable successors for the country's comprehensive development of moral, intellectual, physical, mental, and physical skills.

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Application Research on Pre-case Teaching Method and Head-to-Tail Case Teaching Method in the Teaching of Engineering Mechanics

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Abstract. This paper proposes two pedagogies: Pre-case teaching method and Head-to-Tail case teaching method. The Pre-case teaching method is mainly for the teaching of simple knowledge points, and the Head-to-Tail case teaching method is mainly for the teaching solving comprehensive problems. Practice shows that the Pre-case teaching method has obvious effect on the teaching of simple knowledge. While students can understand theoretical knowledge, they can also use the knowledge they have learned to solve practical engineering problems. However, the Head-to-Tail case teaching method has a remarkable effect on explaining comprehensive problems. Students can quickly grasp the more difficult and complex theory, and understand the engineering application of it. Therefore, the Pre-case teaching method and the Head-to-Tail teaching method are important teaching methods in the teaching of Engineering Mechanics, thereby improving the teaching effect of Engineering Mechanics.

Keywords: Engineering Mechanics; Pre-case Teaching Method; Head-to-Tail Case Teaching Method; Application Research.

1. Introduction

Engineering Mechanics is a compulsory course for science and engineering majors. It is a bridge connecting basic courses such as university physics and advanced mathematics with subsequent professional courses such as mechanical design and electromechanical transmission. As shown in Figure 1. At the same time, Engineering Mechanics is closely integrated with engineering practice, and is widely used in many engineering technology fields such as mechanical manufacturing, civil engineering, and construction. It systematically guides students to use mechanics theory to solve practical engineering problems [1].

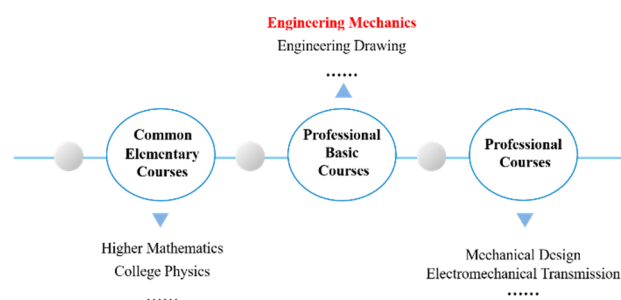


Fig 1. Course status of engineering mechanics

The Case-based teaching method was first created by Professor Christopher Columbus Langdell, Dean of the Harvard Law School in the United States in 1870[2], and was originally a teaching method for law students. After the teaching method was introduced to china in 1979, with the continuous deepening of reform and opening, China's education system is constantly updated, the effectiveness of Case-based teaching is becoming clearer, and it is constantly being used in the teaching of various disciplines. The Case-based teaching method can promote the continuous conversion of tacit knowledge and explicit knowledge. Through different situations, the tacit

knowledge can be exposed or the explicit knowledge can be internalized. For Engineering Mechanics, Case-based teaching method is a teaching method that uses actual engineering cases as carriers to guide students to comprehensively use the theoretical knowledge they have learned to analyze and solve practical engineering problems[3]. Lihong Liu explored the teaching method of "case five steps" based on working process in the classroom in " Teaching discussion of professional basic courses based on task drive and ability cultivation -- scenario design of "five parts of case" course of engineering mechanics "[4], Yanbin Liu and others explored the application of interesting case teaching in the course of material mechanics in " Exploration and practical application of interesting case teaching method "[5], Deru Chi and others introduced the research and practice of case teaching using bench drill as a carrier in " Case teaching method of engineering mechanics based on engineering practice "[6], Yongwei Wang and others introduced the advantages and application of the case teaching method through the case of a crawler crane hoisting the arch rib in the " Application of case teaching in material mechanics teaching. Educational and Teaching Forum "[7], None of the above studies involved how to design different Case-based teaching methods according to the characteristics of the content taught.

Taking into account the above considerations, this paper explores the design of different case teaching methods according to the different contents taught. The remainder of the paper is organized as follows: In Section2, the existing problems in teaching engineering mechanics by traditional methods are analyzed. In Section 3, according to the characteristics of engineering mechanics courses and the advantages of case teaching, two kinds of case teaching methods are proposed: Pre-case teaching method and Head-to-Tail case teaching method. Pre-case teaching method, aiming at the simple knowledge points, its implementation process is "case introduction -- theoretical explanation -- return to the case". The Head-to-Tail case teaching method aims at comprehensive problems, and its implementation process is "case introduction -- theoretical explanation -- regression case -- new case consolidation". In Section 4, the implementation of the two Case-based teaching methods is elaborated based on specific problems. In Section 5, the effectiveness of case teaching is evaluated. In Section 6, the paper is concluded.

2. The Problem of Traditional Teaching Methods in Engineering Mechanics

Engineering Mechanics has both the basic theoretical characteristics of mechanics and the practical application characteristics of engineering due to the inherent characteristics of its discipline. The basic theory part contains a large number of basic concepts, theorems, and formulas. The basic concepts need to be memorized. The theorems and formulas need to be deduced through rigorous mathematical calculations. If lecturers only give theoretical lectures, it is not only difficult to stimulate students 'interest in learning, but it will also make some students wearisome. In addition, although theoretical knowledge is combined with practical application of engineering, most of the examples and exercises are directly based on the mechanical model to use theoretical knowledge to solve the problem[8], so that students may have difficulties with the process how to convert actual engineering cases into mechanical models. Therefore, if the teacher simply adopts traditional teaching methods, not only will the student's learning process be boring, but it will also cause the students' knowledge to stay at the literally level, and will not achieve the purpose of solving practical engineering problems. In order to stimulate students 'interest in learning, improve teaching effects and improve students' ability to apply theoretical knowledge to solve practical engineering problems, explore new teaching models driven by Case-based teaching, and study different Case-based teaching methods for different contents.

3. Design for Case-based Teaching

Case-based teaching is a pedagogy that introduces actual cases into the classroom during teaching process. Its core lies in the selection and discussion of cases. In view of the characteristics of the close

integration of Engineering Mechanics theory and engineering practice, this paper proposes two Case-based teaching methods: Pre-case teaching method and Head-to-Tail case teaching method.

The Pre-case teaching method aims at simple knowledge points, and its implementation process is "case introduction-theoretical explanation-regression case", as shown in Figure 2. Introduce practical engineering cases in the term of problem traction before learning theoretical knowledge. Because the teaching content is relatively simple, placing cases in advance can greatly stimulate students' interest in learning, allowing students to learn theoretical knowledge with questions, and then return to the case, Use the theory learned to solve practical problems.

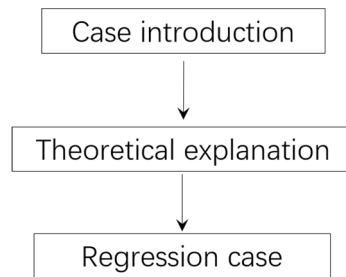


Fig 2. The implementation process of Pre-case teaching method

The Head-to-Tail case teaching method is aimed at comprehensive problems, and its implementation process is "case introduction-theoretical explanation-regression case-new case consolidation", as shown in Figure 3. Before learning related content, introduce comprehensive and relatively complex practical engineering cases to stimulate students' interest and arouse students' thinking, and then explain relevant theoretical knowledge. On the basis of students learning relevant theoretical knowledge, they return to the case to guide students to sort out and screen the knowledge, so as to apply the corresponding theory to solve the practical problems raised. This process is the same as the Pre-case teaching method. The difference is that because it is a comprehensive problem, and it is difficult. To enable students at different levels to better grasp the content, it is necessary to add new ones after returning to the case. The new case reinforces the knowledge learned.

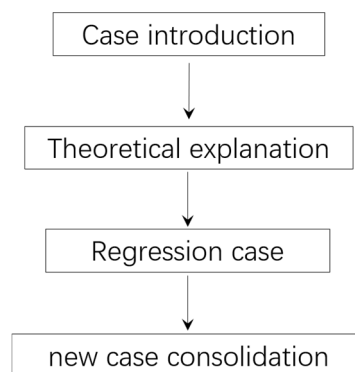


Fig 3. The implementation process of Head-to-Tail case teaching method

Different case teaching methods have different characteristics. For simple knowledge points, it is advisable to choose simple, typical, vivid, and attractive cases. It is easier for students to solve, so that they can experience the sense of accomplishment in solving practical problems. For comprehensive problems, it is advisable to choose a more comprehensive and relatively complex case, because that's what happens in engineering, to train students to solve the practical problems of engineering, this is the ultimate goal of this course. In addition, in the Case-based teaching process, students gradually master how to convert complex engineering practical problems into simple mechanical models. In the process of transformation, it is necessary to consider the major factors and ignore the minor factors, and the major contradictions and ignore the minor contradictions. This is

exactly a scientific method for Engineering Mechanics to deal with practical problems in the engineering. Engineering literacy that engineers should possess.

4. Implementation of Case-based Teaching

4.1 Pre-case Teaching Method

For simple knowledge points, the traditional teaching method can comprehensively and systematically impart basic concepts and basic knowledge to students, but the simple theoretical teaching makes students only passively accept this knowledge and will not actively think about it. Therefore, for this kind of problem, it is advisable to use Pre-case teaching method. Introducing cases before teaching specific theories greatly stimulates students' interest in learning and mobilizes their subjective initiative. Students learn with practical problems. After the theoretical lecture is over, they return to actual cases and use theoretical knowledge to analyze practical problems.

For example, when explaining the knowledge of translation theorem of a force in theoretical mechanics, before giving a specific lecture, first introduce the actual engineering case: why the technological requirement is that both hands must be force evenly without one-handed operation in the machining of fitters when tapping the thread with a tap? Then, give a theoretical lecture on this knowledge point. Finally, back to the case, if the tapping thread is operated with one hand, it is equivalent to exerting a force on only one end of the hinge bar. If this force is translated to the center of the hinge bar, a force and a couple will be obtained. The tap rotates to achieve the purpose of tapping the thread, and this force will cause the thread hole to skew or even break the tap. Therefore, when tapping the thread, both hands must be used at the same time and cannot be operated with single hand. When explaining the stress conditions of axial tension and compression in material mechanics, first introduce a practical case: why is it necessary to provide a clamping end for the test piece in the mechanical properties test of axial tension of metallic materials? Through theoretical study, we know that for axial tension, the internal force is not evenly distributed in the vicinity of the concentrated external force, and the clamping end is provided so as not to affect the calculation of stress. When explaining the mechanical properties of tensile and compression of metal materials, the engineering case is first introduced: Why do most of the bases of large machines in the project use cast iron materials? Through theoretical study, it is known that the compressive performance of cast iron materials is much higher than the tensile properties, coupled with its low price, so most of the machine base materials of large machines use cast iron.

4.2 Head-to-Tail Case Teaching Method

The characteristic of the comprehensive problem is that it requires multiple knowledge points to systematically analyze and sort out the problem, which is relatively difficult. Therefore, for this type of problem, it is advisable to use Head-to-Tail case teaching methods. Introduce practical engineering cases as problems to cause students to think, and then explain basic theoretical knowledge, and then guide students to fully mobilize the knowledge and sort out and screen the knowledge, to apply the corresponding theory to solve the practical problems. Finally, we need to add new practical engineering cases, so that students can truly think, learn, and master how to solve practical engineering problems. This process not only enables students to better grasp theoretical knowledge, but also cultivates their ability to analyze and solve problems.

For example, in Theoretical Mechanics, before explaining the balance of the plane force system, the tower crane commonly used in engineering is introduced as a case, to let students think about how to ensure that the tower crane will not fall to the left when it is empty, and when it is fully loaded, it will not fall to the right. After explaining the theoretical knowledge, back to the case. In this problem, students should analyze a series of problems such as what forces are acting on the tower crane, what force system these forces constitute, and what consequences the counterweight is too heavy or too light. Finally, new cases must be added to consolidate the knowledge learned and continuously improve their ability to solve practical engineering problems. When explaining the content of bending deformation, before the theory is taught, the actual project case is introduced: how is the load-bearing

capacity (such as 5t) of the beam crane designed? This question first involves how to transform the actual engineering problem into a mechanical model, and then through strength analysis, seeking external force, seeking internal force, and seeking stress, and finally calculating the strength and stiffness. Finally, add new cases. In the process of constantly using theoretical knowledge to solve practical engineering cases, students' theoretical knowledge is consolidated and their ability to solve practical problems is strengthened.

5. Evaluation of the Effect of Case Teaching

From the effect reflected in the classroom, after adopting different case teaching methods for different knowledge points, students have a stronger interest in the questions involved in the cases, answer the questions more actively, and the classroom atmosphere is more active. From the perspective of the completion of classroom practice questions and homework questions, after applying the Pre-case method and the case-end method to explain relevant theoretical knowledge, students have a higher accuracy in completing the corresponding questions, a clearer idea of solving, and a better grasp of how to transform practical engineering problems into mechanical models.

The above two aspects show that the two case teaching methods proposed in this paper are effective

6. Conclusion

In the teaching of Engineering Mechanics, this paper proposes the Pre-case teaching method and the Head-to-Tail case teaching method. The Pre-case teaching method for simple knowledge points and the Head-to-Tail case teaching method for comprehensive problems. Both methods not only stimulate students' interest in learning, but also increase their enthusiasm and initiative in learning. Students can grasp the theoretical knowledge learned more solidly; they can also apply the theoretical knowledge to practical engineering cases to achieve the purpose of learning. During the process from theoretical study to practical application, students have been cultivated in engineering literacy, making them more diligent, hardworking, good learning, fun learning, love learning. In addition, in terms of ability training, Case-based teaching makes students more diligent in observation, good at thinking, and happy to summarize in real life, and cultivate their ability to raise questions, analyze problems, and solve problems.

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The Evolutionary Psychological Explanation and Specific Prediction of Online Mate Choice

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Abstract. Mate choice is a major topic of research in the evolutionary psychology, but past researches conducted on the differences between mate choice of different sexes have been primarily through the means of self-report and written-based analysis of spouse, which have limitations in both sample size and ecological validity. With the expansion of internet and technology, online spouse selection is now one of the main ways for people to select spouses, thus this thesis is going to utilize theoretical perspectives and researches on evolutionary psychology to explain and verify the phenomenon of "online mate choice" in three ways: 1) Women's preference for "good resources" and implicitly choosing spouses due to economic pressure; 2) Wealth of male and attractiveness of female are still the main criteria for choosing a spouse on the internet; 3) House ownership is the most important factor for women to choose a spouse online, while an optimal reproductive age is the most important factor for men to choose a spouse online. In addition, this paper presents three specific hypothesis predictions for future empirical researches: 1) Individuals with high perceived sex ratios on the internet tend to choose Short-term mate selection strategies; 2) The use of the Internet will increase the proportion of women who make Short-term spouse choices; 3) The internet will have a significant impact on Mate-choice copying researches conducted in the future.

Keywords: Cyber Psychology; Evolutionary Psychology; Sexual Strategy Theory; Online Mate Choice.

1. Introduction

Mate choice is a major area of research in evolutionary psychology [1]. The internet has changed the way people behave, and it is now the most common and important way to choose a mate. The internet has specific feature to be uninhibited, geographically unrestricted, and visually anonymous [2], which makes it an excellent and convenient way for people to choose spouses online. Using the perspective and framework of evolutionary psychology, it is possible to analyze and explain that not only do online mate choice makes the research contemporary and innovative, but it also provides ultimate explanations to the various behavioral phenomena that people express during the mate choice process. This paper explains and validates the phenomenon of "online mate choice" from the theoretical perspective of evolutionary psychology and research: 1) Women's preference in online mate selection; 2) Differences in online mate choices between the sexes; 3) How the Click-through rate on dating websites and applications verify these online mating preferences. In addition, there will be some three specific theoretical predictions and validations for future empirical researches to conduct.

2. Validation of the Evolutionary Theory of Mate Choice Behavior on the Internet

Researches in evolutionary psychology have shown that males and females have formed different mating strategies due to the distinct adaptive problems they faced during the evolution process, and there are also differences between long-term mate choice strategies and Short-term sexual behavior strategies. Buss et al., for example, conducted a study on people from 37 cultures and found that socio-economic status is an important criterion for female mate choice, as the formation of female

mate choice strategies are based to resources. Men, on the other hand, are most interested in the reproductive value of females in long-term mate choice, which means they prefer younger female and the ones with great physical appearances [3].

At the same time, the Blue Book of social psychology: China's social psychology in 2019 and Survey Level of China's Online Marriage and Dating Industry in 2019 released by the Chinese Academy of Social Sciences pointed out that the registered users on online marriage platforms in China had reached a total of 430 million, and the online dating industry accounted for 54.4% of the overall dating market. The leading online marriage enterprises provide services to nearly one million users on a daily basis. Amongst their users, 78.8% of them have used paid services provided by these platforms, such as extra profile exposure [4]. The Internet has dramatically changed people's behavior in choosing a spouse, and it is now the main way to choose a spouse [4]. Internet mate choice stems from the instinctive need to establish a sense of intimacy and belonging with others, which has positive evolutionary significances. Therefore, it has important practical value to verify the evolutionary psychological mate choice mechanism through Internet behavioral research.

2.1 Data Validation of the Social Mindset Blue Book: 2019 China Social Mindset Research Report

A survey and analysis done by the Chinese Academy of Social Sciences from the data of 31,345 Internet marriage applicants across all Chinese provinces had found that "talent (wealth) of male and attractiveness of female" are still the basic principles of contemporary Chinese youngster when choosing a spouse online. The analysis found that women have more stringent requirements for the socio-economic status (income, education, housing) of their spouses, and have also placed greater value on their own appearances and how they presented themselves in order to attract mates; male marriage seekers on the other hand, place less value on women's socio-economic status and tend to choose spouses younger than their own age. The Blue Book also analyzes the values of choosing a spouse in six dimensions: sexual values, reproductive values, economic values, expectations of family-social roles, life aspirations, and expectations of relationships. The results indicate that in general, males are more accepting of male premarital sex, but they are less acceptive of their partners to do the same thing. Women are the opposite, as they are relatively less accepting of premarital sex as a whole, but still more accepting of premarital sex from their future partners [5]. Online dating and spouse-selection sites have many advantages over traditional ways of choosing a spouse, as it allows users to fully express and embellish themselves. Therefore, research based on data from online marriage seekers provides one of the richest and most realistic sources of information in psychology. Although online mate choice allows people to have a wider range of choices, this study on online marriage sufficiently confirms the evolutionary psychology theory of differences in mate choice: "talent (wealth) of male and attractiveness of female" is still the basic principle for young people in contemporary China to establish criteria for choosing a spouse, with women paying more attention to men's resources and men paying more attention to women's appearance and age.

2.2 Study on Female's Mate Preference under Economic Pressure

A study on women's mate preference under economic pressure validates the theory of evolutionary psychology, which is an experimental validation of Buss's 1993 [1] study on the three dimensions of female mate preferences: "good genes", "good resources", and "good father". From the results, it can be seen that in terms of the three factors of female preference in a mate, both the subjects in the economic control group and the subjects in the control group are in the male dimension of "good resources". There are significant differences between the "good genes" and "good resources" dimensions, but no significant differences in the "good genes" and "good father" dimensions. This means that when they are under economic pressure, Chinese women prefer men with "good resources". As the resources on the women's side increases, such as larger wealth, the dimension of "good father" starts to become more popular, as it provides more emotional support such as forming a caring and tight family. This evidence shows that when women are under great pressure to survive, they tend to sacrifice the dimension of "good father" in the hope of securing "good resources" [6].

Another important innovation of this study is the avoidance of social impression management effects that can affect experimental results, as many statements, such as "preference for wealth" generally comes with negative sentiments. The study found that women's mate preference differed between explicit and implicit measures, with more emphasis on the "good father" trait when measured explicitly and more on the "good resource" trait when measured implicitly [5]. It means that the human psyche is made up of a series of evolved adaptors that often work subconsciously, and many people are not even aware of their existence. Therefore, in the study of evolutionary psychology, the measurement of the subconscious is crucial. Internet-based mate choice data shows exactly what human behave under the strong influence of subconscious and without the judgement from the others. These formless data allow psychology to be removed from physical sample data, which contains many forms of noise and unreliability. Therefore, it leads to a more objective representation of an individual's psychological and behavioral patterns, and even an improved level of extraction and reorganization of existing results.

2.3 Online Mate Choice Study based on Click-through Rate Data

A research on Network used the click through rate index to analyze the information of 200 people that were selected from a dating website. In this study, sex, age, house ownership, car ownership, monthly income level, education background, self-description and the online click through rate information of the spouse were selected. Results indicated that (1) Two factor variance was used for housing data, and the results showed that the effect of house ownership was significant $f(1,196) = 47.41$, $P = 0.0001$, the click through rate of the condition of owning a house was significantly higher than that of the condition of having no houses, $P < 0.05$; (2) For the two factor variance of income data, the results showed that the effect of monthly income variable was significant $f(2,194) = 7.77$, $P = 0.001$; for male, the ones with high-income level had an significantly higher click through rate than the middle-income level counter parts, $P = 0.01$; The click through rate of high-income couples were significantly higher than that of low-income couples ($P = 0.0001$). As for women, there was no significant difference in the click through rate of different income levels; (3) According to the two factors analysis of variance of the click through rate data, it was found that the click through rate of the candidates who were at the best childbearing age was significantly higher than that of the candidates who were out of the best childbearing age [8].

The regression analysis of the impact of male resource conditions on the click through rate shows that: housing ownership, education level, and car ownership all have a positive predictive effect on the click through rate of female-to-male mate selection; the corresponding regression analysis on the male-to-female mate selection indicates that the best remaining childbearing age was the most important factor, and the effect of house ownership and education level were positive, but also limited. This shows that while both sexes share very similar interest in general, but the priority, and hence the first factor to predict the click through rate is very different. House ownership and best remaining childbearing age are the two most influence factors in the eyes of female and male respectively. [8]

Most of the previous studies on mate choice have been conducted empirically, which makes the results susceptible to subjective factors of the researcher's level of generalization and research experience. Therefore, it is more accurate to analyze and measure objective quantitative indicators such as Click-through rate on Internet sites. The Click-through rate can effectively reflect the degree of interaction between the spouse and the potential choice of spouse, thus effectively reflecting the spouse's choice of spouse preferences. The results of this study, based on Click-through rate data, are fully consistent with the evolutionary psychology hypothesis of sex differences in mate choice. User behavior data on the Internet includes not only Click-through rates, but also favorites, likes, interactions, and other related data. Big data on the Internet provides a huge sample and a completely new approach to the study of mate choice.

3. Hypothetical Predictions of the Evolution of Internet Mate Choice Strategies

In the previous section we validated sex differences in evolutionary psychological mate choice mechanisms through Internet research and data, and in this section the thesis will further present three specific predictions for more in-depth empirical research in the future.

3.1 Individuals with a High Perceived Sex Ratio in Online Mate Choice Tend to Choose Short-term Mate Selection Strategies

The sex ratio is the ratio of males to females in a given group and is generally expressed as the ratio of the number of males per 100 females. Gender imbalance affects human behaviors such as economic behavior, risk-taking behavior, mate choice behavior, parental investment behavior and aggressive behavior [9]. There are nearly 200 million singles in China and there is a serious imbalance in the sex ratio. When it is combined with the ever-increasing divorce rate, the demand for second marriages continues to expand, thus creating a large and active dating market across all age groups. The platforms on the internet have increased the effective range and selectiveness of the mate choice process, the perceived sex ratio on these platforms however, differ greatly from the real world, which could be the result of operational strategies and matching algorithms of these online dating platforms. Perceived sex ratio affects the Short-term mate choice strategies of marriageable men and women [9], therefore this paper makes the prediction that individuals, both males and females that believes perceived sex ratio is high will prefer to choose Short-term mate choice strategies.

3.2 The Internet Will Increase the Proportion of Women Who Make Short-term Spouse Choices

According to Trivers' theory of progeny investment, men and women contribute differently in the reproduction process, thus causing men to be more interested in Short-term mate selections [10]. According to the Social Mindset Blue Book: 2019 China Social Mindset Study, while the overall mental health of Chinese women appeared to be better than man, their marriage satisfaction on the other hand, was less than man [4]. In comparison to male, women will pay a heavier price for Short-term mate selection, as they are often exposed to dangers such as reputation damage, physical injury and premature death of the offspring. And since female have a limited number of ovulations in their lifetime, the reproductive benefits are reduced even further. Short-time mate selection is a risky choice for female. However, once a woman's Short-term mate selection strategy is successful, she will be able to benefit from both her husband and her lover. For example, the investment in resources from the husband and the physical protection and the genetic contribution of the lover, who could even be a reserve choice for spouse replacement. The internet makes sexual behaviors more accessible, which verifies the hypothesis of women's Short-term mate selection and long-term purpose. Research shows that when individuals want to establish a long-term real intimate relationship, they will consciously reveal their emotion more truthfully and deeply. The first step of an intimate relationship is to establish a Short-term commitment via communication and sharing of emotions, and as these connection deepens, the Short-term commitment will gradually become a long-term commitment. Some studies have shown that online dating usually has a lot of spiritual intimacy [11], but it is also easy to produce a lot of visual or offline sexual behaviors [12]. According to the long-term purpose hypothesis of Short-term mate selection, we can predict that Internet mate choice will increase the proportion of women's Short-term mate choice as it is easier, safer and more beneficial to female.

3.3 Significant Impact of Mate-choice Copying on the Internet

Mate-choice copying is a non-independent mate choice strategy in which the female's choice during mate selection is influenced by the behavior of other females around them. Pruett Jones found that women's probability of choosing a particular man as a partner was increased as the man was chosen by other women [13]. The values of potential partners are very important for people to know prior to the mate selection process, thus a sufficient amount of direct information, such as house ownership and education level are needed. However, when direct information is not available or

enough, the indirect information, such as the decisions made by peers will take up a very powerful role in the mate selection decision process. Therefore, it can be said that Mate-choice copying is a strategy used by individuals in the mate choice process that utilize the indirect information provided by other people. Dugakin et al. have identified and confirmed the phenomenon of mate choice copying in humans [14] [15]. However, most of the existing research is to evaluate the target photos in laboratory environments, so the ecological validity was less than ideal. The big data of online dating platforms and their algorithms now provide a clear reference for people to copy. Indicators such as "Popular people" and "Best picks" will play an important role in modifying other's mating choice while also providing an empirical environment for cross-cultural research. Therefore, this paper argues that it is more effective to conduct mate choice copying analysis in the digital world.

4. Conclusion

The Internet has become the primary channel for people to date both casually and seriously today, and it is consistent across all cultures. Mate choice is the core research field of evolutionary psychology, and therefore it is of great practical significance to explain and validate spouse selection behavior on the Internet using the perspective and theoretical framework of evolutionary psychology. Currently the researches that focused on this particular area are still quite minimal. This paper fully validates the theory of male and female sex differences in evolutionary psychological mate choice mechanisms through research on Internet mate choice: The first is that women's preference for "good resources" and implicitly choosing spouses with such trait when undergone economic pressure. The second is that male's wealth and female's attractiveness are still the main criteria for choosing a spouse in the age of internet. The third is that housing conditions is the most important factor for women to choose a spouse online, while age at optimal reproductive age is the most important factor for men to choose a spouse online. In addition, this paper presents three specific hypothesis predictions for future empirical researches: 1) Individuals with high perceived sex ratios on internet tend to choose Short-term mate selection strategies; 2) The use of the Internet will increase the proportion of women who make Short-term spouse choices; 3) The internet will cause a significant impact on Mate-choice copying. Big data on user behavior in marriage and social networks provide a new approach and convenience way for the study of mate choice to be conducted, while evolutionary psychology mate choice theory provides the ultimate causal explanation for these behaviors, using evolutionary psychology to study online mate choice is a new perspective and direction for the future.

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Research on Educational Reform of Marketing in the Context of Blockchain Technology

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Abstract. With the development and application of emerging blockchain technology, such as finance, industrial, energy and management, more universities and researchers are learning the necessity and importance of applying blockchain technology in higher education reform. As the significance but insufficient relevant studies on this topic, this paper attempts to comprehensively understand the status quo of educational reform of Marketing as well as advantages of blockchain technology in Marketing area. The next section contributes to the influence factors and potential challenges of Marketing educational reform with blockchain technology. Followed by this, the literature and experiments are designed to be reviewed and analyzed, which focuses on projects with milestone significance in blockchain application of education reform. A new application approach is conducted for educating students with competitive advantages in real business environment.

Keywords: Education; Blockchain; Marketing; Technology; Application.

1. Introduction

Nowadays, it is undoubtedly true that we're in the new age of industrial internet, 5G and the Internet of Things (IoT), also it brings huge dividend that follows. Nevertheless, the essence of Internet technology is to improve the efficiency of communication and collaboration of individuals, so as to increase the productivities. For the marketplace as a whole, including companies and individuals, considering today's business environment within a worldwide emphasis and competition, it is significant to establish a trust connection and change traditional production relations, not just communicate with them. It is precisely because of this change, the importance of blockchain technology for marketing lies in the fact that it reduces trust costs, enhances customer satisfaction and improves production relations. As the result of the continuous improvement of blockchain technology and the expansion of application fields, some international teaching institutions and scholars have begun to understand and explore the application of blockchain technology in education.

These two main reasons for choosing this topic are, firstly it is need to recognize the significance for Marketing in a real business world as well as educational and teaching reform of Marketing in higher education. Secondly, it is better to choose a more systematic, flexible and reliable application mode for academic discipline.

For obtain the purpose of this paper, it will first develop a theoretical understanding of current situation on educational reform of Marketing with blockchain technology, involving the obstacles to teaching and training students in terms of Marketing. Then, it seeks to explore the influence elements and possible reasons so as to recognize the challenges. Consequently, this paper attempts to provide a new blockchain application method for educational reform in the major of Marketing. Finally, we end drawing conclusion that aims to educate and prepare students for a competitive career of Marketing.

2. Current Situation on Education Reform of Marketing

During the decades, no matter in China or in other foreign countries, it is hard to implement realistic educational and teaching reform on the major of Marketing, Investigation, Project Management, Human Resources Management and even any Management-related subjects.

Traditional educational Reform of Marketing without blockchain technology has some room need to improve in both academic and teaching practice. On one hand, in terms of theory, the current teaching reform of marketing only focuses on explaining method or professional tools, discussing business cases and learning theoretical knowledge of related disciplines, for instance, adding elective

courses of Consumer Psychology, Communication, Brand Management or New Media Marketing. On the other hand, from the aspect of business practice that has been aware of the contradiction between students' learning enthusiasm and teachers' supervision. It may attempt to develop simulation program, carry out Marketing competition, and encourage the project of university student innovation and entrepreneurship training program which implemented by the majority of domestic universities and colleges. In spite of this, there is no solution or powerful technical tool to solve the problem fundamentally. It is because that most previous study on Marketing academic reform lacks of one kind of secure technical support which can affect learning process efficiently and transparently manage entire educational experience both of teachers and students.

2.1 Educational Reform Experiments with Blockchain Technology

It goes without saying that technology like blockchain could speed up the modernization of education. While educational technology has come a long way in the last 20 years worldwide, it still needs to improve before it can be fully modernized. Distributed ledger books, artificial intelligence, mobile phones and tablet devices are rapidly replacing clunky desktop computers and antiquated books as the tools of choice for teaching. This chapter will introduce experiences with typical cases of institutes, universities and companies with blockchain technology on domestic and international educational reform.

In European countries, particularly in UK, enterprises, institutes and universities prefer to trust and originally use blockchain technology in education than American's. For instance, APPII company that puts blockchain technology in online recruitment field, it has partnered with The Open University to create a qualification and accreditation platform for managing students' unmodifiable academic records. it uses blockchain technology to verify credentials, which provides Ethereum's Smart Contracts and machine learning technology to validate the academic credentials of students and professors. For APPII users, they can create personal profiles and fill out their academic resumes, including educational history and academic performance reports, and as well as the user's background and information can be identified and recorded in the platform.

"White Paper on Blockchain Technology and Application development in China" issued by National Ministry of Industrial and Information in October, 2016. It points out that blockchain technology offers transparency, secure and reliable system, it applies to the management of students' employment, academic, credentials, and co-operative, etc. No doubt, it is in common that it has important value for higher education and employment. Yet a small number of brave universities are experimenting with blockchain technology, which mainly embodied in setting up blockchain-related courses, establishing platform for administrative work and other relative sectors, for example, the Central University of Finance and Economics jointly launched the blockchain project that cooperated with an enterprise in July 2016. It offered blockchain-related courses in September of the same year. Meanwhile, Tongji University also participated in People's Bank of China's digital currency research, which incubated several blockchain Entrepreneurship and Innovation Projects. It first launched the coached blockchain training class.

However, blockchain technology in domestic education field is rarely used in teaching and educating students or improving the communication between teachers and students positively, especially for students in business schools, that's exactly what they need during at their universities.

2.2 Advantages of Blockchain Technology in Marketing

As we know, Blockchain owing outstanding advantages of distributed books, timely and orderly data recording, collective maintenance, security, credibility and so on. It provides convenience for credit endorsement, information encryption and intelligent contracts, which has great application potential in the current field of marketing education.

First of all, based on a decentralized learning management platform, learners and teachers will become the controllers of teaching resources and information instead of universities. Because that distributed ledger based on blockchain technology can safely and flexibly manage distributed teaching resources and information, it and can offer educational opportunities for learners while

achieve large-scale learning certification. For example, Alibaba Cloud College makes full use of the advantages of blockchain to train business learners with both theoretical and practical abilities. It aims to provide advanced business school courses, node tests and online certifications, then issue official Alibaba Cloud certification to graduate learners so well as skill assessment report, and finally recommend to enterprises.

Secondly, for individual learners who are unable to complete traditional higher education due to various reasons. Blockchain platform can combine credits or learning results obtained from different educational institutions together, apply for the certification of educational institutions that recognize this learning mode, and thus obtain the corresponding graduation or degree certificate.

In addition, the development and application of blockchain technology can help learners obtain learning certificates and professional qualifications, thus effectively improving the competitiveness of individuals in the labor market, promoting their career development, and ultimately realizing lifelong learning. For instance, MIT has created the first blockchain diploma platform “Blockcerts” in history, which can issue degree certificates based on blockchain to graduates with a secure and tamper-resistant manner.

Last but not least, in any enterprise, The Marketing Department is responsible for ensuring business system that can constantly adapt to the dynamic environment. Peter Drucker points out that the goal of a company is to create customers and fulfill satisfaction, therefore there are only two basic functions of a business: Marketing and Innovation." It is reasonable to assume that his point of view is correct, the Marketing function of a company ought to complement by the innovation function.

Thus, in this background of decentralized technological innovation, It is necessary that a decentralized encryption-based marketing organization should adapt to the environment, which is a Decentralized Marketing Organization (DMO), it aims to collaborate with technical teams, attract and retain cryptocurrency customers. Unlike traditional customers, under a decentralized network system, the most valuable customers are those who can deeply participate in protocol transactions and bring more nodes to the network. Therefore, an effective marketing strategy should achieve a series of multi-level demand-pull effects and targeted at multiple actors who adopting the protocol, such as developers, designers, token buyers, investors, social media key opinion leaders, regular users, partners, and so on. Marketing personnel in traditional companies are accountable to leaders, but for a decentralized project, a significant portion of the participants executing the marketing strategy are not subject to such conditions. They are paid not by their bosses but by the growth in the value of crypto tokens. Such Marketing has gone far beyond the boundaries of traditional organizations in terms of organizational structure. In the past, the “edge” of a marketing network was promotion activities carried out by lower-level employees. Nowadays, the “edge” is managed by token holders, who going to aggressive market the decentralization to other potential customers.

All of these are vital for business school students of Marketing Major, it will provide more opportunities of real-world business for them, training them to become more competitive marketers, and offer a flexible continuous-learning approach.

3. Challenges and New Application Model on Marketing in Higher Education

3.1 Influence Factors and Challenges

It is certainly that the blockchain technology is still in the initial stage of development. Compared higher education with finance, they have some influence factors in common and some challenges different. Higher education field in Marketing is more unique and complex than financial field, which affected by various factors and had to face potential challenges in blockchain technology application. On the one hand, there has been no universal standard of blockchain application at home and abroad, and most researches focus on financial area. Lacking of policy protection and practical experience are great challenges to educational reform in Marketing field. On the other hand, weakens the management function of universities is weakened due to decentralization of blockchain application, also the management of student data is relatively weakened, which may lead to the ambiguity of the property rights of students’ data and arguments over it. In addition, the current capacity of the

blockchain system is difficult to carry the amount of data generated by teachers, students and education management departments, and thus it will even decrease data propagation efficiency and affect the demand of teachers and students for real-time data acquisition.

Blockchain's feature of decentralized makes university and institutes' educational management responsibilities reduced, and the function of student data management is relatively weakened. Due to the decentralized characteristics, the data of blockchain is stored and recorded in a distributed way, which makes the property rights of student data become fuzzy. Currently, data management in education is generally taken charge by the academic affairs office of university, while the application of blockchain technology weakens the responsibilities of physical management departments, making data stored on virtual platform. Based on the property rights of data stored within blockchain technology, relevant education departments need to formulate a detailed data ownership standard system and benefit value distribution scheme. First of all, the ownership of education data stored in blockchain should belong to the data producer, namely teachers, students and education management departments, rather than the third-party platform, which is the basic principle of blockchain data storage. Secondly, the use of any data requires the written authorization of the data producer, which can be authorized to the company to develop greater commercial value. However, the premise of data use is to ensure the individual interests and privacy of the data producer. Finally, in the process of university-university cooperation or university-enterprise cooperation, education data business value is created that needs to be set clear profit distribution plan, in addition to written authorization involves the provisions of the income, can also refer to the copyright royalties, allocated by the platform according to fixed proportion will be benefit to value data generator, a data provider, and developers, or can be obtained from the user authorization for free, completely belongs to the benefit results data value to developers. Only by formulating clear data property right ownership and use norms can teachers and students eliminate their concerns about data ownership generated by educational and teaching activities, so as to better promote the application of blockchain technology in the field of education.

According to above discussion, blockchain application in education industry is at the early stage of exploration, and its functions are limited to reducing education costs, ensuring learners not to become detached from the reality, solving credit investigation problems such as academic degree fraud, and protecting the copyright of educational information resources. Just as the blockchain technology is more than a virtual currency in the financial application, blockchain technology also brings about the updating educational concepts and the new model of educational reform in the future, and thus restructures the whole educational system positively.

3.2 New Application Mode

For obtaining both academic and practical purpose in Marketing educational reform, it therefore addresses an updating blockchain application model instead of traditional method for university students. Traditional Marketing mode is being changed to DMO, which means the personnel of "edge" position in DMO are accountable to who at the "core" of the organization. It brings enterprise a more effective Marketing strategy that has opportunities to archive demand pull on multiple levels. For example, traditional advertisement of single strategy tends to work not so well as a more interactive way of setting up a vlog or platform of live marketing for consumers or potential consumers to discuss and disseminate.

In related to above-mentioned aspects, a new blockchain application mode of Marketing needs to be developed based on the emerging Marketing mode with blockchain technology, is called Decentralized Marketing Organizations. Firstly, universities are accountable to students and teachers, the supervision and management function will have change from universities to students and teachers. It ensures the truly implementation of "student-central" educational method. Moreover, some activities of Marketing educational reform that hard to be conducted in traditional mode can put into practice with blockchain technology, such as online courses, online test, skill training, mastery-level, and extra-curricular activities and etc. It offers a new method for both students and teachers in a way of more flexibility in time and space, it also helps universities by reducing the administrative costs.

Additionally, students' creativity, motivation, leadership and other abilities will be recognized through setting up laboratory or business incubator or open-source platform, which provides the opportunities for students to access and manage directly, and even connects to companies directly. It is noteworthy that it delivers students or learners a motivated and transparent record of accomplishments they can manage or even control.

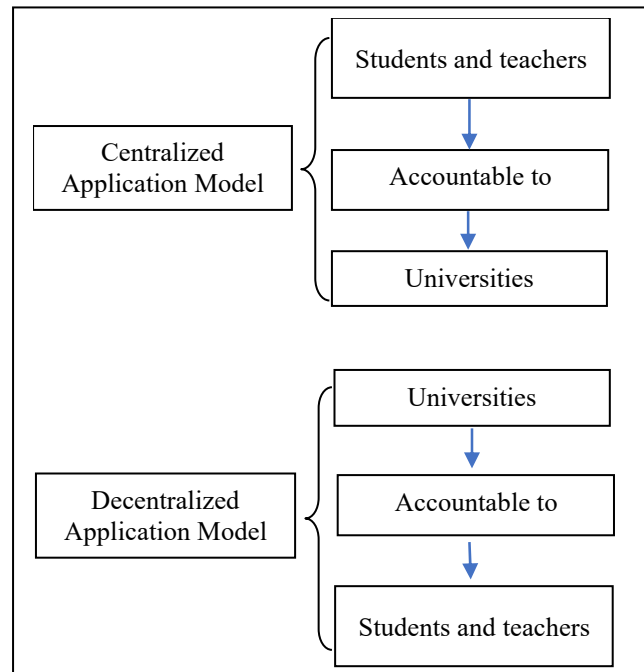


Fig 1. Application models of centralized and dencentralized

At the same time, with the help of blockchain technology, the virtual economy function trading system can be built. Like the marketing activities of enterprises, learners can purchase various services through this system. When learners make purchases, the system can automatically and directly select the corresponding learning materials sent to them. Meanwhile, through this system to realize the online learning, learners can as well counsel and download learning data, compared with the traditional mode of education, intelligent education platform can according to the learners' personalities need to create the most suitable way for its services. Therefore, self-service transactions can be obtained here. More importantly, the application of blockchain technology in the field of education has well solved the original inadequate credits as well as the problems in education. Through distributed learning recording and storage, it enables universities and educational institutions to record learning information of the platform and store them permanently in cloud servers. In this way, enterprises can conduct accurate evaluations on applicants according to the data information of recruiting, to choose and select the talents with greater accuracy that can be well adapted to job.

For lifelong learning, it offers an interactive channel of communication between professors and students whether they have graduated or not.

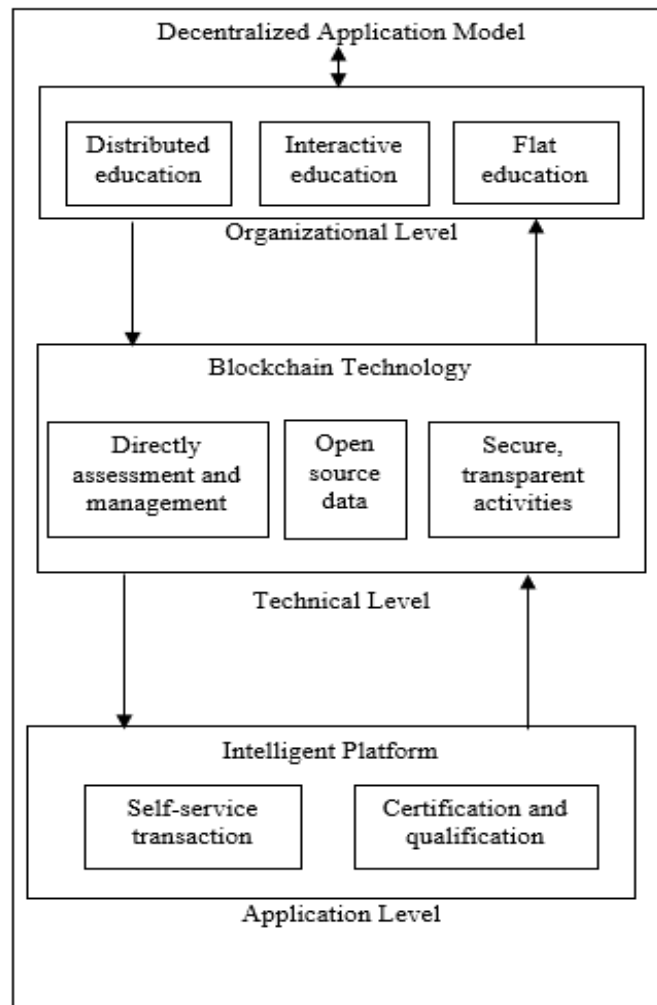


Fig 2. Dencentralized application model with different levels

4. Conclusion

On a whole, as blockchain technology rapidly develops and widely applies in various fields, such as finance, industrial, energy and so on, education reform of Marketing in higher education has gained support from students, teachers, scholars and universities. It is need to recognize and consider the necessity and implemented approach of blockchain technology in Marketing education. Consequently, this paper is aims to holistically understand the current situation of Marketing educational reform as well as advantages of blockchain technology for Marketing strategies. Then it puts emphasis on the influence factors and potential challenges for blockchain application in Marketing education field. At last, a feasible application model is discussed in the nest part which consists of the basic concepts, a new Marketing organization, and five aspects of implementation points. Since the significance but only few relevant analyses on this area, this research provides available information to universities with intent on educating and teaching competitive and assertive students in increasingly modern commercial competition.

Acknowledgments

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Explore the Reform of Teaching Mode based on the Practice of Cloud Computing Technology in College English Courses

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Abstract. As the technological focus of today's society, cloud computing plays an increasingly significant role in the development of various fields of society, which is regarded as the core of information technology in the 21st century. Nowadays, due to the global outbreak of COVID-19, online education has become a necessary way for universities to ensure the schedule and quality of teaching in such a special period. In response to the call of the Ministry of Education to "suspended class, ongoing learning", schools all over the country started "webcast teaching". This paper will analyze the practice of cloud computing in college English courses in order to explore the reform of education mode. By analyzing the characteristics, advantages and disadvantages of cloud computing technology and the adaptability of college students to this technology in English courses, we can conclude that schools should make full use of the opportunity of building a national open university system to fully promote cloud computing technology in the education field. Integrate learning resources to form a social and public-oriented education sharing service platform, and accelerate the pace of building a learning society of "learning for all, lifelong learning" in our country.

Keywords: English Learning; Online Courses; Cloud Computing in Education.

1. Introduction

Issues related to "cloud computing in education and education reform" still require long-term and in-depth teaching practice and systematic theoretical research. The purpose of this project is to find out the positive and negative effects of online teaching in the practice of college English courses, as well as some of the problems we currently encountered. This is conducive to finding effective solutions to problems encountered in online education, and can also help to accumulate experience in online education development and deepen the reform of the education system.

2. Purpose of the Study

2.1 Social Impact Level

(1) For society, under the influence of the epidemic, in order to avoid delaying the teaching process, schools in various regions adopted the method of "online teaching without returning to school" and carried out interactive teaching work through the Internet.

(2) For college students: Online education can make online study possible without returning to school, which can effectively guarantee the original learning progress. In addition, with the help of the Internet platform, the limitations of time and space can be broken, and to some extent, it can meet the needs of students for excellent teaching resources. This will also improve the imbalanced status of our country's higher education to a certain extent. The research on online education helps increase the fairness and rationality of the distribution of educational resources.

(3) For parents, online education will give more time to them for staying with their children, which allows them to observe their children's learning status after college. It can also increase their understanding of children, and enhance the relationship between parents and children.

(4) For schools, on the one hand, it can ensure the progress and quality of teaching, on the other hand, it can use this large-scale online teaching activity to improve school educational facilities, optimize educational resources, and speed up college education informatization process.

(5) Make up for the shortcomings of the traditional education model, and enhance the coordination of online and offline teaching. Online education helps to broaden educational communication channels, innovate teaching models, and deepen educational reforms.

3. The Foundation of Previous Research

Over the years, many countries and regions have done relevant research on this subject. They learn about the nature and core of this type of education, and about how to improve teaching efficiency. Moore and his partner Weedmeyer studied the "independence theory" for students' independent learning methods in distance education. They believe that the essence of distance education is student independence. Online education attaches great importance to network information technology, and needs to cultivate talents with multimedia technology as the support. This teaching model pays more attention to the individual development and individual learning needs of students, and can also realize the rational use of teaching resources across the country, which will help promote the individual development of students and improve the effect of education and teaching.

German scholar Otto Peters put forward a theory with far-reaching influence on distance education-"the theory of teaching industrialization". He regards distance education as the process of industrial production. He intends to make the educational method more flexible and open through his theoretical research. With the popularization of computers and networks, the methods of distance education have become more modern. He has made great contributions to the theoretical research of distance education in three aspects: the analysis of the characteristics of distance education, the taxonomy research of distance education institutions in the world, and the theory of distance education industrialization. The "Equality Theory" proposed by the American scholar Simonson believes that the definition of distance education is "a formal, college-based educational behavior", which connects separated teachers and students synchronously or asynchronously through a two-way interactive distance communication system. The "teaching-based education of sharing images and sounds" should be established on the basis of equal learning experience. the above-mentioned research theories provide some thoughts for us to study the development status and future trends of online education.

4. Related Theoretical Knowledge

4.1 Cloud Computing

Cloud computing is "a huge computing power through the Internet, the program will be automatically split into numerous smaller subroutines, and then to a large number of servers consisting of a large system, through the search, calculation and analysis of the results back Pass to the user" [1], cloud computing makes distance education possible.

4.2 Interactive Learning

Interactive learning is "The interactive approach to any given lesson plan encourages students to interact with each other and with the subject matter. Rather than sitting at their desks like passive sponges ready to absorb the material, with the interactive approach, students are part of the lesson. Interactive education involves a variety of techniques that range from lessons that require conversational skills to extensive project-based learning units that can cover an entire grading period" [2].

5. Analysis of Teaching Status

5.1 Questionnaire Data Analysis

In order to investigate the practice of cloud computing technology in college English courses and students' views on online courses, I released a set of questionnaires and collected 122 valid questionnaires. The following is some data analysis of the questionnaire options.

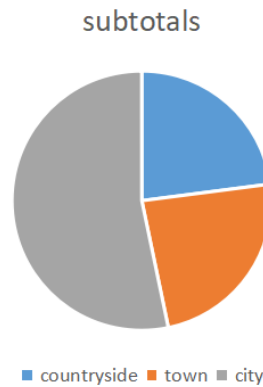


Fig 1. Your location during the online education

During the epidemic, 53.28% of the students who answered the questionnaire took online classes in cities, 23.77% in towns, and 22.95% in rural areas. We can find that more than half of the students take online classes in cities.

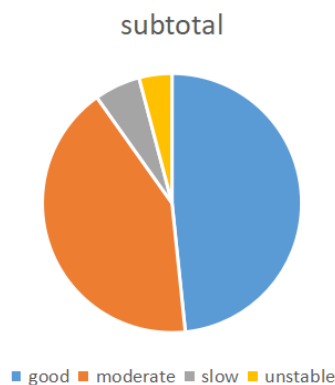


Fig 2. How is the network condition during class?

Among the collected questionnaire data, almost half of the students think that the network is in good condition. This shows that China's network coverage is very high and the network speed is relatively fast, which can provide students with a good hardware facility.

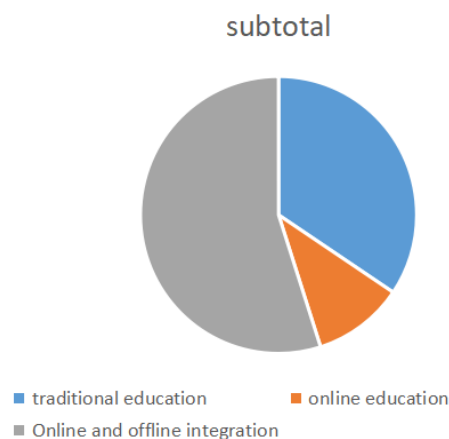


Fig 3. Compare traditional education and online education, which one do you prefer?

By observing the questionnaire data, we found that 34.43% of students prefer traditional education, 10.66% prefer online education, and 54.92% prefer the combination of online education and offline education. It can be seen from this that we may be able to develop an education model in which online and offline education is rationally distributed and coordinated in the future.

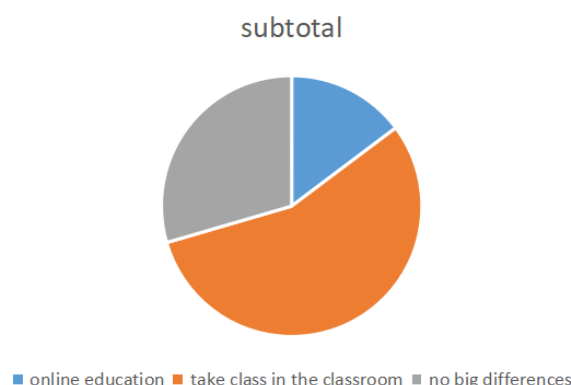


Fig 4. Which one do you think is more efficient for online education or classroom teaching?

Through data analysis, we can find that more than half of the students believe that class is more efficient in the classroom, so education still cannot be completely separated from the classroom and cannot completely rely on the Internet.

5.2 The Current Practice of Cloud Computing in College English Courses

During the epidemic, each school will select a college English webcast platform suitable for its own school based on the conditions and the characteristics of the students. The school will arrange corresponding college English live courses. College English is a compulsory public course for college students across the country, so the courses are arranged twice a week, once for two hours. This is basically the case for live college English webcasts across the country.

The content of the college English webcast class does not deviate from the five aspects of listening, speaking, reading, writing and translation required in traditional classrooms. In the live teaching, the English teacher will teach the whole course in English, and will also appropriately explain in Chinese according to the students' response. The explanation of the specific content of the classroom is arranged differently for different teachers. Some teachers will give a single, detailed explanation for listening, speaking, reading, writing, and translation, and conduct specialized training. Some teachers take all five aspects into consideration, allocate online class time reasonably, and train students' comprehensive abilities. For the explanation of listening, reading, translation, and writing content, some teachers follow the content of the textbook step by step, while some teachers have a variety of forms and ingeniously explain English classics and movies. The process of live broadcast by different teachers is different. Some teachers just follow the script to complete the teaching tasks, while some teachers are to tap the students' potential, stimulate students' interest, improve classroom efficiency, and interact with students online in real time. In this way, for teachers and students, college students' webcast teaching has a different impact.

5.3 The Advantages of Cloud Computing in the Practice of College English Courses

Online education can provide students with flexibility in managing time and choosing a study place. "One can take, or teach, an online class from anywhere in the world as long as both the student and the teacher have internet connectivity" [3]. Online education eliminates the geographical restrictions, allowing students from different places to take the same class at the same time. Since education is conducted in a virtual classroom, through a video conference or through a platform, if students can use a computer or a mobile phone with internet connection, they can access the education content from anywhere. Students do not have to get wet on a rainy day or expose themselves to the scorching sun when attending online classes. They do not have to sit in the same place or face each other. They only need their computers, and they can study comfortably at home.

Based on the interconnectivity of the internet, students have more access to learning resources and teachers can evaluate students more objectively [4]. James mentioned in her article that “Online education provides superior quality learning opportunities. Course materials are accessible all the time, enabling students to read and re-read discussions, lectures and explanations”. When teaching online, professors will upload videos, lectures and study materials to Baidu folder or chat groups, so that every course will be accessible. Provided students need to review what they have learned, they can easily retrieve the materials. Online education makes resource sharing possible. Many websites and learning software provide free high-quality online courses. Students can take classes taught by the professors from world famous universities, learn other interesting knowledge and communicate with people from all over the world.

Online education is reforming the traditional education mode and it may become the future development trend of education. James mentioned in her article that “Students are not only expected to read and understand all the contributions made by their classmates and instructors, but are also allowed to engage actively in the areas of the contributions that are most relevant to their individual needs” [4]. Different from traditional education, online education has higher requirements for students’ autonomous learning. It cultivates students’ self-discipline, responsibility and time management abilities. Teachers no longer play a traditional and stereotyped role in the classroom. They have changed from “absolute authority” and “instructors” to students’ “collaborators” in class. With online learning, the teaching methods are more flexible. All the teaching materials can be recorded with the help of the internet. Students do not have to worry about taking notes or understanding the contents because everything can be read again. Classes do not need classrooms, blackboards or chalk. Through voice and video, students can simulate the class.

5.4 The Disadvantages of Cloud Computing in the Practice of College English Courses

(1) Lack of professional classroom environment

The lack of professional classroom environment is mainly reflected in two aspects, one is the teaching environment of English teachers, and the other is the learning environment of college students [5].

For English teachers with children at home, the teaching will be interrupted by the crying sound of the children during the live broadcast, or the children will suddenly break into the live footage and the shouting sounds are recorded in the live broadcast room. In order to comfort the children and remove obstacles, the English teacher had to interrupt teaching. Especially for English teaching, if there is no quiet environment, English pronunciation will be unclear, which will hinder the teaching of professional knowledge.

(2) Interfered by network signals

The college English webcast class is controlled by the strength of the network signal due to its own characteristics. Then, English teachers will inevitably be interfered by network signals during the course of live webcast. In reality, the interruption of live webcast classes often occurs. Some English teachers may report that they cannot hear the sound during the live broadcast. This is because the teacher’s network signal is too poor, which directly affects the quality of the class.

Similarly, when students’ signals are interfered, they will also miss English teaching courses, which will affect the improvement of English ability. Students will suddenly freeze while watching the live broadcast. They cannot watch the live broadcast. They have no choice but to exit the live broadcast room and re-enter the live broadcast room. This will miss the live broadcast content. Some are more severely disturbed by network signals, and once you exit the live broadcast room, you cannot enter again, and some will drop directly.

6. Suggestions and Countermeasures

To solve the problems of cloud technology in education practice, ensure the quality of live broadcast of online courses. We must try to start with both teachers and students to improve “teaching” and “learning”.

1.Improve teachers' ability

(1) Improve network management

English teachers should train themselves in various aspects of the control level of live lessons, and ask more professionals for advice. Exercise more after class to make full preparations for each live class, check whether the microphone, video and other facilities are complete, and whether the network signal is interfered. During the live broadcast, the teacher must communicate well with the students, and the live broadcast will only start after receiving the student's response to avoid useless work and dumb classroom accidents. After the live broadcast is over, be sure to check whether the corresponding facilities are closed to ensure that the preparations are correct. If accidents cannot be avoided, teachers must have the ability to respond, maintain the order of live broadcasts, and manage their students.

(2) Improve interactive communication skills

The results of the online questionnaire show that at the beginning of the live English webcast, students have a sense of freshness and are interested in the teaching methods of live broadcast teachers. They are highly motivated to participate in the interaction during the live broadcast. However, with the nearly four months of live English webcast classes, students will feel bored and hostile measures. This requires teachers to make a summary in time, make adjustments, show strong communication and interaction skills, maintain the vitality of live English, mobilize students' emotions, and ensure the quality of live teaching.

2. Enhancing the comprehensive quality of college students

(1) Correct learning attitude

College students can improve their participation and attention in online classes by correcting their learning attitudes and strictly demanding themselves, and then they will be able to avoid the negative impact of online live classes. Give full play to the advantages of online classes, improve yourself, and listen carefully to every English webcast class. During the live webcast, listen carefully, actively participate in interaction, take notes, practice oral English, communicate well, and improve English listening.

7. Conclusion

Affected by the epidemic, we must adopt online courses to continue our education. This is not only a challenge to students and teachers, but also a huge impact on the education model. At present, there are still many shortcomings in the online course model, but there are also many advantages that can promote the electronic and cloud informatization of education. The future is unpredictable, and we should be full of imagination and confidence in the future of education.

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Teaching Reform of Information Management Course based on OBE

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Abstract. Under the guidance of the student-centered, results-oriented, and continuous improvement of the educational concept, information management course has been reformed in four aspects: teaching objectives, teaching content, learning methods, and evaluation of learning results. Through optimizing and integrating course content, in order to focus on the training of students' abilities. Besides, we put students on center, enrich students' learning methods and activate students' enthusiasm to participate in learning. Also, we pay attention to the evaluation and assessment of process results and adjust evaluation indicators in time according to students' feedback in order to promote the degree of achievement of course objectives improved steadily, thus the entire teaching process has been continuously improved.

Keywords: OBE; Information Management; Teaching Reform.

1. Introduction

Since the Central Military Commission and the People's Armed Police Force formally issued a document to guide military colleges and universities to actual combat teaching reform, various military schools have actively carried out professional construction and structural adjustment around reform and transformation. How to train compound talents facing actual combat requirements has become a research hotspot in various military schools. Curriculum is the core concept in modern education theory and the main organization form of modern education activities [1-3]. Therefore, the core issue that colleges and universities needs to be explore in the transformation and development of undergraduate teaching is to study how to reform the curriculum system and teaching methods to achieve the goal of talent training [4-6].

OBE (Outcomes-Based Education), an educational model based on learning output [7,8], compared with traditional education, results-based education should achieve a transition from subject-oriented to goal-oriented, from teacher-centered to student-centered and from quality monitoring to continuously improve the transformation [9]. The key point of OBE is achievement-oriented, focusing on the achievement of students' ability [10-12]. The OBE model must have clear training goals and formulate graduation requirements based on the training goals [13]. And completing the curriculum system according to the graduation requirements and mapping each graduation requirement index through a reasonable course setting [14]. The course determines the teaching target according to the assigned graduation index points. This teaching goal focuses on the cultivation and achievement of students' abilities and emphasizing the quantifiable and measurable ability results that students can achieve after learning [15-18]. Clearly clarifying the teaching objectives will also clarify what students learn [19]. Based on this, the teaching methods can be optimized and perfected to let the students know how to learn [20]. As for how to learn, it is necessary to establish a perfect achievement evaluation mechanism to make the learning results clearly visible. The achievement of capabilities is based on evidence, and continuous improvement according to the achievements [21].

2. Situation and Problems of Course Teaching

Information management is a basic course for undergraduates majoring in information management and information systems. It is also a basic and introductory course. The purpose is to enable students to systematically understand and master the survival, distribution, dissemination, acquisition and processing, laws of utilization, methods of information and business processes of information management, which laid the foundation for the study of subsequent courses and practical information management. In the traditional Introduction to Information Management teaching, teachers are the main focus, and the emphasis is on systematization, comprehensiveness, and accuracy of knowledge teaching. However, there is not enough attention to the cultivation of students' comprehensive ability and the training of innovative consciousness.

2.1 Teaching Subject

Instructors focus on textbooks and set curriculum objectives and arrange teaching plans based on textbooks. Inevitably, the teaching process is relatively fixed and the teaching content is relatively single. Besides, the latest relevant developments are difficult to enter the classroom. Therefore, the learners' knowledge is relatively old, which cause the result that it is difficult for them to adapt to the enterprise application requirements.

2.2 Teaching Mode

Teaching is centered on lectures, and students passively receive knowledge in the classroom, which is not enough to mobilize students' enthusiasm for learning. The homework is centered on theoretical concepts, which cannot effectively arouse the interest of the students, resulting in low enthusiasm for completing the homework and the phenomenon of coping with plagiarism.

2.3 Teaching Evaluation

The assessment is centered on the examination. The process evaluation is not enough to fully and truly reflect the learning effect of the students. The phenomenon of the sudden test makes the students do not have a thorough understanding of the knowledge. There is a drawback of forgetting after the test. The results are centered on the test scores, and the form is too simple, so the students' sense of achievement is not enough, and the ability improvement is not significant.

For these stubborn diseases of traditional teaching mode, the OBE mode provides teachers with new ideas. This article will carry out the reform of the OBE concept of the course Introduction to Information Management from the aspects of teaching objectives, teaching content, learning methods, evaluation of learning results, achievement of course objectives and continuous improvement.

3. Methods of Curriculum Reform based on OBE

3.1 Teaching Objective Reform

The teaching objective of the OBE concept emphasizes ability development, and is no longer limited to mastering textbook knowledge. The achievement of this goal needs to be determined according to the talent training goals of the student's major. The professional training goal is a general description of the qualities and abilities that the student should possess about five years after graduation. The professional graduation requirements are determined according to the professional training goals. The professional courses are determined according to the graduation requirements. The curriculum system should be able to map the graduation requirements, so as to determine the graduation index points corresponding to the relevant courses, and finally determine the course goals according to the allocated graduation index points.

Based on the above system, the course objectives of this course are determined: through the study of this course, students can establish the basic knowledge framework and academic system of information management science. Also they can understand the basic theory of information resource management and master the basic laws, general rules, general methods and techniques of information

resource management. They can understand the overall development trend and research progress of the information management discipline, so as to cultivate the ability of students to manage information resources. Therefore, the teaching objectives of the course can be divided into two levels:

1) Students can master the basic principles, methods and techniques of information resource management, which is in line with the professional training objectives. Therefore, this goal is mainly to cultivate skills and practical ability.

2) Cultivate the professional interest of the students and the theoretical literacy in this field, which lays a theoretical foundation for the study of post-service courses.

3.2 Teaching Content Reform

The reform of the teaching content of the OBE concept is to select the teaching content according to the course objectives, not to decide the teaching content according to the textbook. Based on the teaching objectives and the development of the students, the reasonable teaching content is determined according to the ability requirements in the teaching objectives, and the concept of training applied talents is carried through throughout.

Based on the construction positioning of the Engineering University, this course should be optimized according to the needs of the army. It can reduce the content of partial memory and more theoretical chapters and increase the content of partial application and more practical chapters. Besides, it can introduce actual combat examples and cases and establish relevant teaching case database and information teaching resource platform in order to increase students' interest in learning.

In addition, taking the previous innovation design competition and the "second classroom" as the meeting point, through the interpretation of the theme of the competition and the analysis of classic award-winning works enable students can master the ideas and methods of information management. Simultaneously, through introduce modern information management methods and innovative management methods allow students to have theoretical support, case guidance, and results analysis for innovative activities, which can mobilize students' enthusiasm to participate in information management related competitions in all aspects. Due to the limited course hours, the introduction of content should be systematic and purposeful. Introducing new teaching content will inevitably reduce the traditional teaching content. This part of content allows students to learn outside the classroom, or to encourage students to learn independently by means of micro-classes, MOOCs and other forms.

3.3 Teaching Method Reform

The core of the teaching is the teaching process. The OBE concept emphasizes that students are the center. The teacher should continuously stimulate the students' curiosity and mobilize the enthusiasm of the students, and make the students change from to what I want to learn, which requires teacher adopts a learning method suitable for the students according to different teaching content. Thus through this way, teacher can guide the students to change from learning happily to learning easily. To stimulate students' curiosity and interest in courses, teachers need to continuously accumulate and update teaching cases in the work, especially some cases around daily life that students can reach. Guided by questions from shallow to deep, let students actively explore related principles hidden behind the appearance. Secondly, a learning group should be set up for cooperative learning, which can not only promote each other, but also can take advantage of the individual strength of different students. After all, not every student has a strong self-control ability. They can exert their own specialty in cooperative learning and learn and grow mutually together. Finally, the group can take a variety of methods such as case study, investigation study, seminar study, role-play study, autonomous study, on-site study, lecture study and online learning based on the content of the course to allow students to fully participate in the study. The learning methods can be diversified, but results should be formed in the learning process and a platform for the students to show results should be created. In the classroom, students should be given the opportunity to display the learning results of the group. Through the formation of learning report materials or classroom displays, different groups can evaluate and learn from each other to improve the student's dominant position in learning. For the results that cannot be displayed in the classroom, you can use the Yu Classroom or online

courses and other information interaction platforms to share and communicate. The results display section prevents the students from muddling and forms a good learning atmosphere for mutual learning through sharing and communicating.

3.4 Teaching Evaluation Reform

The learning results of the OBE concept should include staged results and final learning results. In particular, we must pay attention to the staged learning results. Only when all stages of learning are implemented carefully will the final learning achievements be rich and substantial.

The teaching objectives, teaching content and learning methods in this course are different. The staged learning results can also be summary of case study, reports of research study, reports of seminar study, e-learning reports and other related materials except homework according to the different learning methods used in the course content. For these relevant reports, the teacher only gives basic requirements such as writing outlines and do not make specific requirements for the content and presentation form, which gives students a free space for creativity.

A set of specific, reasonable, and operable evaluation standards should be formed for the evaluation of the staged results. For example, some subsections are reserved for students to learn independently. The team members divide the work reasonably to check the data, collect materials, produce slides, integrate content, and perform exercises within the group. Finally show it in the classroom. According to the evaluation standards, students and teachers both participate in the evaluation together. The students score other groups in groups and reporting group makes self-evaluation, and then average the scores of the students according to the group. Finally take the average and the score given by the teacher. The 50% weight is used to calculate the score of this achievement. The evaluation standards can be classified as four levels as follow:

(1) Excellent (9-10 points): The students have a thorough understanding of the selected chapters. They make PPT excellently and have rich materials, complete content, clear logic and strong visibility. They have clear ideas, generous manners and concise language in their speeches. And they have a clear division of teamwork and strong communication skills.

(2) Good (7-8 points): The students have a good understanding of the selected chapters. They make PPT good, have full materials, complete content, clear logic and strong visibility. They have clear ideas, generous manners and concise language in their speeches. And they have a clear division of teamwork and strong communication skills relatively.

(3) Fair (5-6 points): The students have a fair understanding of the selected chapters. The PPT they made is okay and the content is relatively complete. The logic is not clear enough and the visibility is bad. And they have a relatively clear division of teamwork and general communication skills.

(4) Poor (0-4 points): The students do not clearly understand the content of the selected chapters. The quality of the PPT was poor. The logic was chaotic and the content was incomplete. The visibility was poor and the speech ideas were unclear. The expressions were not smooth and the teamwork division of labor was not clear. There are no active participation and poor ability of communication skills.

The OBE concept focuses on process results. The proportion of process assessment should be appropriately increased. The motivation of students to participate in learning should be increased through appropriate incentives. The evaluation standards should also allow students to participate in the formulation in order to improve the subjective status of the students, and make the students be the masters of learning.

3.5 Continuous Improvement of the Course

Achievement of course's objective should consider the entire process of course's operation. All kinds of assessment materials of the course should be included in the calculation, and the achievement of course objectives should be evaluated one by one, which are used as the evaluation basis for the achievement of relevant index points. According to the analysis and comparison of the achievement of the goal, it's necessary to find out the weakness of the course objective and analyze the reason deeply. Then try best to adjust the method in time and constantly improve the evaluation index system.

In addition, students' evaluation of the course learning must be understood in time after the course. It's a good idea to collect the students' views on the problems in the course learning process and adopt the reasonable suggestions from the students. The learning methods that students like to hear should be further standardized and expanded. The learning methods with low acceptance or poor learning effects should reflect on the reasons and find the crux of the problem. Finally, continue to explore and continue to adjust in the teaching of the next year to promote the sustainable development of the achievement index in a good direction.

4. Conclusion

According to the OBE concept, the Introduction to Information Management course has been reformed and discussed in four aspects: teaching objectives, teaching content, learning methods, and evaluation of learning results. All above in order that the enthusiasm of the students for course learning continually increases and the participation in the classroom continues to rise.

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Training Model Research of Civil Engineering Professional Masters based on Industry-University-Research-Application

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Abstract. To provide high-quality professional talents for civil engineering, the university-industry cooperation training models for existing civil engineering graduate students and existing problems are summarized and analyzed carefully. In addition, the industry-university-research-use training mode and key programs of civil engineering master are put forward, and the implementing conditions are summarized. Finally, in order to investigate the effect of this training mode, several civil engineering postgraduate students were trained based on this industry-university-research-use mode and their development was tracked. Their good job opportunities and development speed are good proof for the reasonability of the industry-university-research-use training mode. The research results can also provide reference for the professional masters' training of similar engineering applied major.

Keywords: Professional Master; Industry-University-Research-Application; Civil Engineering.

1. Introduction

At present, China's graduate students can be divided into academic and professional according to the different training objectives, the purpose of which is to train professional graduate students set up with a solid theoretical foundation and adapt to the actual work needs of various industries Application-Type high-level professionals[1-2], such as engineers, physicians, teachers, lawyers, accountants and so on. The training process should be guided by professional practice, pay attention to practice and application, and focus on the close integration of academic and professionalism, and cultivate high-level talents who have received formal and high-level training in professional technology. However, by the realistic conditions and the current national conditions, many universities in the design of graduate courses, the choice of research topics, research methods and models, academic and professional graduate training process are not much difference, mostly biased academic graduate training mode, so it is difficult to achieve the purpose of training professional and Technical by formal high-level training of high-level personnel[3]. It is difficult to provide enough high-quality professional talent for civil engineering, and students often take a long time to enter the working state after graduation.

Therefore, to enhance the quality of civil engineering professional graduate students training direction, by exploring the direction of civil engineering professional graduate students with training mode, will enhance the scientific and technological content of civil engineering industry, promote the field of civil engineering toward high-tech, low energy consumption, low pollution direction of transformation, and promote the industry to provide important support for the conversion of old and new kinetic energy.

2. The Status and Existing Problems of Joint Training of Professional Master Students

2.1 Status of Joint Training of Professional Master

Developed countries graduate education School-enterprise cooperation training has a more mature experience. Stanford University in the United States is the first start of School-enterprise cooperation to train graduate students practice attempts, and it will be closely combined with engineering teaching and industry, so that the universities not only play the role of knowledge transfer, but also play the role of affecting industrial and economic development. Stanford University has also created a

collaborative graduate education model, that is, schools and enterprises jointly train graduate students of School-enterprise joint training model. In France and Germany and other European countries, the master is a one-year, and engineer education is a three-year. French engineer education attaches great importance to the training of practical aspects. In addition to the accompanying course of the experiment, there are fixed internships every year, and each stage of the practice content has a clear purpose. These School-enterprise cooperation models have played a positive role in promoting the economic development of countries[4].

In fact, carrying out “joint training” is not a new concept in the field of domestic graduate education. As early as the beginning of the establishment of new China, universities and research institutes have carried out cooperation, learn from each other to give full play to their respective advantages of joint training of graduate students, and our country has also issued relevant documents to support and affirm this. In 1963, the interim regulations on the training of graduate students in institutions of higher learning (draft) were issued, and the Central Ministry of Higher Education unified planning and leadership from training units, admissions plans to professional settings, which further standardized the training system of graduate students, including the provisions on “university specialized colleges to set up research departments, with the Chinese Academy of Sciences and other research institutions”, to a certain extent, they reflect the characteristics of resource sharing in the training process of graduate students in universities and research institutes[5]. In 1989, the state Education Commission issued the notice on strengthening the training of Master's degree in engineering in engineering types, encouraging factories and Mining Enterprises, engineering construction and other units to cooperate closely with institutions of higher learning, providing scientific research projects, funds and necessary working conditions, and deepening the training system for Master's degree in engineering. In 1992, the “industry-university-research joint development project”, jointly organized by the former state economic and Trade Commission, the Ministry of education and the Chinese Academy of Sciences, was officially launched, providing a system guarantee for the development of industry-university-research joint training of graduate students[6]. Into the 21st century, with the development of universities and research institutes, they both are more closely linked, such as sharing mentor resources, joint courses, scientific research cooperation and other ways to form based on their own characteristics. They play their own expertise of cooperation, and there is a scale of joint training conditions gradually mature. Since 2009, China's Ministry of Education officially promulgated the notice on the addition of full-time professional master's degree, major domestic universities gradually carried out research and discussion on the reform of Professional Master's degree training mode, which mainly focused on two aspects of the Professional Master's degree curriculum system, Training Program Reform and School-enterprise joint training base construction and management[7].

After nearly 10 years of development, major universities have basically completed the reform of Professional Master's degree course system setting and training programs, reducing the difficulty of some disciplines basic courses, increasing the practical courses closely related to professional development, the development of topics reflects the requirements of Professional Master's students in the experimental and practical aspects. However, the construction of School-enterprise joint training base is still in the stage of exploration and development. At present, it can be summarized as three kinds of joint construction base model[8], school-level base, College-level joint construction base and the practice base of the mentor team.

2.2 Problems in the Training of Professional Master in Civil Engineering

In the three joint training base model, the practice base model of the mentor team is more suitable for the joint training of civil engineering professional master students. However, due to the Research Foundation, the number of projects, a series of factors, the existing civil engineering professional master's degree based on the tutor team practice joint training is still very little [9], and the existing practice training model also has a lot of problems.

Students are difficult to contact the core problems of the project, due to the professional direction of graduate students, construction engineering experience and civil construction project duration

requirements and a series of problems limit, many graduate students in the enterprise base training process, enterprises dare not give the core problems to students, enterprise mentors or training people do not have time to guide them. Therefore, many graduate students are still unable to get in touch with core projects in the training process of enterprise base, and are mostly engaged in some marginal work, unable to truly understand the key issues to be solved in enterprise projects, and unable to get adequate professional training.

Enterprise mentor management quality is difficult to guarantee, and the current enterprise mentor guidance for graduate students is based on obligations, personal emotions and moral level of work, without standard enterprise mentor assessment standards and incentive system, coupled with the difference in the level of enterprise mentor's own, resulting in enterprise mentor guidance and supervision of graduate students' uneven quality. It directly affects the training quality of professional postgraduates.

Business practice opportunities are unstable, and mentor team practice base model largely depends on the mentor and enterprise cooperation projects, often according to the needs of cooperation projects and the relationship between the mentor and the enterprise to develop the corresponding graduate practice training links, and once the end of the project, or the mentor did not establish a good and stable business cooperation relations, it is difficult to guarantee that the professional master's graduate students they supervise have enough business practice opportunities.

The assessment mechanism is not perfect. The final assessment of existing professional master's students is divided into two parts of the course results and dissertation. Among them, the course results are still assessed by the credit system, and the thesis assessment mainly includes the opening, mid-term and defense of several links, mainly in the form of reports and papers. There are no specific assessment requirements for the practical part, and there is a lack of assessment methods and mechanisms to encourage and urge professional master students to participate in enterprise practice, reducing the ability of graduate students to find practical problems, solve practical problems, cannot achieve the purpose of Professional Master students to enter the working state in the short term after graduation.

3. Discussion and Improvement of Production-University-Research Training Mode

As a strong discipline of engineering application, civil engineering professional graduate students with the production-study-research model training should pay more attention to the solution of practical problems, should maximize with the needs of professional positions, research and solve practical problems in engineering, and constantly improve self-learning ability, hands-on ability, ability to solve practical engineering problems and engineering management ability in the course of training. The author believes that the training mode of Professional Master's degree in civil engineering can be divided into the following stages.

3.1 Basic Training Stage of Colleges and Universities

According to their own research characteristics, the needs of cooperative enterprises and the actual ability of graduate students, the initial development of the research direction of the project, graduate students, under the guidance of the tutor a graduate students, choose the appropriate professional courses, and complete the graduate-level basic courses in colleges and universities according to the needs of the subject. During this period, graduate students mainly have professional course learning, literature review summary, and regularly carry out these activities through the preparation of reports and reports in the form of subject exchange with the tutor according to the literature and personal understanding. During this period, the tutor should regularly check and guide the work of students, cultivate students to find problems, self-learning to solve problems, complete the role transition from undergraduates to graduate students, prepare for their entry into the enterprise joint training base.

3.2 Enterprise Engineering Case Tracking Stage

After the completion of the basic training stage of the study in colleges and universities, graduate students directly step into the enterprise front-line, and the graduate enterprise training stage of the project case is determined by the enterprise tutor according to the pre-agreed research direction. During this period, the instructor of the company or a designated professional will guide the graduate students in practice to ensure that graduate students complete tracking engineering cases, contact with core issues, to avoid duplication of simple edge work, with the first perspective to understand the key issues in the field of professional, and to ensure its safety.

3.3 School-enterprise Collaborative Training Stage

According to the study and practice in the enterprise, the graduate students put forward the key problems that need to be solved in practice. And through the remote collaborative guidance mode, school mentors corporate mentors and graduate students together to discuss the necessity of the problem, scientific, feasibility and practical value of the application of engineering, determine the final research topic, and develop specific research plans and solutions for the topic. During this period, graduate students regularly report on the subject, remote collaborative discussion, on-campus mentors and corporate mentors to guide the progress of the subject.

3.4 Stage of Self-improvement and Transformation of Scientific and Technological Achievements

Under the guidance of college mentors and corporate mentors, graduate students through experiments, simulation, measurement and a series of basic research means carry out self-research on the subject, ultimately give solutions, and improve the ability to solve practical problems. During this period, the school tutor and enterprise tutor should evaluate the feasibility and innovation of the solution, determine the feasibility of the first time after the transformation of scientific and technological achievements landing, demonstration and application, to verify the feasibility of scientific and technological achievements. And graduate students complete the application of related technical achievements, such as patents, industrial law and other intellectual property rights to declare the project, and cultivate graduate students' awareness of intellectual property protection and scientific and technological achievements to summarize and enhance the ability.

3.5 Final Assessment Stage

Graduate students complete the final thesis under the joint guidance of on-campus tutors and corporate tutors and organize defense. The defense committee shall be composed of university teachers and relevant professional enterprise engineers, taking into account graduate students' thesis topic selection, basic theoretical level, advanced degree of professional and technical, practical engineering application value and the ability to express their personal reports and other factors, to review them, and determine their graduation results.

During the above-mentioned production-university-research training process, enterprises, universities, graduate students, and tutors have cooperated very well, from the perspectives of course selection, topic setting, organizational demonstration, theoretical analysis, practical research, summary of results, and thesis writing. Postgraduates follow up the whole process, exercise the ability of self-discovery and solve practical problems to the greatest extent, greatly shorten the transition period for professional postgraduates from school to work, and greatly increase the conversion capacity achievements of postgraduates as the main research force. Whether from the training of personal ability, enterprise demand, or the application of scientific and technological innovation, relative to the traditional training model has obvious advantages.

4. Application Effect Analysis of Production-University-Research Mode

In order to better explore the effect of the above-mentioned production-University-Research Training Mode, the author has cooperated with China State Construction Engineering Co., Ltd. to

conduct a number of civil engineering professional master graduate students' industry-university-research training models. According to the needs of enterprises and project requirements and graduate students' own characteristics, develop some application-oriented issues such as “a ultra-thick floor support construction load and fine analysis and research”, “hydraulic self-climbing mold structural stability research and optimization”, “based on Deep Bay huiyun Center ultra-thick floor steel temporary support stability analysis” and other engineering problems are closely related to the enterprise. Besides, tracking, research, monitoring and other practical work in the first scene of the project are carried out as shown in Figure 1.



Figure 1. Professional Master's Program Practice

Throughout the training process, these post-graduate students according to the needs of the subject under the guidance of the tutor for the selection of basic courses and Literature Collection, review, collation, fully learn the experimental design, simulation, on-site measurement and other basic scientific research skills. In the whole practice training link, graduate students make full use of their own research foundation, through simulation, measurement and other means for the solution of key problems in the project provides a great help, and timely summary of the work, independent completion of the work report and related academic papers written. Its self-learning ability, the ability to deal with the problem on-site, interpersonal skills, the ability to summarize the results have been fully exercised, but also for the safety of the site construction and related key problems to solve to provide help.

After graduation, some of these Graduate students directly step into the construction enterprise technology center and other scientific research departments engaged in professional and technical work. There are some into the largest real estate enterprises engaged in management work, but whether it is engaged in technical work or management post work, basically they can quickly enter the role in their respective positions due to the early basic learning and practical learning, and they have been recognized by the employer, so its development speed is relatively fast.

5. Conclusion

As a typical applied discipline, the training of high-level civil engineering professional personnel is essential, and the production-University-Research Training Mode is an effective way to train civil engineering professional master's students, but also the main development direction of modern higher education. It has obvious advantages in improving students' self-learning ability, on-site problem handling ability, practical hands-on ability, management and collaboration ability, and the ability to

summarize the results. However, this production-university-research training model currently in the field of civil engineering is still in the initial stage of development, and its wide-ranging implementation requires collaborative efforts of students, tutors, universities, enterprises and other aspects, and the corresponding system and policy as a guarantee because a university and an enterprise can't complete independently, but also there is a need of continuous improvement.

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From the Concept to Brain Imaging

-- How Culture Influence the Self under Self-reference Effect

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Abstract. The psychological representations of “the self” by humans have long been thoroughly studied in the field of psychology. Behavioral researches have revealed that there are distinct structural differences between the concept of the “the self” in the Eastern and Western cultures. In recent years, neuroscience has begun to study the neural mechanism of self-related information processing with the help of brain imaging. It aims to explore whether there is a cognitive neural representation of culturally specific Self-concept. Cross-cultural neuroimaging studies have shown that there are indeed cultural differences in Self-concept in terms of the perception level and personality characterization. This article reviews the research progress in this field, and how the results from these researches could help us to understand the neural mechanisms behind the Self-conceptual representation of cultural differences.

Keywords: Self-concepts; Self-reference Effect; Culture; Brain Imaging.

1. Introduction

The idea of "the self" had become an enduring topic several hundred years after its first creation. The early efforts by psychologists were concentrated on establishing the Self-concept and its structure. T. B. Rogers was the one who established the Self-reference effect theory, which suggests that whenever the situations are applied to themselves, people appeared to recall more details than they are applied to others. As time went on, more and more experiments that aimed to study this theory were introduced. These studies demonstrated that Self-reference is a dynamic process of the encoding process. When Self-reference is acting as a part of the human information management system, the self takes up the role of a superordinate scheme profoundly involved in processing, reading, and memorizing personal knowledge. An increasing number of researches have demonstrated that the diverse way of thinking between Westerners and Orientals results in gaps between the two groups, not just in perception and focus, but also in advanced social cognition, such as self-representation. In this article, in order to answer the question that how culture influences the self under Self-reference effect, the definition of "the self" will first be introduced; then the role of the self as a cultural product will be discussed; after that, the Self-reference effect and several relevant concurrent experiments will then be introduced; in the end, the progress made in brain imaging on the self will be displayed. This article is mainly focused on the thesis published when the Self-reference effect was popular and Discuss it from a couple of different angles.

2. The Definition of ‘Self’

The concept of “the self” was first proposed by William James in his work *Principles of Psychology* in 1890. James discusses the composition of what constitutes "the self" and the distinction between “Me” and “I”, in which "Me" corresponds to the self as an object, and "I" reflects the self as a subject. In this theory, the self-consciousness is the knowledge of "I" about "Me".

After James's theory came out, scientists started to explore the deeper meaning of “the self” and its structure. For example, one of the most famous models of the self is the multifaceted, hierarchical model of Self-concept developed by Shavelson et al.[1]. In this model (Fig. 1), Self-concept is organized in a hierarchical structure, with general Self-concept at the apex, Academic and non-academic Self-concept were placed under the apex as two subareas of Self-concept (e.g., academic - English, history, mathematics, science), and the bottom of the hierarchy is where situation-specific

perceptions of behaviors sit. The general Self-concept is stable, but as the level descend, the Self-concept becomes more and more specific, and therefore unstable.[1]

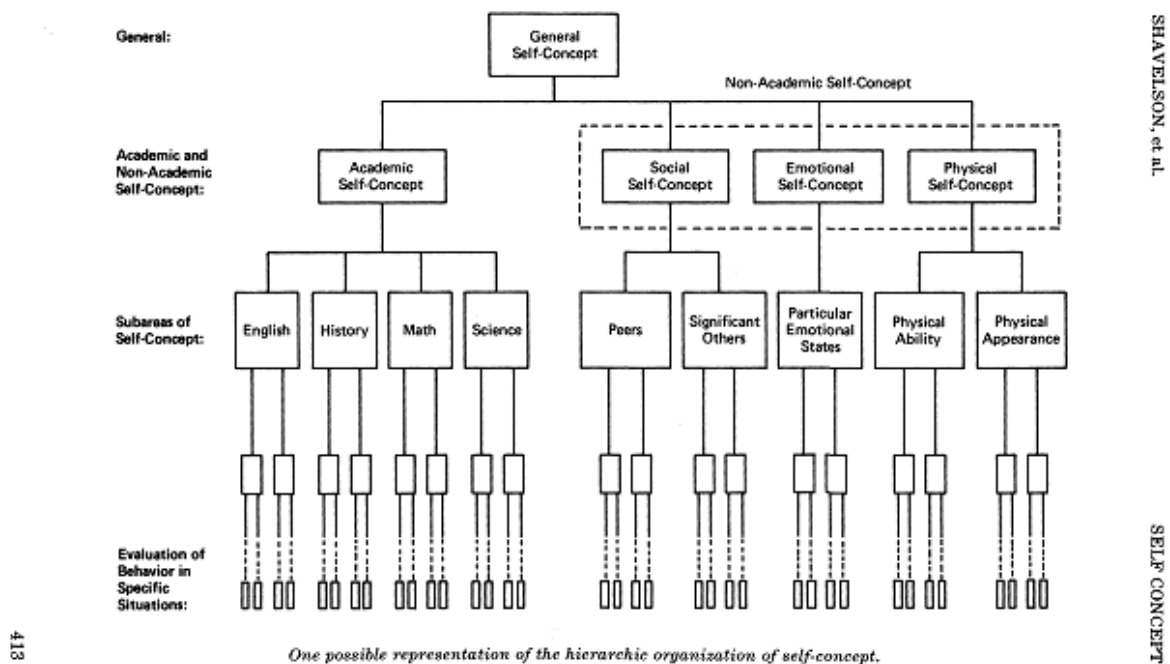


Figure 1. The multifaceted, hierarchical model of Self-concept

More recently, based on the data and experiments in Neuropsychological studies, Klein et al.[2] suggested that “the self” can be divided into six different and functionally distinct systems: episodic memories of one's life; representations of one's personality characteristics; knowledge of one's life; continuous-time experience of one's life; personal agency and ownership awareness; the ability of self-reflection.

The distinction of "the self" by Klein et al.[2] is based on neuropsychological data. Patients with various brain injuries may lack 1 or 2 of the above 6 components. This method provides a new and effective way for us to study and understand human minds: by interpreting the data from neuroscience, it is possible for us to analyze the individual components of the self, and then gradually piece them together to form a complete view of the self. From James's theory to Shavelson's model, then to Klein's system, the definition of "the self" is getting more and more experimental and clear.

3. The Self as a Cultural Product

The self at the individual level has been introduced in the previous section. The role of self at the social level will now be discussed. Markus and Kitayama [3] put forward their view on the influence of culture on “the self”, and they further described the concepts of independent self and interdependent self (Fig. 2). They believe that culture affects the self-construction of individuals (Table 1). More specifically, they believe that most Westerners have the construction of an independent self, as the culture of the West emphasizes the independence and uniqueness of individuals. In contrast, most Orientals have the development of interdependent self, emphasizing attribution, belonging, and fitting in [3]. The difference in self-construction allows individuals to have different reactions and behavioral performances at emotional, cognitive, and motivational levels.

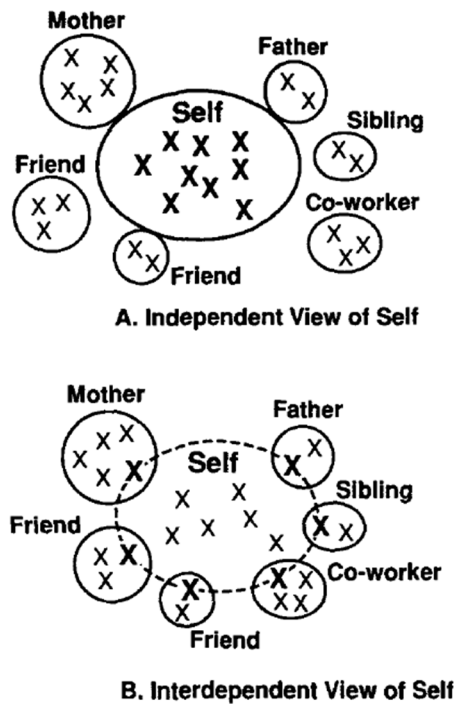


Figure 2. The view of independent self and interdependent self

In their theory, Markus and Kitayama[3] also believe that Western culture emphasizes the independence of the individual as it attaches importance to the individual's independence and integrity and emphasizes that the individual must understand the inherent qualities of the self and express themselves completely. Western cultures are mostly based on this basis when understanding or defining individuals. Regarding the self-definition, the individual is separated from others and the social situation. The primary task of an individual is to be unique and to distinguish oneself from others: the individual must be responsible for themselves and pursue their personal goals and achievements. For Asian individuals, however, the culture emphasizes the relationship between the individual and the social environment, which focuses on fit in and ensure the harmony between "the self" and the society. The individual must be flexible, has plasticity, and are able to cooperate with the social environment. They must also pay attention and be aware of other's needs and goals, understand others' ideas, and take into account What the current social situation demands. Therefore, Oriental culture is very different from the West in understanding or defining individuals. The personal value of Asian individuals is no longer just the inner integrity of the self, but interpersonal harmony with the community. It promotes the achievement of others' achievements and goals.

Table 1. The differences between western people and Asian people on the self

	WESTERN PEOPLE	ASIAN PEOPLE
THE PRIMARY TASK OF AN INDIVIDUAL	To be unique	To be a part of the group
THE VALUE OF AN INDIVIDUAL	Be responsible for oneself and pursue his personal goals and achievements	To cooperate with others, and take into account the requirements of social situations
CULTURE	Independent	Interdependent

The view that the self is a cultural product has been widely recognized by social psychologists and cultural psychologists. The two self-schema theories of Markus and Kitayama[3] that we discussed above is one of the evidences of social level. When comparing the self-structure of Orientals and Westerners, other studies[4][5] have shown that there is an inherent separation doctrine in Western culture. A general requirement of the Western culture is independence from others, and to discover

and express their unique attitudes. Meanwhile, Orientals show a tendency to include the inner circle in the Self-concept, and the degree of relationship with the self is defined by the self [6].

The difference between the independent self and the interdependent self shows that at the social level, this difference caused by different cultures could affect our psychological behaviors. In other words, this difference in social level can lead to the recognition of the independent self and the interdependent self. However, although psychologists had discussed the role of the self in relation to individual empirical memory, it was not until the late 1970s, with the Self-reference processing paradigm proposed by Rogers et al., that the relationship between self and memory was studied in experimental ways.

4. Self-reference Effect

The Self-reference effect is a tendency that people tend to encode information differently according to whether they participated in the event that is relevant to the information. When people are asked to remember certain information about themselves, the rate of recall is higher. In fact, the "Self-reference" method is an extension of the deep processing paradigm of memory proposed by Craik and Lockhart [7] in the field of self-research. The experiment usually requires the subjects to complete the tasks in multiple angles, such as Self-reference processing, semantic processing, structural processing, or speech processing, etc., after they have completed this part, a series of judgment task will be presented to the test subjects, whom will then be guided to code at different depths through different instructions, such as "Is this word suitable to describe you?" (Self-reference processing); "Is this word commendatory or derogatory?" (Semantic processing); "Is this word in uppercase or lowercase?" (Glyph Processing); "How many syllables is this word consisted of?" (Phonetic Processing) etc. Finally, subjects are requested to participate in an unexpected free recall and recognition test to get them to recall or recognize the words presented in the judgment task. The results show that the memory performance of Self-reference processing is significantly better than other encoding forms.

In other words, research [8] shows that when adding self-referencing materials to standard processing-level tasks, as the degree of Self-reference materials to be remembered varied, Self-reference effect (SRE) can be observed. For example, for a test subject with the Western background, a typical result is: the memory performance in the recognition test of Self-reference (e.g., "Can this personality adjective describe you?") is better than the performance in the recognition test of their mother's reference (e.g., "This personality adjective can describe your Mother?"), others' references (e.g., "Can this personality adjective describe Jimmy Carter?"), and the results of general semantic processing [9][10].

After Rogers proposed the paradigm of Self-reference, the Self-reference effect has aroused the interest of many researchers, and a large number of confirmatory and exploratory studies on the internal mechanism of the Self-reference effect have been conducted. Klein et al. [8] summarizes many studies on the Self-reference effect of Westerners and pointed out that with few exceptions [11] [12] [13], the use of descriptive tasks to make judgments about familiar others (such as "Can this adjective describe your parents") will result in worse performance than Self-reference [14] [15] [11] [16] [17][10].

In order to get more explicit results, Conway and Dewhurst [18] introduce the R/K paradigm proposed by Tulving into the self-referential effect. In a recognition test, the subjects firstly had to identify whether an item was old or new, if the answer was old they had to indicate then which is based on recollective experience ("remember" responses), and which is recognition based on another basis ("know" responses). The ability that distinguishes between recollecting a personal experience and recalling an impersonal fact, which can be quickly done by any ordinary individual, makes it possible to define the operation of autonoetic and noetic awareness according to the "remember"/"know" (R/K) paradigm [19]. Therefore "R" can represent self-awareness, and "K" can represent general awareness.

A typical result of Western subjects shows that the Self-reference test has a higher "R" value and a lower "K" value than the mother's reference and the other's references. However, behavioral research on Self-reference effects completed by Chinese subjects showed different results. Mother-reference and Self-reference are very similar in terms of memory performance and self-awareness[20]. Another study shows father-reference had the same good recognition memory as Self-reference and mother-reference, but they were all reliably better than famous-person-reference in R response[21].

The Self-reference effect provides an opportunity for researchers to examine "the self" from the perspective of cognition (memory). However, it also leads to a debate among cognitive psychologists and social psychologists. It seems complicated to solve this problem only by behavioral research. So, researchers turned to brain imaging research to try to find Self-reference processing of special brain area activities.

5. Brain Functional Imaging of the Self

Since the pioneering research of Craik et al.[22], people's interest in how does brain imaging relates to "the self" has dramatically increased, a common theme of these studies is how to position "the self" in the brain. The logic of most research is that since Self-reference processing is superior to other forms of processing, we should find out if this advantage manifest in brain activity, in other words, we should find out if the self has a dedicated area of brain activity. Based on this hypothesis, people began to use cognitive neuroscience methods, such as functional magnetic resonance imaging (fMRI), positron emission tomography (PET), etc. to investigate the brain activity induced by the self from the beginning of this century.

Typical studies refer to self-processing adjectives of personality traits or to judge a person's own personality traits[22][23]. This type of research is derived from the results of extensively validated behavior experiments – Self-reference processing performs better than other methods (Self-reference effect). Here, the experimental paradigm of the Self-reference effect can still be used as a reference. Although the self is a highly complex unitary, involving multiple dimensions from perception, memory to imagination, using this paradigm to test Self-reference processing, to position "the present self" in the brain is made possible.

The starting point of this research is the hemispheric encoding/retrieval asymmetry model (HERA), which suggests that the processing of episodic memory mostly occurs in the left frontal lobe, while the extraction of episodic memory mostly involves the right frontal lobe[24]. They believe that the main reason memory extraction often causes activation of the right prefrontal lobe is that this area is responsible for the so-called "retrieval mode", which is closely related to past events and the self.

Craik et al.[22] used the positron emission tomography (PET) to study the self. Meanwhile, other research[23][25] used fMRI. Although these two techniques are very different, the results of activation are similar. The most significant activation occurs in the medial prefrontal cortex or cingulate gyrus.

Besides, Huff et al.[26] found that Asian Americans induced more vigorous neural activity by reference to mother processing than reference self-processing. Han et al. found that when compared with the other people's reference conditions, Chinese participants shared similar neural activity in the medial prefrontal lobe when judging the traits of self, spouse, and children. In another study done on Chinese participants, the mother-referential processing also yielded activations of the medial prefrontal cortex, which indicates that the mother and the self may have a shared brain region in the medial prefrontal cortex.

From the above research, we discovered that the difference between the East and the West is consistent at the social, cognitive, and neurological levels: the difference between the independent self and the interdependent self at three levels is the difference of the tendency in separation between the self and the others. At the social level, for the independent self, the boundary between the self and the non-self is between the individual and others. However, for the interdependent self, the boundary between the self and the non-self is between the in-group member and the non-group member. At the cognitive (memory) level, for the independent self, the processing of the Self-reference has better

memory performance than the processing of the mother, father, or good friend, that is, the role of the self in the memory is different from the role of others in the memory. However, for the interdependent self, the processing of the Self-reference and the processing of the mother reference, father reference, or good friend reference have similar memory performance.

6. Conclusion

No matter from the perspective of philosophical thinking or psychological process, the concept of “the self” varies significantly in different cultures. Recent studies on Self-reference effect and brain imaging have further supported this view and provided evidence for cultural variations in the self-processing cognitive neural processes. The cultural differences of this self in neural representation are evident in both the field of perception and minds. The East Asian cultural environment's emphasis on the connection between individuals has led to the fusion of self and intimate others, such as mothers, in neural representation. In contrast, the dominant position of the independent self in Western culture has contributed to the separation of the self from others in terms of neural representation. These brain imaging studies provide substantial evidence that there are differences in the experience and conceptualization of the self in different cultures. The cultural influence of the self-processing mechanism reflects the inherent plasticity of the brain and the contextual dependence of social cognition.

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Exploration and Research on the Promotion of Urban and Rural Integration Development by Track Specialty Group

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Abstract. This paper takes Chongqing Jiangjin rail transit professional group as an example to explore and study the role and characteristics of rail transit professional group in the process of talent training for the integrated development of urban and rural areas. the paper elaborates the development mode of promoting the integration of urban and rural areas in the local and other regions of Chongqing in the process of training talents of rail transit specialty group in higher vocational colleges.

Keywords: Urban-rural Integration; Promoting Development; Orbital Specialty Group.

1. Positioning Goals of Professional Groups Serving Urban-rural Integration

Thousands of students directly study rail transit in Chongqing Jiangjin Universities, majoring in rail transit engineering technology, rail transit operation management, rail transit operation management, rail transit equipment maintenance and so on, covering all kinds of work in the whole rail industry. Rail transit can be divided into construction plate, operation plate and operation plate, and the positioning of related professional groups in higher vocational colleges in Tianjin has summarized the talents needed by these three plates [1].

Most of the students trained in related majors in Chongqing Jiangjin colleges and universities serve the southwest, especially the graduates who are rooted in the industrial chain of Chongqing rail transit, which lays a solid foundation for serving rail transit and promoting the integrated development of urban and rural areas. the cultivated students can not only become the talent support for the operation and opening of Jiang Jumper Line, but also serve the rail transit of the whole country.

2. Measures Taken by Professional Groups to Promote Urban-rural Integration

2.1 Cultivate Artisan-oriented Talents to Help Integrate Urban and Rural Development

As a talent serving rail transit, it is the most basic occupational requirement to master solid skills. Only with solid technical skills can we serve Chongqing rail transit line 5 extension line well, to better promote the integrated development of urban and rural areas and drive economic construction. Therefore, the related professional groups in colleges and universities have been advocating hard training technology, and paying attention to the cultivation of students' practical ability in the process of training students[2].

From the point of view of the cultivation of such majors in higher vocational colleges, it can be divided into two categories: one is off-campus practical training, the other is on-campus practical training. According to the statistics of recent years, in the off-campus practical training, the training of technical skills is directly carried out on the actual position, mainly relying on the units such as Chongqing Railway Transportation and Chengdu Railway Bureau. The other kind of training is the training of conventional practical skills through the on-campus training base. Moreover, in order to further promote the development of vocational skills, colleges and universities also actively undertake a number of skills competitions to promote training, so that students of this major can practice through competitions to temper their skills and learn solid track technology[3].

2.2 Get Involved in the Construction of New Lines in Advance to Reserve Talents for Urban-rural Integrated Development

At present, Chongqing rail transit line 5 extension line is in full swing and has entered the electromechanical installation stage. From the actual situation of the project site, in order to seamlessly dock the rail transit site, it is necessary to intervene in advance to cultivate students' technical skills in advance [4].

In 2017, urban rail vocational college students in Chongqing Jiangjin began to assist China Railway No.2 Bureau Group Electric Service Co., Ltd. to carry out the joint commissioning and trial work of Chongqing Rail Transit Line 5, ensuring that the northern section of Chongqing Rail Transit Line 5 was put into operation by the end of this year [5]. Students from related majors work in various positions such as traffic dispatching, station duty, comprehensive debugging, bullet train debugging, business assistant, etc., and participate in the whole process of the northern section of Chongqing Rail Transit Line 5 from construction debugging to test operation, from stand-alone operation to the whole line linkage. The effect of this mode has not only won the high praise of Chongqing Railway Group, China Railway No.2 Bureau Group and other enterprises, but also kept zero accidents in safety management during the intervention process. These early intervention for the opening of Chongqing rail transit line 5 extension line and other lines formed a talent support, for the opening of the line operation guarantee to lay a solid foundation [6].

2.3 Poverty Alleviation with Wisdom, Talent Training and Rural Revitalization

Employment is the priority in poverty alleviation. Chongqing Jiangjin University has become a pilot vocational college of the "Railway Employment and Poverty Reduction" project, and will recruit at least 1,000 students from poverty-stricken counties along the new railway line, including Wulong, Qianjiang, Youyang, Xiushan and Pengshui, in four years from 2019. College at the same time through the extremely poor freshmen report "green channel", increase the intensity of funding for poor students, to ensure that the poor students complete their studies smoothly, boost employment poverty alleviation "railway", by means of their orientation training, arrange the batch students in his hometown near the railway transportation system of employment, through the intellectual poverty alleviation, support through the railway transport system, let students of poor families have stable job and income, also let the families of these children, because their employment, gradually out of poverty, to boost rural revitalization [7].

2.4 Poverty Alleviation with Wisdom, Talent Training and Rural Revitalization

The important purpose of training talents in Chongqing Jiangjin University is to protect the rail transit. For this reason, the higher vocational colleges train many students to join the rail transit industry every year, and the cultivated talents participate in the subway operation in their own ways at different posts in Chongqing rail transit [8]. colleges and universities to actively respond to a nation called on at the same time, for veterans, laid-off workers, migrant workers, the new professional farmers and on-the-job personnel groups such as the opening of a urban rail transit vehicle technology, urban rail transit, communication technology, railway signal power supply technology, urban rail transit operation management and so on in the direction of professional class, develop their technical skills. Through re-education, they can acquire skills and join the major forces of rail transit construction. Meanwhile, it also promotes social and economic development, further improves the economy and greatly promotes the integrated development of urban and rural areas [8].

3. Summary

This paper takes the rail transit specialty group of Jiangjin universities in Chongqing as an example and deeply analyzes the methods of integrating talent training into urban and rural development in universities. the current practice shows that the rail transit specialty group of higher vocational colleges has greatly promoted the development of Urban-rural integration in the process of training rail technical talents.

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Exploration of English Teaching Mode in Applied Undergraduate Colleges in Big Data Age

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Abstract. Liaoning Communication University plans to carry out the pilot of stratified college English teaching practice in freshmen of Grade 2020. As a participant in this teaching activity, before stratified college English teaching, I conducted an investigation in the following areas: stratified college English teaching practice in other colleges and universities, investigated the feasibility of stratified college English teaching in my own university (e.g., students' learning attitude, students' learning methods, teachers' suggestions), and the expected effect of teaching. I hope to provide effective data support for the smooth development of stratified college English teaching in my own university.

Keywords: College English; Stratified Teaching; Investigation Report.

1. Introduction

With the continuous expansion of the enrollment scale of colleges and universities in China, different types of students in various regions are admitted to universities, but the gap between students in English learning foundation and ability is large, and the overall English level of students is uneven. The students in our university are the same. They have different family environments, different learning environments, different English learning bases, different interests and hobbies, different learning habits, different learning goals and motivations, even students of the same major have great differences in English learning. In the face of this situation, how to carry out English teaching more effectively, cultivate students' interest in English learning, improve students' academic achievement, develop the study habit of autonomous learning, make teaching more targeted, and let every student gain something during college, which has become an urgent problem to be solved in front of English teachers.

The aim of this project is to cultivate students' learning ability and improve the quality of English teaching through the implementation of stratified college English teaching.

2. Research on Stratified College English Teaching

2.1 Analysis of the Student's Learning Situation

The students in our university come from all over the country, and there are great differences in students' English proficiency. Especially, the students in rural areas and mountainous areas with relatively backward economy have great differences in English proficiency compared with urban students. Urban students almost begin to learn English from kindergarten, there are Chinese teachers and foreign teachers, the forms of classes are online teaching and tutor. The starting point of learning English for students in the urban area is almost the same as the starting point of learning mathematics, Chinese and other courses. Some parents will also find a tutor for their children to improve their oral ability, examination-oriented ability, learning grammar and so on.

According to the actual situation of the students in our college, the English scores of liberal arts students and science students are obviously higher than that of art students. The former has systematically studied the basic knowledge of English in middle schools, has good study habits, has certain autonomous learning ability and has certain learning methods. but the latter's English ability is relatively weak, lack of autonomous learning ability, only under the supervision of the teacher can complete the learning content, lack of suitable learning methods, only under the guidance of the teacher can keep up with the progress of teaching.

2.2 Analysis of the Results of the Student Questionnaire

In order to understand the students' views on the stratified college English teaching model, the Humanities and Social Sciences College, Liaoning Communication University conducted a questionnaire survey on the undergraduates of Grade 2018 and Grade 2019, analyzed and summarized the results of the questionnaire, and put forward the improvement strategies for the problems summarized. A total of 980 questionnaires were distributed and 936 valid questionnaires were collected, including 425 in Grade 2018 grade and 511 in Grade 2019. This questionnaire includes three aspects: first, the basic information of students; second, the learning needs of college students for English; third, the views of college students on stratified college English teaching. Through the questionnaire, we understand the students' views on stratified teaching.

The results show that 67% of students think that stratified teaching is necessary ; 68% think that after stratified teaching, they will like English more ; 56% think that after stratified teaching, the attention they pay on the class will be concentrated ; 59% think that the form of stratified college English teaching has a positive effect on their own enthusiasm for learning English compared with traditional teaching ; 74% think that there is psychological pressure in stratified teaching class; 61% think that stratified teaching is helpful for them to pass CET-4 and CET-6; 54% think that different teaching materials should be used in stratified teaching classes; 55% of students think that in classes where stratified teaching is carried out, if the same teaching materials are used, the learning content should be different. From the above data, we can see that the mode of stratified teaching is accepted by the majority of students.

2.3 Discussion on Stratified College English Teaching

Since the beginning of 2019, our college has held many special meetings on the stratified college English teaching mode, soliciting teachers' opinions and suggestions, so that teachers can express their own views and discuss its feasibility and implement ability. Teachers also discuss stratified teaching from their own teaching practice. The final conclusion is that because the students' English level is uneven, we should face up to the existence of individual differences, set different teaching goals for students with different learning bases. The implementation of stratified teaching is conducive to differentiated teaching, teaching according to their aptitude, each student can get teaching suitable for their own English learning level, this will make them make much progress, achieve the goal of cultivating students' interest in learning, improve students' English learning level, and improve the quality of English teaching.

2.4 Research to Similar Colleges

In order to get the first-hand materials of stratified teaching and grasp the advantages and disadvantages of stratified teaching practice, we went to the College of Foreign languages of Shenyang normal University for investigation and study. Shenyang Normal University has started stratified teaching for several years and got much experience, in Shenyang Normal University, there are also many art students. It is the appropriate object of study and reference for our college. Through this investigation and study, we learned much about stratified teaching model, like "how to stratified", "how to teach", and "how to exam". Through the investigation and study to the College of Foreign languages of Shenyang normal University, we have strengthened our confidence in the implementation of stratified college English teaching.

3. Results

3.1 Implementation Plan of Stratified College English Teaching

In order to enhance the practicability of college English teaching and highlight the characteristics of English teaching, through the careful study of our university's leaders, our university decided to try out stratified English teaching from Grade 2020.

3.2 Guiding Ideology

Highlight the main body of students and respect individual differences. Because the English level of freshmen admitted to our university every year is uneven, if teachers adopt the same teaching mode in English teaching, the same mode cannot be adapted to the learning characteristics and level of all students, let alone meet the needs of students. Therefore, in order to highlight the main position of students in teaching, we should respect individual differences, teach students according to their aptitude, and achieve the goal of improving students' learning as a whole.

3.3 Principle of Stratification

Classification guidance: targeted guidance and teaching for students at different learning levels.

Steady progress: in the pilot phase, teaching objectives and learning plans are implemented step by step, teaching and examinations in stratification.

4. Conclusion

As college teachers, teaching and scientific research are inseparable. Teaching work is the first, scientific research work is to serve the teaching work. If we find problems from teaching, we should study them and find the best solution to them. That is scientific research. Scientific research is also inseparable from teaching. Without teaching, scientific research is empty, and it will have no practical significance. I also hope that this stratified college English teaching work can achieve the purpose of improving the quality of teaching, at the same time, in the implementation of stratified teaching process, can smoothly solve all kinds of problems encountered.

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Research on Influencing Factors of Job Burnout of College PE Teachers

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Abstract. In this paper, 69 college physical education teachers were investigated by using Job Burnout Questionnaire, Coping Style Questionnaire and Job Stress Questionnaire, to explore the influencing factors of college physical education teachers' job burnout and put forward targeted suggestions for reducing the occurrence of job burnout.

Keywords: Job Burnout; College Physical Education Teachers; Influencing Factors.

1. Introduction

In 1974, American clinical psychologist Feldenberg first introduced the concept of "job burnout" into psychological research. He regards job burnout as the exhaustion of body and mind in physiology, emotion, behavior, etc., when an individual can't cope with the excessive demands of external energy and resources. In recent years, job burnout has become one of the hot topics in the field of mental health.

At present, the fierce competition among colleges and universities is not only reflected in the level of scientific research and subject teaching, but also penetrates various activities. Teachers should complete the corresponding scientific research work, participate in various activities and competitions, take part in academic education, continue education and training, and meet various standards, which makes teachers exhausted. Teachers' profession is a very stressful profession. Work stress has an impact on teachers' physical and mental health, teachers' behavior, teaching quality and the stability of teachers, and has a certain negative impact on teaching and students' development. In this way, teachers are prone to job burnout, which makes teachers in a bad state in physiology, psychology, emotion and behavior, showing some bad performance in work, and affecting their professional development and personal quality of life. At the same time, the negative educational behavior caused by job burnout will affect the quality of teaching and hinder the realization of educational goals. As a result, when the parties experienced pain and suffering, they were misunderstood and coldly received by colleagues around them, thus dumping negative emotions to students.

Physical education in colleges and universities has always belonged to the category of public courses, and physical education has been reduced to the edge of "minor course". Therefore, it is difficult for the society, schools, leaders at all levels, parents and students to attach importance to the status of physical education. Physical education teachers' work intensity, time and energy consumption, low work creativity, lack of training and further education opportunities, knowledge gradually aging, personal development hindered, and potential difficult to play. This leads to the passivity of physical education teachers' teaching work, and even worse, job burnout. Once college physical education teachers' job burnout appears, it will not only harm college physical education teachers' mental health and mental health, but also affect the quality and effect of college physical education activities and students' enthusiasm for physical exercise.

It is found that job burnout is the result of interaction between internal and external factors. But how do these factors affect teachers' job burnout? It is of great practical significance to understand the influencing factors of college physical education teachers' job burnout and explore the influencing factors and countermeasures of college physical education teachers' job burnout. The research of this project is an applied research, which explores the factors affecting the job burnout of college physical education teachers and puts forward targeted strategies for reducing the occurrence of job burnout.

2. Research Method

(1) Research object

In this study, stratified random sampling was adopted, and 72 samples were estimated. Finally, there were 69 valid answers to statistical analysis, and the recovery rate reached 95.58%.

(2) Research tool

1) Social Support Rating Scale: compiled by Xiao Shuiyuan in 1992, which consists of 10 items and 3 dimensions: objective support, subjective support and utilization of social support. The total score consistency of the scale was 0.92 ($P < 0.01$), and the consistency of each item was between 0.89 and 0.94.

2) Simple Coping Style Questionnaire: This questionnaire is composed of two dimensions (subscale): positive coping and negative coping. The questionnaire is a self-rating scale, which adopts 4-point scoring method. The retest correlation coefficient of the scale is 0.89 and the A coefficient is 0.90. The A coefficient of active coping subscale is 0.89; The A coefficient of negative coping subscale is 0.78.

3) "Job Burnout Questionnaire": The Maslach job burnout questionnaire and scoring standard translated by Hong Kong scholars included in "Clinical Psychological Nursing Guidance" (Chen Sukun, 2002), with 22 items in total. The coefficient of Cronbach's α in this study (Job Burnout Scale) is 0.730.

4) Job Stress Questionnaire: A 24-item job stress questionnaire for university teachers compiled by Lee Hung. The internal consistency coefficient of the questionnaire Cronbach's $\alpha = 0.92$, and the retest reliability after two weeks Cronbach's $\alpha = 0.75$.

(3) Data processing

The data were analyzed and processed by SPSS22.0 and Amos17.0.

(4) Data processing

The data were analyzed and processed by SPSS22.0.

3. Investigation Results and Analysis

Table 1. Gender difference test of job burnout of physical education teachers in Colleges and Universities

Variable	Male		Female		F	P
	M	SD	M	SD		
Emotional exhaustion	19.900	11.095	24.000	11.562	.088	.767
Low personal achievement	26.000	4.690	25.961	4.312	.160	.690
Depersonalization	8.850	6.124	10.961	7.581	2.902	.093

It can be seen from Table 1 that there is no obvious difference between male and female teachers in the three dimensions of job burnout experience. That is to say, there is no difference in the perception and experience of job burnout among different genders.

Table 2. National difference test of job burnout of physical education teachers in Colleges and Universities

Variable	Han		Ethnic minorities		F	P
	M	SD	M	SD		
Emotional exhaustion	19.2889	10.631	27.4762	11.834	.900	.007
Low personal achievement	25.2667	4.345	27.9048	3.576	.518	.089
Depersonalization	8.9556	6.626	12.0476	7.0602	.256	.018

It can be seen from Table 2 that there are differences in the dimensions of emotional exhaustion and personality disintegration ($P < 0.05$) between Han and ethnic minority PE teachers in job burnout. That is to say, the scores of emotional exhaustion and personality disintegration of minority teachers are significantly higher than those of Han teachers.

Table 3. Correlation analysis of stress and job burnout

Variable	Emotional exhaustion	Low personal achievement	Depersonalization
Working pressure	.824**	.434**	.545**
Work fun pressure	.722**	.546**	.507**
Working load pressure	.709**	.522**	.485**
Interpersonal pressure	.678**	.656**	.467**
Teaching guarantee pressure	.763**	.640**	.568**
Job guarantees pressure	.661**	.533**	.567**

It can be seen from Table 3 that there is a significant positive correlation between the three dimensions of job burnout and the pressure experienced by teachers. There is a significant positive correlation between stress and emotional exhaustion, which shows that physical education teachers with greater stress are more likely to have a sense of emotional resource exhaustion in professional emotion. There is a significant positive correlation between stress and personality disintegration, indicating that the greater the stress, the more likely it is to produce negative and MoMo attitudes and emotions to others. There is a significant positive correlation between stress and low personal sense of accomplishment, which indicates that the greater the stress, the easier it is for individuals to make negative comments on themselves, especially in work.

There is a significant positive correlation between the three dimensions of job burnout and the five dimensions of job stress. That is to say, the higher the pressure of college PE teachers in these five aspects, the easier it is for them to produce job burnout. Of course, most of them mention that they feel emotional exhaustion, depersonalization and low personal accomplishment when they mention five pressures: job interest pressure, workload pressure, interpersonal relationship pressure, teaching guarantee pressure and job guarantee pressure.

Table 4. Correlation analysis of coping style and job burnout

Variable	Positive coping style	Negative coping style
Emotional exhaustion	-.319**	.101
Low personal achievement	-.276**	.213
Depersonalization	-.320**	.251*

It can be seen from Table 4 that "Coping Style Questionnaire" is composed of two dimensions: positive coping style and negative coping style, and the three dimensions of positive coping style and job burnout are significantly negatively correlated. Active coping reflects treating the things around us or events, trying to see the good side of things and finding several different solutions to problems. Therefore, the more positive the coping style is, the less likely it is to produce job burnout. At the same time, it can be seen from the table that negative coping style is positively correlated with low personal achievement, that is to say, when an individual adopts negative coping style, such as smoking and drinking to relieve troubles or fantasize that miracles may happen to change the status quo, it is easier for an individual to make negative comments on himself.

Table 5. Correlation analysis of social support and job burnout

Variable	Subjective support	Objective support	Support utilization
Emotional exhaustion	-.364**	-.271*	-.039
Low personal achievement	-.327**	-.157	.003
Depersonalization	-.234	-.061	.057

It can be seen from Table 5 that subjective support is negatively correlated with emotional exhaustion and personality disintegration, and objective support is also negatively correlated with emotional exhaustion. Subjective support designation refers to the support experienced subjectively, and the emotional experience and satisfaction degree that an individual receives respect, support and understanding in society. This is closely related to individual subjective feelings. While objective support is objective, visible or practical support. This kind of support is independent of the

individual's feelings and is the present of objective existence. Therefore, it can be seen from the research results that the support experienced by an individual has a significant negative correlation with emotional exhaustion and personality disintegration in job burnout, that is, the more support an individual can feel, the less likely he is to have emotional exhaustion and personality disintegration. The more objective support, the only influence on emotional exhaustion.

Through correlation analysis, the results show that there is a positive correlation between the stress dimensions of college physical education teachers and the job burnout dimensions. College teachers' stress is negatively correlated with positive indicators of mental health, positively correlated with negative coping and negatively correlated with positive coping styles. Subjective support is negatively correlated with emotional exhaustion and personality disintegration, and objective support is also negatively correlated with emotional exhaustion. There are differences between minority teachers and Han teachers in the dimensions of job burnout, emotional exhaustion and personality disintegration.

The stress and mental health status of PE teachers in colleges and universities should be paid close attention to by schools and all sectors of society. From the research, it can be seen that stress is an important factor affecting the job burnout of college physical education teachers. Therefore, it is one of the important ways to solve the mental health problems of university teachers, improve their mental health level and reduce stress.

Improve the external environment of society and alleviate the environmental causes of job burnout. The information support, action support and emotional support that teachers can feel can enhance the autonomy of college physical education teachers in their work, enhance their personal sense of accomplishment and desire for work performance, reduce the pressure level and establish a developmental evaluation mechanism for college teachers. To build a relaxed platform for university teachers' work, research environment and personal development, provide opportunities for training and self-development, improve their own quality and ability to perform their duties, and relieve the pressure on university teachers.

4. Conclusion

More and more research data at home and abroad show that the teaching profession has always been one of the most stressful occupations, and teachers are the high-risk group of job burnout. College physical education teachers' job burnout is caused by many factors, and different factors have different influences on the three dimensions of job burnout. In social support, the relationship atmosphere is not harmonious, colleagues are fighting with each other, full of individualism, or teachers and students can't cooperate with each other. All these phenomena will promote teachers' job burnout. Teachers can alleviate job burnout if they adopt positive coping styles, and job stress is also one of the important influencing factors of job burnout.

Therefore, it is a complicated systematic project to alleviate the job burnout of college physical education teachers. It not only needs extensive attention from all walks of life and all walks of life, but also needs to take effective measures at the level of schools and teachers to improve the current situation of school running and management, provide support and guarantee for teachers' work, reduce teachers' work pressure and burden, and relieve their burnout mentality. At the same time, we should establish a long-term system of teacher training, create an academic atmosphere and mechanism of exchange and cooperation, emphasize the cooperative relationship among teachers, and form real cooperation and sharing on the basis of cooperation. In the relaxed and harmonious campus cultural life, teachers can work together, exchange experiences and solve problems in teaching together, so as to effectively reduce teachers' work pressure, relieve physical and mental fatigue and prevent teachers' job burnout.

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The Importance of Engineering Ethics Education in the Education of Engineering Universities

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Abstract. Nowadays, engineering activities play an important role in society. In the process of cultivating engineering universities, engineering universities in Our country should not only cultivate their professional knowledge, but also educate them in engineering ethics, to bring into play the role of engineering ethics education and cultivate high-quality engineering talents for national and social development. This paper analyzes the current situation of engineering ethics education at home and abroad, and discusses the importance of engineering ethics education in engineering universities in order to guide engineering ethics education in Our country.

Keywords: Engineering Ethics Education; Engineering Universities; Ideological Education.

1. Introduction

Engineering and ethics do not seem to have much to do with each other on the face of it. They belong to different disciplines, but they are inextricably linked, especially in the education of engineering universities. Along with the rapid development of economic society and urbanization, put forward higher requirements for engineering and technical personnel, but in the actual engineering project often involves the integration of ecological environment, laws and regulations, and other areas of the cross, is unable to avoid these problems is to address the specific project, this would require the related engineering and technical personnel in addition to professional engineering and technical ability, but also has high engineering ethics accomplishment. engineering universities students are the reserve talents for China's future engineering undertakings. Engineering colleges and universities have the obligation to carry out engineering ethics education for engineering universities students, shoulder the responsibility of engineering ethics education for engineering universities students, and provide high-quality engineering technical personnel with good engineering ethics literacy for the country's future development. Therefore, engineering ethics education is of great significance in the education of engineering universities.

2. Current Situation of Engineering Ethics Education Abroad

(1) United States

In the 1970s, a series of engineering activities in the United States brought many negative effects to the society, such as the Challenger accident and the fuel tank incident of Ford zebra, etc. the urgent need for high-quality engineers with both professional technology and engineering theory literacy has promoted the development of engineering ethics education in the United States to some extent, and has been rising rapidly in various engineering universities. The model of engineering theory education in American engineering universities is a combination of independent course, cross-course, engineering ethics and non-technical course.

(2) Germany

After the 20th century, German engineers realized that science and technology would bring great changes to human development. Germany has always attached great importance to industrialization and is a world-famous industrial power. in addition, the German people strive for perfection in work attitude, strict requirements on technology and quality, engineers in Germany's status is quite high. In terms of engineering ethics education in Germany, engineers deeply integrate philosophy and technology and pay attention to the evaluation of engineers' technical responsibility, so as to reduce the negative impact of technology on society.

(3) French

Engineers are regarded as "social movers and shakers" in France, and France's unique engineering education has trained many elite engineers. On the one hand, France attaches great importance to humanistic education in engineering ethics education and focuses on cultivating engineers' moral level and social responsibility. On the other hand, students of engineering universities in France receive more rational education, which is related to the mathematics and rational education they receive. This traditional rational spirit is still extolled in France.

3. Current Situation of Engineering Ethics Education in China

Engineering ethics education in China is generally marked by the course of Engineering Ethics taught by Professor Xiao Ping in Southwest Jiaotong University and the publication of the textbook Engineering Ethics. Compared with western countries, China's engineering ethics education starts late, attaches little importance to it, and lags in development. However, because of this, China's engineering ethics education has a broader space for development.

(1) Engineering ethics education attaches little importance to it

China has always trained engineers to pay more attention to professional knowledge and technical ability, but not enough attention to the ethical and moral education of engineers. On the level of engineering technology, our country can be compared with other countries, but on the education of engineering ethics, we are far away from it. In addition, there has always been a saying in China that "learning mathematics, physics and chemistry well can go all over the world". Influenced by this idea, it is believed that improving technical level is the key to engineering projects, while engineering ethics is not considered at all. Therefore, engineering ethics education is rarely offered in engineering universities, and students seldom receive systematic and special engineering ethics education.

(2) Lack of systematic and perfect engineering ethics education system

In the education system of our country, from the macroscopic level, the higher education of our country pays little attention to the moral education in essence, and the moral education only stays at the level of ideological and political courses and counselors in universities. In terms of professional education, engineering ethics has become an accessory to professional learning. Even though engineering ethics education is permeated in professional learning, it mainly focuses on general education, such as the handling of interpersonal relations. There is a lack of systematic and perfect engineering ethics education system, standardized teaching program and unified published teaching materials in China's engineering universities. From the micro level, engineering universities do not play a positive role in promoting the construction of engineering ethics education system, and some of the relevant engineering ethics education courses offered by engineering universities are also special courses, which do not understand the essence of engineering ethics education. Compared with professional courses, they are not worth mentioning.

(3) The teaching staff of engineering ethics education is not strong enough

When it comes to ethics education, many people will associate it with morality. Compared with ethics education, engineering ethics education is a kind of higher moral education with more pertinence, which requires the engineering ethics education to have a large number of teachers. At present, engineering ethics education teachers in Chinese engineering universities are insufficient, and their understanding of the construction of corresponding disciplines is not enough. At present, most of the teachers who teach engineering ethics education courses in Chinese universities are those with professional backgrounds in philosophy and ethics, but they are limited by their majors and lack practical experience in engineering. The other is to have the knowledge of engineering, but the consciousness of engineering ethics education is weak, do not realize the role of engineering education in engineering education in universities.

(4) Engineering ethics education emphasizes theory over practice

In the education of engineering ethics, the emphasis is on theory rather than practice, while the emphasis is on theory rather than on the integration of disciplines. Due to the lack of necessary

practical experience in daily teaching, it is difficult to analyze and deal with all kinds of complex problems in future engineering projects.

4. The Importance of Engineering Ethics Education in the Education of Engineering Universities

Human ethics is not innate, but gradually cultivated in the acquired society and practice. It is beneficial to the healthy development of society and the normal communication of human society to strengthen the education of engineering ethics for the students in engineering universities. By conducting engineering ethics education, can improve the students' awareness of ethical risk degree and cultivate students' future career sense of responsibility, let the student through the engineering ethics education, change the original cognitive structure, internalizes for own code of conduct, moments with your high standard requirements, solve problems, reduce the incidence of social risk.

(1) Set up the correct concept of engineering ethics

Whether engineering ethics can be correctly understood is the premise of improving the moral quality of engineering college students. Only by having a clear and definite understanding of engineering ethics can we distinguish good from evil in practical work. the correct concept of engineering ethics is generated by the interaction of engineering ethics education, social ethics and relevant professional ethics. Engineers with the correct concept of engineering ethics can consciously restrain their own behavior, take the initiative to undertake their own moral responsibilities and obligations, and carry out specific engineering practices through the correct concept of engineering ethics, to better complete work tasks. However, not all engineering students can realize their responsibilities and obligations in the future work, and even some engineers with good moral quality will be affected by the surrounding environment, under special circumstances, they act contrary to engineering ethics, which is caused by their insufficient understanding of engineering ethics. Engineering universities should have the responsibility to cultivate engineering students, help them establish the correct concept of engineering ethics, let them realize the importance of engineering ethics education in engineering accidents, analyze the root causes of engineering accidents, and find the best way to solve problems. Colleges and universities of engineering should train students to improve their moral cognition, help them to establish correct concept of engineering ethics, and master and deal with various engineering problems skillfully.

(2) Cultivate the social responsibility of engineering universities students

Modern society cannot do without engineering. Engineering projects cover all fields of human life. Engineers are the main implementer of engineering projects and play an important role in the quality of engineering projects, which highlights the importance of ethics in engineering construction. as future engineers, engineering college students will understand and digest the internal mechanism of engineering in their future work and understand the impact of engineering on the society. Therefore, in engineering ethics education, engineering colleges and universities should consciously train students to make correct analysis of engineering projects and have the awareness to publicize various risks in engineering design to the public. Respect the basic rights of citizens and cultivate students' ability to deal with uncertain problems. With the development of modern technology and human society, the social uncertainty caused by various technologies becomes more and more obvious. Faced with the unknown, people are often at a loss, wandering between rationality and reality, which may trigger engineering ethics problems at any time and even cause the "butterfly effect". in the education of engineering ethics, it is necessary to cultivate students' ability to eliminate the hidden dangers of engineering and to cultivate their vigilance against various social problems. In engineering activities, always use engineering ethics to regulate themselves, with their own noble quality to complete engineering projects, to achieve self-value and social value.

(3) Solidify engineering students' lofty career aspirations

Professional ideal is an inexhaustible driving force for engineers to move forward and can motivate engineering students to carry out innovative practices and fulfill their missions and responsibilities. in engineering universities, engineering ethics education should encourage students to strengthen

their career ideals, seek social recognition and realize self-worth. Engineering students with ideal career can master their own behavior in the future work, with a strong sense of professional responsibility; Engineering students with ideal career pay more attention to the social practical benefits of engineering, keep in mind their own mission and tasks in engineering projects, to ensure the development of modern engineering in a healthy and orderly direction. Engineering ethics education in engineering universities is mainly to help college students to have firm and lofty career ideals, truly understand the responsibilities and tasks of engineers, design and improve engineering projects, meet the social needs of more people, create and transform the world, and create welfare for human society through their own efforts.

5. Conclusion

Training engineering talents in our country in the new era must be combined with engineering ethics education to strengthen education in engineering ethics education. And constantly explore and improve themselves in practical activities under the guidance of socialist core values. Centering on the current engineering construction and actual situation in China, this paper takes it as the starting point and end point to adapt to the strategic goal of strengthening China's education and talent power and promote the all-round development of engineering universities students.

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The Dilemma and Breakthrough of Physical Education in Colleges and Universities under the Background of "Internet + Education"

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Abstract. In the background of the new era, "Internet + education" has brought great changes to the development of school education, and brought new ideas and difficulties to the physical education teaching in colleges and universities. The historical background of "Internet + education", on the one hand, brings more learning time and space for students, and provides PE teachers with richer teaching means, thus improving the effect of PE teaching in colleges and universities. On the other hand, the development of physical education in colleges and universities is hindered by the lack of information literacy of physical education teachers, the limited Internet teaching equipment and the lack of students' autonomy in learning. To this end, this paper proposes the strategies of teacher-student collaborative curriculum construction and reasonable guidance for students' online learning to improve the physical education teaching effect in colleges and universities under the background of "Internet + education".

Keywords: "Internet + Education"; Physical Education Teaching; Physical Education Curriculum.

1. Introduction

In July 2010, the Ministry of Education issued the "national medium and long-term education reform and development plan outline (2010-2020)", in March 2012, the Ministry of Education issued by the "education informatization ten year development plan (2011-2020) ", in July 2015, the State Council promulgated the "about promoting action guidance for 'Internet +' " [1], [2], [3], such as files, from the perspective of different degree and explains the implementation and promote the importance and necessity of "Internet + education". "Internet + education" is a new type of education service in the current information age, which can expand the coverage of quality education and promote educational equity. Therefore, to clarify the opportunities and difficulties of physical education in colleges and universities under the background of "Internet + education" will help to improve the effect of physical education in colleges and universities under the background of "Internet + education", so as to promote the development of physical education in colleges and universities, and give full play to the multiple values of physical education, such as education, fitness and entertainment.

2. Opportunities of Physical Education in Colleges and Universities under the Background of "Internet + Education"

In the context of "Internet + education", there have been obvious changes and breakthroughs in terms of time, space and methods of physical education, which have brought new opportunities for physical education in colleges and universities.

2.1 "Internet + Education" has Broadened the Time and Space of Physical Education

In the traditional physical education teaching, teachers and students can only be taught face to face in a fixed time, which greatly reduces the flexibility and openness of physical education learning. Teachers' teaching and students' learning are both limited by time and space. Under the background of "Internet + education", first of all, teachers and students can teach some basic and explanatory course contents on the Internet platform, which can not only reduce the boring and tedious repetitive teaching of teachers, but also help students to allocate their learning time more reasonably. Secondly,

for some qualities that need long-term consolidation, such as flexibility and endurance, students can conduct scientific and reasonable consolidation exercises according to the materials provided by teachers, which can not only improve students' learning enthusiasm and learning effect, but also help students develop a lifelong exercise of sports habits. Finally, through the big data platform, teachers can have a more in-depth grasp of students' learning status, so as to improve the teaching in a targeted way. Students can also compare with themselves and others, to better understand their learning status and the gap with others, which can not only improve students' understanding of self-learning, but also stimulate students' interest in learning, correct attitude towards learning.

2.2 "Internet + Education" has Enriched the Methods and Means of Physical Education Teaching

In the past physical education teaching, the main teaching methods are demonstration, explanation and practice, etc. Teachers teach students face-to-face, which is often difficult to meet the learning needs of all students. Under the background of "Internet + education", on the one hand, the application of Internet platform can effectively help teachers present diversified teaching content, and implement teaching and curriculum improvement by means of cooperative exploration, flipped classroom, big data, etc., which can better meet the learning needs and interests of different students. On the other hand, students can watch and study the learning content repeatedly through the Internet platform, and they can have a deeper understanding of the learning content, and they also can solve the problems through the online guidance of teachers. Therefore, the educational background of "Internet + education" has brought more abundant teaching methods and means for physical education teaching in colleges and universities, which will form good instrumental means for the improvement of physical education teaching effect.

3. The Dilemma of Physical Education in Colleges and Universities under the Background of "Internet + Education"

"Internet + education" not only brought opportunities for colleges and universities sports teaching, but also puts forward higher requirements for teachers' teaching ability, students' learning ability and school's teaching platform. If these problems cannot be solved or alleviated, the effect of "Internet + education" on the improvement of physical education in colleges and universities will be reduced.

3.1 Physical Education Teachers Lack of Information Literacy, it is Difficult to Adapt to the Needs of Current Physical Education Teaching

Information literacy refers to the basic awareness and ability related to information possessed in the information age [4]. Under the current background of "Internet + education", physical education teaching has higher requirements on the information literacy of physical education teachers. Physical education teachers can correctly and reasonably use the Internet platform, which will affect the development of physical education teaching. From the perspective of reality, it is a common phenomenon that physical education teachers lack of information literacy, especially some old teachers with rich experience in offline teaching, whose offline teaching effect is remarkable, but their application ability to the Internet is insufficient. However, under the current background, using the Internet to carry out teaching will become an inevitable trend, and it is also an essential skill that every physical education teacher should master. Therefore, the lack of information literacy of physical education teachers will seriously affect the development of "online + offline" hybrid teaching.

3.2 Site Equipment has Restricted the Development of Online Physical Education in Colleges and Universities

Although the blended teaching of "online + offline" has been applied in many disciplines, due to the particularity of physical education, the development of online teaching is restricted by the curriculum structure, teaching methods and venue equipment. Especially in the field equipment level, can meet the physical education Internet equipment is not rich. Most of the Internet applications in

college physical education are limited to the communication between teachers and students and between students and students, as well as the statistics of students' extracurricular exercise by using APP. There are few platforms that can truly feedback students' physical education learning status by using big data and optimize and improve students' learning path and learning effect by using Internet platform. Therefore, these are the areas that need to be paid more attention to and improved in college physical education teaching under the background of the future development of "Internet + education".

3.3 The Lack of Student Autonomy Reduces the Effect of Physical Education Learning

Physical Education in the background of "Internet + Education", due to online upper section lacks the face-to-face to urge the pressure from teachers, students are prone to lax state itself. Whether students preview new knowledge after class and practice and consolidate it according to teachers' requirements will affect the progress of teachers' offline teaching. Students' different degrees of completion of online teaching are caused by students' learning autonomy and learning ability. When students lack autonomy in learning and teachers' supervision and guidance, it is easy to lead to the phenomenon of "fooling teachers and fooling themselves". For example, in the after-school exercise in a university, a small number of students take the form of "slow cycling" to complete the running times of each semester, which completely fails to achieve the effect and requirements of after-school exercise. Therefore, under the background of "Internet + education", students have insufficient autonomy in learning, which will reduce the effect of "online + offline" physical education teaching, and also hinder the implementation of physical education teaching in colleges and universities under the background of "Internet + education".

4. Strategies for the Development of Physical Education in Universities under the Background of "Internet + Education"

"Internet + education" is an inevitable trend of future education development. Therefore, taking advantage of the advantages of "Internet + education" and improving its disadvantages will help promote the development of future education and improve the effect of physical education in colleges and universities. From the characteristics of "Internet" and "education" themselves, strengthening the cooperation between teachers and students and improving the efficiency of online learning will help to further promote the development of physical education in colleges and universities under the background of "Internet + education".

4.1 Teachers and Students Cooperate with the Curriculum Construction , Optimizing the Design of the "Online + Offline" Physical Education Curriculum

“Synergetics” is an interdisciplinary subject founded by Haakon in the 1970s, meaning "the science of coordination and cooperation"[5]. The construction of teacher-student collaborative curriculum is based on the principles of collaborative learning. Teacher-student collaborative curriculum construction emphasizes the improvement and construction of curriculum under the joint role of teachers and students, so as to change the "teachers lead students in learning" status in the implementation of traditional curriculum, and improve the applicability of curriculum and students' learning enthusiasm. Therefore, under the background of "Internet + education", the physical education teachers in the teaching, should be reasonable to set up and use "Internet" platform, through the platform of course task arrangement, display of the course content, students' feedback collection, etc., which can maximize the use of the existing and future possible Internet platform. With the mode of "online + offline" and the principle of teacher-student cooperation, the physical education curriculum is designed and implemented. In this way, it can not only improve students' learning efficiency, reduce the limitations of learning time and learning space, but also help to give play to the advantages of teacher-student cooperation, improve the quality of physical education curriculum, and finally achieve the purpose of improving the physical education teaching effect in colleges and universities.

4.2 Strengthen Students' Online Learning Guidance and Improve Students' Learning Autonomy

If the physical education teaching itself is stripped, it includes the teaching of the teacher and the learning of the students. The teacher takes the course content as the blueprint, completes the teaching task together with the student. Collaborative curriculum construction between teachers and students is conducive to improving the quality of physical education curriculum, while teachers, as educators, will be more active and proactive in solving problems encountered in online teaching, while students have lower awareness and initiative in solving problems than teachers. Therefore, in order to improve physical education teaching under the background of "Internet + education", it is of vital importance to guide students' online learning. "Internet + education" under the background of PE teaching, teachers should build a good curriculum foundation for students' online learning, and integrate rich and diverse subject elements that conform to current students' interests and hobbies into the physical education curriculum. Then, teachers should clarify the requirements, content and effect of course learning for students, and build a reasonable platform for communication and feedback, so that both teachers' teaching and students' learning can achieve the goal of "knowing clearly, seeing the way ahead". Through the above ways to guide students' online learning, it will help to enhance students' enthusiasm and initiative in physical education learning, so as to achieve the appeal of improving college physical education teaching effect.

5. Conclusion

In the context of the new era, "Internet + education" has formed a new development trend, which brings new opportunities and opportunities for the development of physical education in colleges and universities, but also brings some obstacles and difficulties. Therefore, it is necessary to optimize physical education design and improve students' learning autonomy and learning effect through teacher-student collaborative course construction and reasonable guidance of students' online learning, to improve the teaching effect of physical education in colleges and universities, to meet the needs of the era of "Internet + education".

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Teaching Reform of Engineering Mechanics in Mechanical Major Facing Applied Ability

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Abstract. In order to cultivate applied ability for the country, in view of the present situation of Engineering Mechanics Teaching of Mechanical Engineering Specialty in Engineering university, the factors influencing the teaching quality are analyzed. In order to improve the teaching quality and highlight the cultivation of students' innovative thinking ability and engineering practice ability, the teaching reform of engineering mechanics is put forward from four aspects: teaching content, teaching method, practice link and assessment mechanism, the basic requirements of engineering mechanics courses for innovative mechanics of applied education were achieved.

Keywords: Practical Ability; Engineering Mechanic; Teaching Quality; Teaching Reform.

1. Introduction

According to the actual needs of military personnel, engineering university students are required to not only be able to conduct daily management, but also to have strong operability and practicality. Therefore, in order for engineering university to achieve the goal of transforming to combat and applied ability, it is necessary to reform the traditional teaching content, teaching methods, and teaching ways, and establish a high-quality talent training program that meets the requirements of the military.

Engineering mechanics, as a basic technical course with theoretical, practical and technical features, is a major of mechanical engineering in engineering university. It is the theoretical basis of many subsequent professional courses. It is in the core position of continuing education in the teaching of mechanical engineering specialty. Both teachers and students attach great importance to this course. The quality of its teaching not only affects the test scores of the students, but also affects the military mechanical engineering-related work that the students are engaged in after graduation. Therefore, to realize the basic requirements of education for ability, the following methods are necessary. Firstly, improving the teaching quality of engineering mechanics and inspiring students' learning interest, Secondly, combining the theoretical knowledge of engineering mechanics with the actual engineering problems, Thirdly, developing students' ability to use the knowledge of engineering mechanics to solve the actual engineering problems.

2. Teaching Research Status of Engineering Mechanics Course

Engineering mechanics, as an important professional basic course for the mechanical engineering major of the Engineering university, aims to train students' ability to perform engineering check calculations on equipment components when maintaining and designing equipment. Engineering mechanics includes two parts, theoretical mechanics and material mechanics. Generally, the teaching hours of local colleges are 120-150 hours, [1-6] but due to the heavy training tasks of military academies and the number of courses that need to be learned, the teaching hour of the course which is carried by our school is 68 hours. Therefore, the content of the course must be reasonably reduced. In order to make the teaching content be useful for subsequent courses or for analyzing practical engineering problems, our school currently determines statics in theoretical mechanics and materials mechanics as the teaching contents. Even so, the amount of class hours is still insufficient. Therefore,

what puts relatively high requirements on the teaching ability of teachers is to make it necessary to ensure both the maximum amount of information and the quality of teaching in the teaching process.

3. Important Factors Affecting the Quality of Engineering Mechanics Teaching

After summary and analysis of engineering mechanics teaching in recent years, the important factors that affect the quality of engineering mechanics teaching in our school are as follows: First, there are many theorems, laws, and formulas in the course of engineering mechanics so that Students lack interest in learning. And many students do not have a comprehensive understanding of the mechanical engineering specialty, while the teachers do not pay attention to the analysis of the application of the course in the actual engineering of the army during the teaching process, so that many students can't realize the importance which this course can bring in the further study and future development, and lack of the motivation to study. Therefore, the teaching effect is unsatisfactory and cannot meet the requirements of the teaching program. Second, the current source of students in our school is divided into army students and local students, and some military students are in the liberal arts in high school, so the students' bases are different. However, the teaching process cannot take care of each student, which causes that some students with poor foundations can't keep up with the pace of learning, and will give up the course over time. Third, the unicity of the assessment method makes the assessment of the course depend only on the results of the final exam. But many students believe that entering the military school is equivalent to entering a safe environment and there is no pressure for employment. Therefore, they only want to pass each course, which is making learning full of utilitarianism and just learning for the exam instead of a good learning mentality.

4. Teaching Reform of Engineering Mechanics

In view of the problems existing in the above teaching of engineering mechanics, in order to improve the quality of teaching and develop cultivate applied and innovative ability to meet the requirements of the actual combat of the army, the teaching reform of engineering mechanics should be carried out from the following aspects.

4.1 Facing the Teaching Reform of Practical Talent, it is Necessary to Optimize Teaching Content First

Firstly, the teaching content of the course must be attractive, so that students can raise their interest in learning. In the classroom teaching, there are a lot of tedious formula derivations and Abstract conception. [2-3] The teachers are tired of teaching and the students are tired of listening. To make the content attractive, you can start with classic demonstrations related to mechanics or common engineering phenomena, and let students first raise their interest in learning, study with questions, and then deduct concepts and formulas, so that the effect will be much better. For example, when explaining the stability of the pressure rod in material mechanics, you can tell a classic story to the trainees: One of the top ten engineering and technical mistakes of this century-the Quebec Bridge Incident in Canada, and the designer of Quebec Bridge, Cooper, excessively pursued the best design but ignores the stability of the pressure members in the bridge, which causes the bridge to collapse suddenly when it is about to be completed, bringing huge losses. Let students first recognize the importance of stability, and then learn what stability is and how to calculate stability. For another example, when teachers explain the geometric properties of plane graphics, this part of the content is some boring integration and coordinate transformation operations, so students are unwilling to learn. At this time, teachers can bring up a common phenomenon to lead to the content to be learned—Why is it easy to bend a ruler with a rectangular section along the long axis of the rectangular section but not the short axis? Then let the students observe the shape of the cross-section of the component that is bent in the actual engineering and its placement orientation. So that let the students deeply understand the importance of the geometric properties of the cross-section in the engineering practice. And then teachers explain the geometric properties. In this way, the effect is quite different.

Secondly, the teaching content of the course must be combined with engineering practice, so that students can deeply understand the importance of the course for their subsequent professional courses and future practical work. For this reason, they can have motivation for the course learning. For example, when deriving shaft shear stress formula of the torsion, the derivation process is tedious and tedious. At this time, the actual engineering case can be introduced into the teaching. Take the common automobile steering wheel main shaft and chassis transmission shaft as examples. It is not difficult to find after analysis that Both shafts are torsional as the main deformation. But the cross-sectional shape of the main shaft of the steering wheel is a solid circle. And the cross-sectional shape of the chassis drive shaft is a ring. What is the benefit of this design? let the students to study the distribution of the stress on the cross section of the torsion shaft with questions, and then analyze the benefits of such a design. Through this process, the students first learn with the problem, and then return to the problem to solve the problem, which greatly improves the teaching effect.

4.2 Facing the Teaching Reform of Practical Talent, it is Necessary to Reform Teaching Methods

The content of engineering mechanics itself is boring and has many formulas. Therefore, it is necessary to change the traditional single method, “teacher speaking, student listening”. Combining multiple methods to maximize the subjective status of students is a good way to achieve a good teaching effect. [4]

4.3 Content Modularity

In the course of teaching, the content of engineering mechanics will be taught in modules. The engineering mechanics offered by our university can be divided into three modules according to the research content. The first module is the statics part, which studies the external forces on the object. The second module is the calculation of the strength and stiffness of the component. The third module is the calculation of the stability of the compression member. The teaching methods of each module are different according to the content. Students can learn in blocks at the beginning of the course, and break through each block. Finally, return to the knowledge map to form a comprehensive knowledge point, establish a knowledge system, and achieve good teaching results.

4.4 Seminar Teaching

The seminar teaching method includes three parts “question” “guidance” and “discussion”. The role of the learner in the learning process is changed from “passive” to “active”, reflecting the subjective status of the student. For example, "bending of beams" is the most difficult and important chapter in engineering mechanics. To study this chapter, you must first learn the calculation of the internal force of a bending beam. Because the torsional internal force and the internal force of tension and compression have been studied before, the question can be asked: How many internal forces are there in a curved beam? What are they? Then guide the students to apply the basic method of internal force calculation—the balance method. Next let the students list the balance equations by themselves. In this process, each balance equation and each item in the balance equation are listed after their own thoughts. Finally, it can be concluded that there are two internal forces of bending beam: shear force and bending moment. At this point, the teachers will guide the students to write the internal forces on different sections of the bending beam under several loads, and require students to discuss What is the relationship between the internal forces of different sections and the external forces on the beam? After discussion and analysis, students can come up with their own calculation methods that directly apply external forces to calculate the internal force of the cross section of the bending beam. In this way, the students have a stronger sense of participation, so the classroom atmosphere is more active, and the learning effect is better.

4.5 Focus on Guiding Students to Learn Methods

There is a saying that is very good: “The mastery of knowledge largely depends on study on one's own, instead of teacher.” Therefore, in addition to teaching the course content in the teaching process,

it is more important to teach students the learning method of the course. The first one is the method of analysis. One of the most widely used analysis methods in engineering mechanics is to simplify the complexity. For example, the deformation of a curved beam under various loads can be completely decomposed into the superposition of the deformation of the curved beam under each load, and the combined deformation of a component can also be decomposed into several basic deformations of the component, thus, achieved the goal of simplifying complex problems. The second one is the method of induction and summarization. Be good at summarizing the learning content, refining the commonness of knowledge points, and cultivating the thinking method of seeking common ground and distinguishing differences. For example, when analyzing the internal stress of deformed members, whether it is tension and compression, torsion or bending, the analysis of stress must be based on geometric, physical, and static relationships. The last one is the method of solving the problem. For the solution of the problem, it must be clear what the problem is? What is the nature of the problem? What is the solution to this type of problem? For each type of problem, a systematic solution method system is formed. In this way, the students have mastered the correct learning methods, and it is easier to learn, so that their enthusiasm for learning is relatively high.

4.6 Facing the Teaching Reform of Practical Talent, it is Necessary to Cultivate Students' Innovative Ability

On the one hand, the experimental can verify the theoretical knowledge learned in the classroom and train the students' practical ability. On the other hand, they can also train the students' ability to apply innovation. [5-6] Training the students' innovation ability is also the basic requirement for training practical personnel in the army. Change the traditional experiment mode that teachers teach demonstration first, students experiment according to the specified steps, and finally submit the experiment report. That explore a new experimental model that focuses on students, supplemented by faculty, and develop experimental plans which meet the needs of different students. For example, for students who have a weak foundation and have difficulty in learning, they only need to complete basic experiments to help them understand the theoretical knowledge of the textbook. For students who have the ability to learn, they are encouraged to use theoretical knowledge to generate experimental ideas and design experimental methods. Finally, they verify their own ideas. It is necessary to maximize students' creative thinking and motivate students' interest in exploring and studying engineering problems. So that the students can be trained into the military technical personnel who can solve practical engineering problems.

4.7 Facing the Teaching Reform of Practical Talent, it is Necessary to Establish a Reasonable Curriculum Evaluation Mechanism

In order to train the applied army technical ability, it is necessary to reform the traditional assessment method of "Examination determines whether pass or fail." Reforming the assessment method is in the same vein as reforming the teaching content and teaching methods. The assessment method must follow the principle of "emphasizing basic content, cultivating innovation ability, and mastering application skills." [1-6]

To assess the students' ability to learn basic theories and basic knowledge, apply theoretical knowledge which they have learned to solve practical problems and creative thinking, they can be evaluated in the following four aspects.

Examination Results: The closed-book assessment method should not be too difficult. This part mainly assesses the students' learning of basic theory and basic knowledge, which accounts for 40% of the total assessment score. Even if the students have a poor foundation, as long as they study hard, they can get a good score.

Daily Performance: Taking the students' usual assignments and in-class tests as the evaluation criteria, they account for 10% of the total score, of which 5% are ordinary assignments. The ordinary assignments are classified as excellent, good, and qualified. Excellent is 5 points, good is 4 points, and qualified is 3 points. The classroom test is 5%. The last five minutes of each class is used to have a test. The form is to ask and answer the questions which are set around the basic content of the lesson.

Ten correct answers are counted as one point . In this way, students are urged to listen carefully in class and finish assignments carefully after class.

Experimental Results: This part of the performance is mainly based on the experimental report of the basic experiment and the experimental conclusion of the innovative experiment. It accounts for 20% of the total evaluation score, of which 10% is the basic experiment. As long as the trainees complete the experiment carefully, understand the experimental results, and complete the questions raised in the experimental report, they can get the score of this part. The innovative experiment accounts for 10%. They mainly examine students' creative thinking and practical abilities. According to different experimental assumptions and the advantages and disadvantages of experimental schemes, teachers give different grades for students.

Paper Results: In the form of writing small papers, which accounts for 20% of the total evaluation scores. It allows students to apply mechanical knowledge to analyze some practical problems in the army engineering, and evaluates students' ability to apply theoretical knowledge to solve practical problems.

This kind of assessment method firstly urges students to have a good learning attitude. Secondly it is an excellent way to ensure passing rates, at the meanwhile to highlight some outstanding students. Finally it is also important to train students to apply theoretical knowledge to solve practical problems. And through the practical test in the front-line teaching, it has obtained a relatively satisfactory effect.

5. Conclusion

According to the characteristics of the course of engineering mechanics in the mechanical engineering specialty of military school, this paper puts forward a teaching method that focuses on the cultivation of students' innovative thinking and the ability to solve practical problems, which changes the traditional "teacher-based" model in traditional teaching, and gives full play to students' subject position in the learning process. Besides, this paper completes the teaching design of engineering mechanics course for practical ability and greatly improves the teaching quality of engineering mechanics. In the future, we will continue to further explore and analyze the needs of troop ability, carry out dynamic updates, and cultivate practical technical personnel who meets the troop needs.

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Model Construction of Influencing Factors of Professional Burnout of College Public Physical Education Teachers

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Abstract. In this paper, 130 college public physical education teachers were investigated by using Job Burnout, Coping Style Questionnaire, Job Stress Questionnaire, etc. The structural model of their job burnout was constructed, and the influencing mechanism model of college public physical education teachers' job burnout was deeply understood. Through the model, practical suggestions were put forward to alleviate this group's job burnout.

Keywords: Job Burnout; College Physical Education Teachers; Structural Model.

1. Introduction

Maslach put forward job burnout, which is considered as "a symptom of personal disintegration, emotional exhaustion and decreased personal sense of accomplishment in the professional field where people serve", and it is specially used to describe the phenomenon of "job burnout" of professionals in the helping industry. At present, there are three components of job burnout: emotional exhaustion, personality disintegration and low effectiveness. In recent years, due to the rapid development of society and economy, the work pressure of various industries is increasing year by year, and the problem of job burnout is also emerging.

Among the three dimensions of job burnout, emotional exhaustion means that in the process of interacting with others, individuals lack energy and feel that their emotional resources have run out, lack enthusiasm for work, and are often accompanied by frustration and tension. Depersonalization means that they will deliberately keep a certain distance from the work and other personnel related to the work. They are not as enthusiastic and devoted to the work as they used to be. They always passively complete their own work, doubt the significance of their work, and no longer care about whether their work has contributed. Low sense of accomplishment means that an individual will hold a negative evaluation of himself, think that he can't do the work effectively, or doubt his contribution to the work, and think that his equality has not made any contribution to society, organization and others.

Outsiders generally believe that the work of public physical education class teachers (hereinafter referred to as public physical education teachers) in undergraduate colleges is relatively easy and simple, and physical education in colleges and universities belongs to the category of public courses. However, the complexity of the work situation is far beyond imagination, and its teaching status is hard to get the attention of society, schools, leaders at all levels and students. Public physical education teachers work hard, teach outdoors for a long time, consume a lot of time and energy, have low creativity in work, and lack training and further education opportunities. This has led to the public sports teachers teaching work will appear passive, even more even appear job burnout. According to attson, job burnout is a process of slow development. At the beginning, there is no alarm, and it develops without the individual's awareness. Once a special critical point is reached, the individual will suddenly feel exhausted, and this negative experience cannot be associated with any special stress events. Generally speaking, most scholars believe that job burnout initially appears in the form of stress. For a long time, individuals may or may not be aware of this kind of stress, and gradually they feel emotionally tired and begin to change their attitude towards others and work. The final result of this process is the generation of individual job burnout. Once the university public sports teachers' job burnout appears, it will not only harm the teachers' own mental health and mental health, but also

affect the quality and effect of college physical education activities, and affect the enthusiasm of students' physical exercise.

Teachers are the high incidence of job burnout. At present, there are few research achievements in this field in China, and the related papers are mainly a summary of the research situation, but there are few empirical studies, especially the research on the job burnout of public teachers in colleges and universities. As a special group, what are the main causes of job burnout and how to build it? In this paper, by establishing the model of college public teachers' job burnout, analyzing the path of their job burnout, we try to explore some rules and characteristics, to provide some theoretical basis for schools, society, educational administrative institutions, especially public teachers to understand and understand the problem of teachers' job burnout, and provide scientific reference for the management and construction of public teachers. It is of great significance to improve the professional work quality and professional life quality of public physical education teachers. Therefore, it is of positive practical significance to investigate the current situation of job burnout of public physical teachers in colleges and universities, to build a model of influencing mechanism of job burnout, and to explore measures to prevent and alleviate job burnout.

2. Research Method

(1) Research object

In this study, stratified random sampling was adopted, and 137 samples were estimated from public physical education teachers in Kunming colleges and universities. Finally, there were 130 valid answers for statistical analysis, and the recovery rate reached 94.89%.

(2) Research tool

1) Social Support Rating Scale: compiled by Xiao Shuiyuan in 1992, which consists of 10 items and 3 dimensions: objective support, subjective support and utilization of social support. The total score consistency of the scale was 0.92 ($P < 0.01$), and the consistency of each item was between 0.89 and 0.94.

2) Simple Coping Style Questionnaire: This questionnaire is composed of two dimensions (subscale): positive coping and negative coping. The questionnaire is a self-rating scale, which adopts 4-point scoring method. The retest correlation coefficient of the scale is 0.89 and the A coefficient is 0.90. The A coefficient of active coping subscale is 0.89; The A coefficient of negative coping subscale is 0.78.

3) "Job Burnout Questionnaire": The Maslach job burnout questionnaire and scoring standard translated by Hong Kong scholars included in "Clinical Psychological Nursing Guidance" (Chen Sukun, 2002), with 22 items in total. The coefficient of Cronbach's α in this study (Job Burnout Scale) is 0.730.

4) Job Stress Questionnaire: A 24-item job stress questionnaire for university teachers compiled by Lee Hung. The internal consistency coefficient of the questionnaire Cronbach's $\alpha = 0.92$, and the retest reliability after two weeks Cronbach's $\alpha = 0.75$.

(3) Data processing

The data were analyzed and processed by SPSS22.0 and Amos17.0.

3. Research Results and Analysis

(1) Fitting index of model

Based on previous literature analysis and correlation analysis, the hypothetical model is evaluated by maximum likelihood method, and the model is modified on this basis. See Figure 1 for the standardized path diagram of the revised model, Table 1 for the fitting index of the structural model in the model, and Table 2 for the standardized path coefficients among the variables in the model.

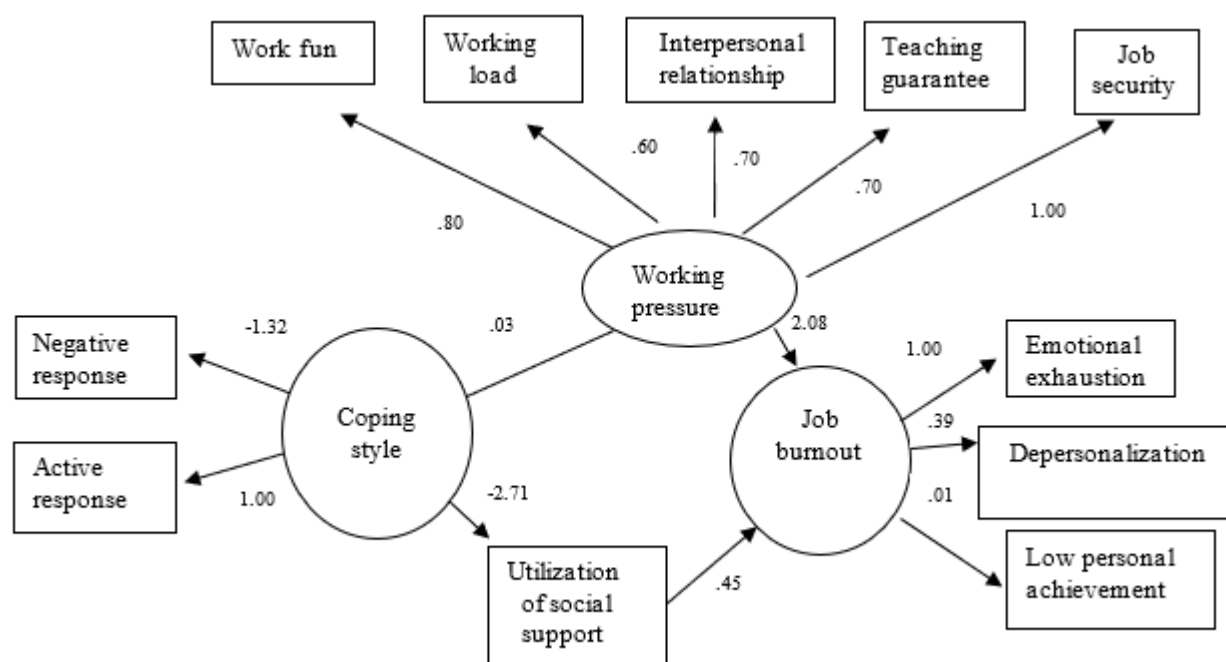
Table 1. Fitting Index of Structural Model

χ^2	df	χ^2/df	p	RFI	NFI	IFI	TLI	CFI	RMSEA
32.124	25	1.285	0.000	0.962	0.951	0.989	0.974	0.988	0.047

According to the fitting index, the fitting index meets the requirements of the structural model. Usually, the values of RFI, CFI, NFI, TLI and IFI above 0.95 indicate that the model fits well, while the value of RMSEA below 0.05 indicates that the model fits well. Therefore, the model has a good fit with the hypothetical model, which is totally acceptable.

(2) Standard regression coefficient between standardized road map and various factors

Job stress and personality of public physical teachers in colleges and universities are exogenous variables, which are influenced by coping style and support utilization in social support. The relationship model is shown in Figure 1.

**Figure 1.** Standardized Path**Table 2.** Standard regression coefficients among various factors in the structural model

Relationship between factors	Regression coefficient	Relationship between factors	Regression coefficient
Coping style <-work pressure	.026	Teaching guarantee <-work pressure	.705
Support utilization <-coping style	-2.711	Interpersonal relationship <-work pressure	.705
Job burnout <-job stress	2.075	Workload <-working pressure	.604
Job burnout <- support utilization	.454	Work fun <-work pressure	.805
Emotional exhaustion <-job burnout	1.000	Negative coping <-coping style	1.000
Disintegration of personality <-job burnout	.391	Actively respond <-coping style	-1.321
Personal achievement <- job burnout	.098	Job security <-job stress	1.000

Through the established structural equation model, we can see that:

Job stress and support utilization in social support have direct effects on job burnout of public physical teachers.

First, "Basic Standards for Physical Education in Colleges and Universities" issued by the Ministry of Education stipulates that "a required course of physical education must be offered for first-year and second-year undergraduate students with no less than 144 hours (no less than 108 hours for junior college students). Every week, physical education class shall be arranged for no less than 2 hours, and each hour shall be no less than 45 minutes. Elective physical education courses are offered for students of other grades and postgraduates, and the scores of the elective courses are included in student credits. In principle, the number of students in physical education class in each section should not exceed 30. " In some colleges and universities, the overall teacher-student ratio is far lower than the standard of "the teacher-student ratio of physical education in colleges and universities should not be lower than 1:300 in general and 1:280 in undergraduate colleges" proposed by the Ministry of Education. Under such circumstances, the teaching task of compulsory physical education courses undertaken by college physical education teachers is already very heavy. However, in fact, besides the teaching tasks of compulsory physical education courses stipulated in the Basic Standards for Physical Education in Colleges and Universities, physical education teachers in colleges and universities also undertake the teaching tasks, scientific research tasks, daily training and competition tasks of school sports teams and guidance tasks of school sports associations. Heavy work tasks often make public physical teachers in colleges and universities feel overwhelmed, physically and mentally exhausted, resulting in great work pressure. In the long run, teachers will easily breed negative burnout emotions, and eventually lead to the emergence of negative and negative psychology.

Secondly, the utilization degree of social support is the individual's utilization of objective social support when the individual feels or obtains it, which is the result of interaction between the individual and external support. Once the individual can't make good use of these supports, the imbalance between individual physiology and psychology will arise, which will interfere with the normal situation of the individual and lead to negative emotions and even job burnout.

Job stress also has an indirect effect on public physical teachers' job burnout through two intermediary variables: coping style and support utilization in social support. Coping style and social support, as intermediary variables of work stress, play a certain leverage role. Because of the different coping styles, the different sensibility of social support utilization, and the different ability to deal with and relieve external stimuli and pressures, the sensitivity to job burnout is different. Although the working pressure of public physical teachers in the same school is roughly equal, they will have great differences because of their different coping styles (positive coping and negative coping).

Therefore, coping style and support utilization in social support can play a role in job burnout of college physical education teachers as independent variables, and they are also intermediary variables of job stress. However, job stress and social support utilization can play a direct role in counselors' job burnout independently. Coping style, support utilization in social support and work pressure are not independent of each other, but integrated and synergistic.

4. Conclusion

College public physical education teachers have strong achievement motivation, hoping to achieve better and better achievements in training students, academic research, promotion of professional titles, etc., but they can't get everything they want. This will bring frustration to public physical teachers in colleges and universities, make them feel depressed and anxious, and produce job burnout. To solve this problem, public physical education teachers in colleges and universities should see a "way out" in their work to relieve their work pressure. The most important factor of job burnout comes from great work pressure, and at the same time, the pressure comes from people's unknowability and unpredictability for the future. Therefore, we should build a relaxed working environment and personal development platform for public physical teachers, and provide training and self-development opportunities to relieve their pressure.

To solve the problem of job burnout of public physical teachers, we need the support of national macro policies and establish a support system for public physical teachers in colleges and universities. The independent variable of social support has a direct impact on their job burnout. At the same time, it can reduce the pressure level, enhance the sense of job accomplishment, establish a reasonable evaluation mechanism, give full play to the guiding role of flexible and diverse educational evaluation systems, and make public physical teachers consciously realize educational reform. It is very important to improve the teaching quality of schools and reduce the occurrence of job burnout of public teachers.

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The Implementation of Curriculum Formative Assessment in Higher Vocational Colleges

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Abstract. Curriculum formative assessment refers to the assessment of the performance and effect of students' learning process in the teaching process, which is conducive to strengthening the control of the learning process. And it could provide timely feedback of teaching information, which is conducive for teachers to adjustment teaching rhythm and methods in time. And it is beneficial to improve the quality of teaching improve the quality of teaching. The proportion of the curriculum formative assessment in the total curriculum assessment results should be determined according to the nature and characteristics of the curriculum, and the assessment contents should cover three aspects of students' learning attitude, learning ability and learning effect. During the implementation, the assessment standards, procedures and methods should be told students in advance. And corresponding quality assurance mechanisms should be established to be comprehensive, objective and fair.

Keywords: Curriculum; Formative Assessment; Vocational College.

1. Background and Significance of the Implementation of Curriculum Formative Assessment

In recent years, summative assessment as the major teaching assessment approach in vocational colleges has fully showed its virtue, such as equality, objectiveness and effectiveness. However, summative assessment has also exposed some of its shortages. For example, summative assessment focuses on results and uses the score of examination to evaluate students learning performance, which cannot effectively stimulate students' learning motivation and cultivate their communicative competence. Moreover, students studied in vocational colleges are to some extent lack the enthusiasm of learning and their total autonomous learning ability is poor. For instance, they just do what the teachers asked and know what the teacher has taught in class, which means clearly that they lack of intrinsic motivation. Almost half of them do not have learning objects or strategies, let alone the ability of reflecting and improving learning methods as well as the ability of assessing their learning.

The term "formative" was first coined by Professor Scriven in "The Methodology of Evaluation in 1967." He used "formative assessment" and "summative evaluation" to distinguish the role of evaluation in the education project. Evaluation was used in the process of education project development or improvement means "formative", while in the decision making of the final result and overall value judgment on education projects were the "summative" [1]. Subsequently, Bloom extended the application of "formative assessment" in teaching and learning, and defined it as a systematic evaluation to improve these processes in the course construction, teaching and learning [2]. Since then, the research on curriculum formative evaluation or assessment has arisen one after another.

As we just said, summative assessment focuses on results, while on the contrary, formative assessment emphasizes the process of learning, diversity of testing forms, contents and methods. Formative assessment mainly aims at promoting students' development and providing decision-making information. Therefore, formative assessment was applied to the cultivation of autonomous learning ability in vocational colleges in order to confirm that formative assessment can cultivate students' autonomous learning. The significance of applying formative assessment is not only to boost teaching itself but also help to make learners become interested in learning and stimulate their learning motivation.

Recently, China has paid more and more attention to the quality of higher vocational education. The implementation plan of the national vocational education reform clearly pointed out that to promote the high-quality development of higher vocational education. Curriculum formative

assessment, as an important link in the process of modern education and teaching, has also increased its proportion in the curriculum assessment of various higher vocational colleges.

Under the background of "Internet +", students have more and more ways to acquire knowledge, and their demand for knowledge learning has greatly increased. They also have a deeper understanding of the importance of learning. However, in the specific learning process, students are easily affected by various factors. In particular, some higher vocational students do not develop good study habits, do not master good learning methods and skills, do not know how to take effective remedial measures for the weak links in learning, homework and exam mistakes. In terms of learning, they rely on the supervision of teachers, lack of learning ability and motivation, learning efficiency is not high, learning effect is poor. In view of this situation, teachers need to guide students to complete the learning process better by means of practical and flexible curriculum formative assessment. The main functions of curriculum formative assessment are as follows: First, strengthen the control of learning process, urge students to learn, and improve learning efficiency. Second, timely feedback of teaching information is conducive for teachers to adjustment teaching rhythm and methods in time. And it is beneficial to improve the quality of teaching improve the quality of teaching. Third, students' academic performance can be evaluated comprehensively and objectively. Fourth, attach importance to skill formation assessment to promote the improvement of students' vocational ability.

2. The Construction of Curriculum Formative Assessment Method

2.1 Design of Assessment Implementation Plan

The result of course assessment is composed of formative assessment result and finalization assessment result. Curriculum formative assessment mainly includes assessment of learning performance at ordinary times, regular homework, stage tests, specially designed curriculum big project, practical work and so on. Each category may in turn contain several items. Each major should select the type of assessment for formative assessment according to the nature and characteristics of the curriculum.

The content of curriculum formative assessment should cover three aspects of students' learning attitude, learning ability and learning effect. According to the nature of each course, the scores of these three aspects shall be synthesized into the formative assessment results in a certain weight ratio. The results of the formative assessment shall be recorded in the 100-point system. The proportion of the formative assessment results in the overall assessment results shall be determined according to the nature and characteristics of the course. The basic principles are as follows: for the public basic theory course, with theoretical teaching content as the main content and practical teaching content as the auxiliary content, the formative assessment score shall account for no less than 20% of the total assessment score of the course, and generally no more than 40%; for the professional basic theory course with both theoretical teaching content and practical teaching content, the formative assessment score accounts for no less than 40% of the overall assessment score of the course, and generally no more than 70%; professional skills and practice courses are mainly based on practical teaching content and supplemented by theoretical teaching content, the formative assessment results account for no less than 60% of the overall assessment results of the course.

In the concrete teaching process, teachers can put online and offline inspection ways organically, and they can design the assessment types appropriately according to different teaching purposes. Selecting the appropriate type of assessment based on their own specific conditions and learning needs of students are allowed in order to mobilize their interest in learning and cultivate their learning ability to a certain extent [3, 4].

2.2 Implementation Requirements

In the formative assessment, a detailed original record should be made of all kinds of situations in the course learning process of students, and the final score should be obtained by quantitative statistical analysis. The assessment result should avoid the assessor giving marks arbitrarily or mixing

personal likes and dislikes. The standards, procedures, methods of assessment should be unified and standardized and should not vary from person to person. Formative assessment must be carried out for every student, and the prerequisite for students to take part in the course finalization assessment is to pass the formative assessment and get more than qualified results. For each course, it shall organize the formulation of "Curriculum Formative Assessment Description" and submit it to the specialty director for approval and record, which shall be published to the students at the beginning of the course. The contents of the Curriculum Formative Assessment description include: the nature of the curriculum, the weight of the formative assessment result in the total score of the curriculum assessment, the types and weights of the formative assessment, the assessment content and scoring standards, etc.

3. Conclusion

To carry out formative assessment, the corresponding quality assurance mechanism should be established. Each semester, relevant departments should organize personnel to check the implementation of the assessment, and take the inspection results as an important basis for evaluating the teaching quality of teachers in the course. Through this inspection system, the implementation of the curriculum formative assessment should be supervised to ensure the assessment quality. The school or teacher shall inform the students of the formative assessment results before the course examination. The students have the right to raise questions and appeal against their own results. The teacher or the management department should timely correct the deviations and inadequacies in the assessment in accordance with the standardized operating procedures and reasonable demands of the students.

To carry out formative assessment, it is necessary to constantly improve the standards of formative assessment so as to truly impart knowledge, cultivate ability and guide the value of students.

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The Application of Cognitive Behavior Theory in the Helping Work of Troubled College Students

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Abstract. According to the cognitive behavior theory, cognition and behavior are taken as intervention points to help troubled students find wrong cognitive behaviors. Through the re-structure of cognition, we can help troubled students to establish a correct cognitive concept, and learn to rationally and calmly look at the people and events around. Then, further to their bad mood and behavior intervention, enhance the students' correct behavior concept, so as to help students get rid of the dilemma, really realize the healthy growth. This is a great significance to help the students in difficulties in colleges and universities.

Keywords: Cognitive Behavior Theory; Troubled College Students; Help Work.

1. Introduction

With the continuous increase in the number of college students, they have become an important reserve force for social development and play a key role in the future construction and development of the country. How to help the students grow up is a topic needed our college educators to think about. At present, the society and school attach great importance to the growth and development of college students, and have done a lot of work in mental health education and help for troubled college students. College is a transition stage from student to adult, which is an important period for the formation of cognition and behavior. Through the intervention of cognitive behavior theory, students with various bad emotions, wrong cognition and deviant behavior can be counseled and intervened to help troubled college students to solve their own problems. So that these students can get rid of the dilemma, integrate into the campus, achieve self-growth, and realize self-value.

2. The Dilemma Faced by College Students

At present, college students are faced with two main difficulties, the reality and the internal. The reality aspects mainly include employment pressure, school pressure, social problems, academic problems and so on. The internal aspects mainly include inferiority and anxiety caused by family reasons, timidity and depression caused by lack of character and ability. Once these two aspects appear in the cognitive deviation, it will cause bad psychological problems and deviation behavior. Ruolan Xu, a scholar, found in her research on cognitive dissonance that more than half of college students have cognitive dissonance. It can be said that cognitive biases are the important reasons that lead to the psychological problems.

2.1 Difficulties in Employment and Education

The final stage of college is faced with the choice of further study or direct employment. The choice of employment, on the one hand, is the huger number of graduates and higher professional and Research Direction; on the other hand, is the higher expectations of career choice, and the ideal university, the desired major, the pressure of scientific research and the pressure of life after graduation. No matter which aspect they choose, they will face great pressure, which will undoubtedly make some college students get into trouble, causing anxiety, irritability, depression and other emotions. Improper handling of these emotions will cause serious psychological problems, which will have a great impact on students' life, family and future.

2.2 Difficulties in Social

After students enter the university, most of the students can quickly adapt to the new environment, but some students cannot because of personality reasons, growth experience. In the long term, negative emotions will occur psychologically, such as unsociability in behavior, sleeping in class, or truancy. Long-term social communication difficulties will produce many adverse consequences. Therefore, it is a great significance to pay attention to the social problems of college students to help them grow up in difficulties.

2.3 Difficulties in Character and Ability

College is a diversified stage, on which students show their talents in different ways, so as to realize their self-worth. By joining the Student Union and serving as student leaders in the class, some students have strong organizational and communication skills that have trained their organizational and leadership skills. By actively participating in science and technology competitions, some students who like professional study can finally won a series of awards. However, some students often suffer from psychological inferiority and low mood due to family poverty and lack of ability. In addition, there is no "step by step supervision" from parents and teachers in high school, which makes them prone to various problems in the long run. Psychologically, it is inferiority complex and taciturn. Emotionally, it is easy to fluctuate and sensitive. In behavior, it likes to go it alone and soliloquize. These are difficulties in character and ability, which require timely intervention and help.

3. Conceptual Elaboration of Cognitive Behavioral Theory

Cognitive behavioral theory is the integration of behaviorism theory and cognitive theory. According to cognitive behavior theory, cognition plays a mediating and coordinating role among cognition, emotion and behavior. Cognition interprets individual behavior, and this interpretation directly affects whether an individual finally takes action. And in most cases, cognition and behavior go hand in hand. Cognition can change behavior, and behavior can also affect cognition. Cognitive behavior theory emphasizes that the problem is not inherent, which is external and internal. The helping process of cognitive behavior theory is mainly to help the recipient identify and change the wrong cognition. And according to the learning principles, positive reinforcement, negative reinforcement and demonstration are used to help the recipients gradually form the right behavior. In this process, the recipient learns the ability to deal with similar problems independently. After a long period of development, cognitive behavior theory has formed a complete theoretical and technical system, and its theories and methods are widely used in the practice of helping people in difficulties.

4. The Application of Cognitive Behavior Theory

4.1 The Breakthrough Point

The cognitive behavior theory takes the establishment of professional relationship as the breakthrough point of helping work. Workers and support sign a contract established role in the form of contact object on the basis of equal consultation. Workers play the role of both educator and partner in their professional activities. Teachers are authoritative for students who come to consult or receive help, hoping to change the current predicament. Both of them can easily establish a working relationship. In carrying out work, teachers need to assist students to discuss their thinking mode and negotiate with them about their wrong cognitive concepts. In this way, goals and strategies can be determined to help students learn correct behaviors. This kind of partnership can also help teachers and students to establish a relationship of trust and dependence. In this dual role, workers and students in distress have established a firm alliance to help, which lays a solid foundation for the development of the follow-up professional treatment work.

4.2 The Application

The main problems of troubled college students are closely related to their incorrect cognitive concepts. When cognitive behavior theory is used to help troubled college students, it is necessary to intervene their incorrect or irrational beliefs. The students' personality is relatively sound and have better dialectical and learning ability, which has advantages for the help work of cognitive behavior theory.

Specifically, it is necessary to start from the causes of the difficulties faced by college students to help to objectively observe the causes, and analyze the understanding and view of the event. And examine ideas from a rational point of view and discuss the relationship between the ideas and the dilemmas that arise to help students abandon the wrong cognitive thinking, form a reasonable and correct cognitive thinking. For example, the main misperception of employment dilemma is that the job expectations are too high and the self-evaluation value is too high. On the one hand, these students generally expect to find a job with good environment, high salary and easy work. On the other hand, self-feeling is too high and the lower job easy to let friends, family look down. In view of this situation, cognitive behavior theory should be adopted to help students realize the current employment form and employment pressure, and to assist students to rationally evaluate their own abilities. Cultivating their concept of employment selection first, to make them really get rid of the plight of employment problems, then form the rational thinking of employment.

Similarly, we can also use cognitive behavior theory to help college students with social and character and ability problems, to help them out of difficulties and truly achieve the goal of growing up.

5. Conclusion

At present, the professional concept and treatment methods of cognitive behavior theory have been widely used in the work of helping the troubled groups. It has a significant effect on correcting the wrong cognition, irrational belief, negative emotion and deviant behavior of the group in difficulty. This paper analyzes the application of the help work of troubled college students through cognitive behavior theory, hoping to provide some new ideas and new methods for the support work. There are still many difficult problems faced by college students in China, which need the joint attention and cooperation of the state, society, school and family. Only by constantly improving the helping system, increasing the means of helping, increasing the intensity of helping, and innovating the methods of helping, can we truly help the healthy growth of college students. There is no end to the education work. The more educators are hope to pay attention to the troubled college students to help them get rid of the difficulties, learn to be formal, to realize their self-worth.

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Analysis of the New Situation and Countermeasure of Ideological and Political Education in Colleges under the New Situation

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Abstract. Under the new situation, the constant changes of social development affect the thoughts and behaviors of college students, and the overall environment of the new situation impinges on the traditional ideological and political education, forcing colleges and universities to seek new educational modes. As ideological and political educators in colleges and universities, they should be able to correctly analyze the current new situation, understand the new situation and solve new problems. By analyzing the "new" situation of ideological and political education in colleges and universities, this paper summarizes the problems of ideological and political education in colleges and universities under the current new situation, and puts forward specific countermeasures, to have reference significance for ideological and political education in colleges and universities.

Keywords: New Situation; Ideological and Political Education; Education Mode.

1. Introduction

In recent years, the state attaches great importance to ideological and political education work, Colleges and universities are the main ideological and cultural front and the gathering place of young college students. College students as the backbone of country and society in future, grab the new characteristics of college students under the new situation, to further explore and put forward under the new situation of ideological and political education work new countermeasures, which is a heavy and long, task facing us at present.

2. The "New" Situation of Grasping the Ideological and Political Education in Colleges and Universities

2.1 The "New Normal" of Economic Development

For the ideological and political education work in colleges and universities, it is necessary to grasp the impact of economic development on college students, and guide students to cope with the new changes of economic and social development, such as the anxiety caused by rapid economic development, diversified value choices and so on. This requires colleges and universities ideological and political education workers to the new consciousness, new vision, new attitude to deal with this "new normal", strengthen the ideological and political education work of the new research, research under the "new normal" economy, the change rule of ideological and clear under the new situation the ideological differences between dynamic characteristics, and the future trend, to better carry out ideological and political education in colleges and universities has a great role in promoting.

2.2 "New Requirements" of Education Work

In recent years, the quality of higher education has become the core competitiveness of inter-state competition, and ideological and political education in higher education is the key to education, which can effectively improve the comprehensive quality of college students. This raises the new request to the university education work. Higher education has always been adhering to the development path of quality improvement, putting the cultivation of talents at the core of university work. The "new normal" of economic development and the "new requirements" of educational work force colleges and universities to adopt a new mode of cultivation in ideological and political education. The task

of ideological and political education in colleges and universities is to improve the quality and promote the all-round development of students.

2.3 "New Platform" of Ideological and Political Education

In the era of big data and Internet + mobile network has become an indispensable part of people's life. Almost all of them have access to the Internet, find the Internet in every situation, The Internet has become a necessary way for college students to study and live, Therefore, the ideological and political education in colleges and universities must be integrated with the Internet to carry out the ideological and political education in real time on the Internet to break the tradition, so that the vast number of college students can receive the ideological and political education in their daily study and life through the Internet, and to create a network brand of high-level ideological and political education with the characteristics of colleges and universities. Especially when events of great influence occur, ideological and political educators in colleges and universities should focus on the reality and introduce and explain relevant major events to students through new online platforms, so that ideological and political education can truly play a guiding role in ideology.

3. The New Information of Ideological and Political Education in Colleges under the New Situation

3.1 New Information about College Students

At present, the college students are more "after 95" and "00", they are in our country's economy society and high-speed mobile Internet development in the process of growing up, their ideas are easily affected by external factors of social environment, but they have also had the ability to accept new things, their advantages such as innovation ability are reflected in the following aspects:

3.2 Strong Desire for Expression and Innovation

Under the new situation, most college students are active in thinking, pursue new things and have a strong sense of innovation. In the face of the diversified social environment under the new situation, their concepts and consciousness are also changing constantly. They are full of confidence to know and understand the society, and even a small part of young college students wants to transform the society through their unremitting efforts. They have strong desire and innovation, they want to be attention, hope to be recognized, hope oneself can be that a "different", they can easily and resonate with the new ideas and new thoughts, they dare to think, dare to do, to take on responsibilities, they are hope the national development and national rejuvenation, is the future of the construction of the national effectives.

3.3 The Ability to Resist Pressure is Weak, and Psychological Problems Occur Frequently

Under the new situation, college students lack the strong ability to resist down, when the failure attribution more due to external factors, such as social environment, family economic condition, luck and relationships, rarely start from oneself, to reflect on my own shortcomings, in the end, all kinds of different psychological problems and even a few students go to extremes. from the perspective of the post-1995 and post-2000 generation, they are born in the new era. They bear the burden and responsibility from the society and the family, and bear the huge pressure from the family and the society. They are required to study well and perform well since childhood, which makes them have a huge ideological burden. in addition, most college students do not accurately conduct self-positioning and self-cognition, and if they do not receive cognitive adjustment and psychological counseling for a long time, they will easily have frequent psychological problems.

In addition, most college students do not accurately conduct self-positioning and self-cognition, and if they do not receive cognitive adjustment and psychological counseling for a long time, they will easily have frequent psychological problems.

3.4 Lack of Spirit to Bear Hardships and Stand Hard Work

Under the new situation, what college students think and what they do are often not the same thing, disconnected from each other. Under the new situation, college students have the advantages of strong logical thinking, strong adaptability, strong innovation, etc. But having been raised in a healthy, nurturing family environment, some of them have never been involved in housework and have poor ability to take care of themselves before going to college, not to mention the negative emotions and negative energy they show in difficult conditions, when it comes to hardship and hard work, they are discouraged and lack the spirit to bear hardships and stand hard work. Although some college students have good ideas in their minds, they find it difficult to stick to the end in the face of tough environment, which results in the disconnection between ideal and reality.

3.5 Pluralistic Values

Under the influence of the current social environment, people can get to know the information of various countries through mobile phones and the Internet every day. In this process, diversified ideas and values of the international community also enter the thoughts of college students. Some college students have insufficient understanding of the western governing concept and their attitude is not clear enough. In addition, after the reform and opening, many people pay more attention to practical problems and only focus on immediate interests, which leads to some college students' thinking confusion, anxiety, social complaints and other negative emotions.

3.6 New Information about Universities and Teachers

A. Form >Actual Effect

At present, almost all colleges and universities attach great importance to ideological and political education, but the emphasis is usually limited to documents and words, and relatively few of them are actually implemented. All the leaders, teachers, functional departments and students pay insufficient attention to the problem, and ideological and political education only stays at the superficial level. Every year, colleges and universities will carry out various forms of ideological and political education work and educational activities, but in essence, it can make students feel in their thoughts and touch their hearts, and there are few activities reflected in their actions.

B. Experience >Innovation

In the past, ideological and political education took ideological and political theory course as the main body. Teachers simply relied on classroom knowledge to teach students ideological and political education. However, under the new situation, college students like new things, are willing to try to challenge themselves, and pay high attention to new technologies and new thoughts. The previous teaching methods and experience of ideological and political theory courses can no longer meet the needs of college students under the new situation, and ideological and political education lacks innovation. This kind of innovation should be based on the actual situation of the current college students and then be studied and innovated.

C. Lead > Communication

The relationship between ideological and political educators in universities and college students is mostly the relationship between leaders and leaders. Teachers give orders and students immediately carry them out. There is a lack of communication between teachers and students. they only blindly suppress and manage students, seldom listen to the real thoughts of students. They lack democracy, fail to be student-oriented, and lack love and respect for college students. as a result, when students have problems, they do not want to seek the help of teachers in the first place, not to mention the collective warmth.

4. Countermeasures of Ideological and Political Education in Colleges and Universities under the New Situation

4.1 By Means of Self-education, the Moral Level of College Students can be Improved and Their Self-worth can be Realized

In terms of college students themselves, we should pay attention to improve their self-education ability and internalize the external requirements into their own self-requirements. This kind of education is the education form that truly touches students' heart. the self-education of college students is the key to their growth and success. Through accurate self-understanding and strict self-requirements, the best effect of education can be achieved. Only when college students turn the requirements of schools and teachers into their own, can they give full play to the effectiveness of ideological and political education. If you can use self-education freely, you can achieve your life value in any environment and at any time.

College students themselves should strengthen the cultivation of moral level, pay attention to exercise and cultivate themselves in their daily study and life. with the rapid development of information technology, college students should be able to distinguish the truth and falsehood of all kinds of information, strengthen the spirit of self-discipline, and constantly improve their moral level. The moral level of college students can effectively promote the ideological and political education in colleges and universities. A person with a high moral level will follow the moral standards and strictly require himself.

4.2 Through Theoretical Study, Improve the Political Literacy of Ideological and Political Educators

Ideological and political educators themselves should have higher ideological and political literacy, which directly determines the quality of college students and the effect of ideological and political education, and determines the direction of talent training in colleges and universities. Ideological and political educators should have a firm political stand and strong political sensitivity, so as to keep a clear mind on complicated things, strengthen self-discipline, strengthen theoretical study, keep calm in the face of danger, and maintain the advanced nature of ideological and political literacy.

4.3 Through Curriculum thought and Politics, We can Realize the Educational Goal of Cultivating People with Moral Education

Ideological and political education should mobilize the full participation of teachers and students of all universities, give full play to the practical effect of curriculum education, and integrate ideological and political education with classroom education in the daily teaching process. Teachers should change their ideas, adopt a positive attitude, set an example and teach by example, and rely on their own good ideological and moral quality and personality charm to make ideological and political education come true quietly. In the course explanation, educational cases are added. Through the explanation of educational cases, students not only learn professional knowledge, but also improve their ideological and political literacy.

4.4 To Establish the Resource Bank of Ideological and Political Education in Colleges and Universities and Realize the Optimal Sharing of Resources

Through the intercollegiate linkage of ideological and political education, colleges and universities optimize and integrate the excellent resources in ideological and political education, establish the resource database of ideological and political education in colleges and universities, and realize the optimal sharing and rational allocation of high-quality resources with the help of the Internet platform. The resource bank of ideological and political education has the characteristics of openness and sharing, which can meet the needs of online learning of teachers and students in colleges and universities all over the country.

In the construction of the resource bank of ideological and political education in colleges and universities, attention should be paid to the synchronous construction of the internal resources of

colleges and universities and the well-known external resources at home and abroad, and to the development and expansion of the teaching content of ideological and political theory courses. The teaching content is closely centered on the actual needs of students, combined with the cognitive characteristics of students, to build a scientific and rich ideological and political theory course teaching resource base, broaden the horizons of students.

4.5 Create a Good Network Platform Environment to Promote Ideological and Political Education

According to the characteristics of college students, a good network platform environment is set up to innovate the ideological and political education work with the use of micro-blog, WeChat, douyin and other multimedia software. in ideological and political theory class, flipped classroom is used to release the topics to be discussed in class in advance through the network platform. Students look for and read relevant materials before class and participate in class discussions to fully arouse students' enthusiasm for learning and cultivate their ability of independent learning. in daily life, with the help of the network platform, the content related to ideological and political education will be released, and relevant policies will be regularly released according to the issues that students focus on, to enrich the ideological and political theory learning of students. Such a good network platform environment can effectively promote ideological and political education, transmit relevant information in the first time, and further enhance the teacher-student relationship and strengthen the cohesion of the class.

5. Conclusion

In order to improve the quality of ideological and political education under the new situation, we must take students as the starting point, take educating people as the goal, and help college students face ideological problems and ideological doubts. Taking students' ideological needs as the starting point and end point of ideological and political education, and making full use of the platform of new media in the information age, ideological and political education is combined with practical problems of college students' work, study and life, so as to truly improve the quality and value of ideological and political education.

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Study of College English Teaching from the Perspective of "Entrepreneurship and Innovation"

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Abstract. With the slogan of "mass entrepreneurship, mass innovation", college students' innovation and entrepreneurship education has been widely concerned by all sectors of society, and the success of college students' innovation and entrepreneurship is closely related to many factors. Based on the current situation of college English teaching, this paper explores the new ideas of college English teaching reform incorporating innovation and entrepreneurship education concept, aiming at constructing the "English plus entrepreneurship and innovation" talent training mode, to better meet the needs of innovative entrepreneurship English talents under the new situation.

Keywords: Innovation and Entrepreneurship; College English; Teaching.

1. Introduction

In the outline of the National Medium and Long Term Education Reform and Development Plan (2010-2020), it is pointed out that "human resources are the first resources for China's economic and social development, and education is the main way to develop human resources. We should take students as the main body, teachers as the leading role, give full play to students' initiative, and strive to improve their learning, practical and innovative abilities. While educating students to learn knowledge and skills, they should also be taught to use their hands and brains in order to train a large number of top innovative talents. Therefore, the state formally put forward the concept of "innovation and entrepreneurship education", namely "entrepreneurship and innovation education", and combined innovation education with entrepreneurship education. As a new educational concept and mode, "entrepreneurship and innovation education" has been explored and researched extensively in universities.

On March 11, 2015, the General Office of the State Council issued the Guiding Opinions on Developing Public Creative Space and Promoting Public Innovation and Entrepreneurship, which explicitly proposed encouraging college students to start their own businesses. At present, innovation and entrepreneurship education has become one of the engines of economic growth and an important tool to advance the comprehensive reform of higher education. It is of great practical significance for carrying forward the healthy development of higher education, economic progress and social employment to launch innovation and entrepreneurship education in all universities (Ma Yongbin, 2015).

2. Research Status and Trend

At present, innovation and entrepreneurship education is introduced into university education as a new educational concept and goal. Starting from the 1997 Tsinghua University Business Plan Competition, as the beginning of the implementation of entrepreneurship education in China's universities, entrepreneurship and innovation education has been performed in our universities for nearly 10 years (He Fei, 2015). Colleges and universities have been paying increasing attention to practical teaching. Therefore, they have offered courses related to employment and entrepreneurship, which focus on professors with professional knowledge of employment and entrepreneurship as the key and difficult points of their teaching plans, and are committed to cultivating students' professional quality and employment ability (Tan Jing, Ye Hua, 2017). Based on this, many colleges and universities have incorporated the innovation and entrepreneurship guidance curriculum into their teaching plans, adopting the "basic teaching + simulation training + post practice" trinity of entrepreneurial talent training mode with entrepreneurial experimental parks, employment and entrepreneurship guidance stations, entrepreneurial trial classes, etc. as basic platforms. Accordingly,

they have been devoting to use the high-quality educational resources inside and outside the school to conduct a two-year series of basic knowledge of entrepreneurship, basic theoretical system teaching and entrepreneurship practice, and focus on the cultivation of students' cultural foundation and innovative thinking in the first and second grades. (Xuan Yufang, 2016). However, as China's innovation and entrepreneurship education is still in its infancy or embryonic development, some inherent laws in practice have not been fully understood by us. In addition, colleges and universities do not have sufficient experience in entrepreneurship and innovation education, and many guidance methods are too superficial and overall, failing to respect individual differences, so that they cannot fundamentally exercise students' ability to deal with the problems of entrepreneurship and employment flexibly, nor can they really help students overcome the obstacles of entrepreneurship and employment (Yu Yan, 2015).

3. Necessity of Integrating Innovation and Entrepreneurship Education with English Teaching

The "College English Curriculum Requirements" issued by the Ministry of Education states: "The goal of college English teaching is to develop students' comprehensive English application ability, especially the ability of listening and speaking, so that they can effectively orally use English and communicate with written information in their future work and social interactions. Meanwhile, it is aimed to enhance their self-learning ability, and improve their comprehensive cultural literacy to meet the needs of China's economic development and international exchanges." Innovation and entrepreneurship education is a systematic project that should be included in the educational content of various disciplines at all stages of education. For any subject, it is especially important to carry out popular innovation and entrepreneurship education in daily teaching, especially the cultivation of innovative spirit (He Fei, 2017).

Therefore, it is wise for college English teachers to make full use of the platform of college English curriculum to help students establish correct entrepreneurial awareness, cultivate their entrepreneurial ability, improve teaching methods, highlight the explanation of listening, speaking and language expression, incorporate innovative entrepreneurial education in college English teaching, and assist students in their study, work and social life. Flexible use of English communication is more conducive to enhancing students' competitive advantage in employment and soft power and increasing the job-hunting hit rate, laying a good foundation for future smooth entrepreneurship and employment (Zhang Jinhong, 2018).

4. Research Methods and Ideas

College English public courses are offered for a total of 64 school hours each semester. They can be taught flexibly and in a variety of ways. This research will adopt the methods of literature research, questionnaire survey, interview, comparative research, lecture and teaching observation. Based on the perspective of innovation and entrepreneurship education, this paper intends to conduct in-depth research on how to integrate innovation and entrepreneurship into college English teaching.

1) *Questionnaires and interviews*: questionnaires are sent out to college students and teachers, combined with open interviews to investigate the current situation of incorporating innovative entrepreneurship education into English teaching followed by analyzing the results of the survey, and then to write a survey report or research paper.

2) *Document research method*: using modern information technology to retrieve, collect and collate relevant literature to analyze and draw lessons from existing achievements.

3) *Comparative research method*: using the method of horizontal comparison to analyze and draw lessons from the advanced experience of different colleges and universities in different provinces; using the method of vertical comparison to examine the historical process of the application and development of communicative theory, in order to provide reference for improving the role of teaching theory in serving the society and training practical talents.

4) *Lecture method*: every semester, relevant lectures will be held to teach students about career planning and innovation and entrepreneurship.

5) *Course teaching observation method*: formulating teaching plan, and incorporating simulation experience, professional ability training, multimedia network and other means into the concept of innovation and entrepreneurship education.

5. Research Findings and Recommendations

5.1 Research Findings

(1) Lack of innovation and entrepreneurship education model: At present, most universities in our country are not clear about the goal orientation of entrepreneurship and innovation education. They only pay attention to professional disciplines and employment education, but ignore entrepreneurship and innovation education. It is mainly embodied in the following points: firstly, the setting of dual-creativity education courses is mostly carried out in the second classroom mode, such as in-school lectures and elective courses, and has not yet been formally incorporated into the compulsory courses of the school; secondly, it mainly relies on the teaching conditions of different disciplines of the university to carry out entrepreneurship and innovation education, and in some universities, entrepreneurship education is even limited to employment guidance departments; thirdly, practice is just equal to several contests, such as business plan competition, business model competition and so on. It is not enough to simply rely on such forms.

(2) The curriculum setting of innovation and entrepreneurship education needs to be improved: By investigating and studying the entrepreneurship and innovation education curriculum of ten domestic universities, the author finds that most domestic universities draw lessons from the curriculum design of foreign universities. The curriculum involves many aspects such as enterprise establishment, investment and financing, marketing and management, with emphasis on courses such as "foundation of entrepreneurship", "identification of opportunities for entrepreneurship" and "enterprise leadership". However, the development and design of entrepreneurship and innovation education courses in universities in China are scattered and limited in number (Ma Yongbin, Bai Zhe, 2016). There is a lack of penetration of entrepreneurship courses among different disciplines, and the number of combination of basic courses and practical courses is very small, especially the combination of college English courses and entrepreneurship and innovation education.

(3) Educational evaluation system needs improvement: At present, there are two problems in the evaluation criteria of entrepreneurship education in Chinese universities: first, for students, it is still based on whether the enterprise is successfully established or whether the company is profitable. Second, for teachers, the university and the government do not distinguish the evaluation mechanism of entrepreneurship teachers and traditional teachers. The same evaluation mechanism makes entrepreneurial teachers unable to concentrate on the practical research of entrepreneurship, but consumes a lot of energy on the traditional evaluation mechanism within the school, which is not conducive to the scientific and rationalized construction of the teaching staff.

(4) The support system of innovation and entrepreneurship education is not perfect: The all-round development of entrepreneurship education cannot be achieved overnight. It is interfered by many factors. Firstly, the government and schools have insufficient policy support for entrepreneurship education, lacking policy measures for entrepreneurship of students in schools; secondly, the shortage of entrepreneurship funds makes it impossible to solve the financial needs of students' entrepreneurship.

5.2 Research Proposal

(1) Reshaping educational objectives and awakening students' entrepreneurship and innovation consciousness: It's better for teachers to develop students' entrepreneurship and innovation consciousness in class, that is, the need for entrepreneurship, the motivation for entrepreneurship, the interest for entrepreneurship, the ideal and belief for entrepreneurship, etc. In addition, it's necessary to actively explore the "student-centered" classroom teaching mode, establish interactive teaching

mode, correctly guide them to transform their self-awareness into innovation and entrepreneurship awareness, and stimulate their internal motivation. Secondly, they shall be good at developing students' different interests and hobbies and respect individual differences. Only by this way can they teach students in accordance with their aptitude, and integrate their interests and hobbies with entrepreneurship education.

(2) Reforming the educational concept and focusing on the cultivation of students' ability of "entrepreneurship and innovation": The core of entrepreneurship and innovation education is to cultivate pioneering talents with innovation and entrepreneurship ability. Such talents not only have the consciousness of innovation and entrepreneurship, but also have certain innovation and entrepreneurship ability, social and management skills. This is also the key and difficult point to break through in this research. It's needful to change the English subject-centered curriculum system into the ability-centered curriculum system accompanied by optimizing and integrating the curriculum content, so that the curriculum content will change from single type to comprehensive one, from theoretical knowledge imparting to ability training.

(3) Integrating educational resources and improving students' entrepreneurship and innovation quality in an all-round way: In terms of college English curriculum, efforts should be made to change from a single course to a "menu-based" course group by adhering to the combination of basic English courses and improved English courses. Meanwhile, it's essential to lay emphasis on the construction of ESP module to transform the plan of cultivating entrepreneurship quality into specific practical teaching activities well. The organic combination of teachers' guidance teaching and students' initiative learning will help students gradually form the consciousness and psychological quality of innovation and entrepreneurship, so that they can better learn and master the knowledge and skills of innovation and entrepreneurship, and constantly improve the basic quality and practical ability.

(4) Constructing a diversified evaluation system of college English teaching to stimulate students' "entrepreneurship and innovation" motivation: The construction of teaching evaluation system is the most easily neglected link in the whole teaching content, but it is a really very important link as an effective evaluation of teaching content and teaching activities. It is more scientific and reasonable to construct a diversified evaluation system of college English teaching. (1) Teachers allow students to make self-evaluation, and teachers just play a supervisory role. (2) Teachers need to evaluate students comprehensively to avoid one-sidedness and absoluteness. (3) The evaluation methods of students of different majors should be diversified. (4) When evaluating teachers, students' innovative ability and comprehensive application ability should be taken as the core criteria. The construction of diversified teaching evaluation system is not only the responsibility of teachers, but also needs cooperation of students.

6. Conclusion

College English teaching should break away from the traditional teaching mode and seize the psychological characteristics of students by always focusing on them to actively mobilize their learning enthusiasm, and integrate the concept of innovation and entrepreneurship education into college English teaching well. At the same time, students should be guided to establish healthy and upward outlook on life, values, world outlook and entrepreneurship.

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The Influence of Representation Training on the Teaching Effect of Football Basic Techniques in Sports Colleges

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Abstract. In this study, students are trained in basic football skills by imagery training. In football teaching, the traditional teaching method and imagery training method are used in the control group and the experimental group respectively. Through the comparison and analysis of the experimental data obtained by using imagery training method and traditional teaching method in football teaching, the influence of imagery training method on the teaching effect of football basic technology is obtained.

Keywords: Image Training Method; Basic Football Skills; Teaching Effect.

1. Introduction

In the process of football basic skills training, in order to quickly improve students' ability to learn basic football skills, teachers will use imagery training method to ensure that students can master the basic essentials and movements of football in a short time. At the same time, imagery training method can also stimulate the improvement of students' image level, so that students' psychology and body are better prepared to master new learning methods.

Imagery training is a kind of positive psychological training method. It pays full attention to the dynamic role of imagery in the formation of skills, and gives full play to the psychological function of regulating and dominating the skills. Therefore, it is an effective training method to promote the formation of skills. The learning of any motor skill is influenced and regulated by mental factors. Therefore, early motor function is called "psychomotor function". It means that motor skill is not a simple explicit reaction, but controlled by internal psychological process. Motor skills are often inseparable from perception, so early people often call the connection between perception and movement "perceptual motor skills". The theory of skill formation shows that any motor skill cannot be formed without the adjustment and domination of consciousness. Perception, memory, imagination and thinking are not only regulators of motor skills, but also necessary components of motor skills.

Imagery training, also known as mindfulness training and imagination training, can be used by teachers consciously and actively to improve students' imagery level. It has been proved by experiments that when athletes are faced with competition situations, recalling the brilliant experiences of past competitions can reduce the anxiety they have experienced. The imagery training of skills helps to reduce stress reaction, and the imagery training can make students shift their worries about achievements to their attention to activities, and improve the quality of technical actions.

The teaching procedure is: watching demonstration, listening to explanation-exercise of action representation-exercise of basic technical actions. Taking learning to kick the positioning ball on the inside of the foot as an example, the students leave a complete action representation to the students through the teacher's accurate demonstration and detailed explanation of the action essentials, and establish the teacher's correct technical action in the mind through visual representation, and combine the psychological recollection with the movement feeling of completing the action (seeing oneself do the action in the mind means watching a movie), establish and consolidate the psychological schema of the complete action, and then combine the actual practice with the technology to gradually establish a good psychological control method. At the same time, in the teaching process, arouse the whole-body muscle image, improve the understanding of action practice. The teaching of review, consolidation and improvement stage is the key stage to promote the students to further learn and

master the football technical movements and form the action stereotype. The basic teaching procedure is: Imagery Training - Football basic technique practice - observation study - key representation - action practice. Taking the review of kicking set pieces on the inside of instep as an example, in addition to making students recall the action essentials and action images of the medial instep kicking, the main purpose is to let students observe and imagine the time, space feeling and muscle force of the inner instep kicking. That is to say, the appearance (watching oneself play football inside the foot) gradually turns into the inner appearance (feeling oneself play football inside the foot), and it can be said that it should gradually change from "watching movies" to "acting movies" yourself. This "film" should also be changed from the original "silent film" to "sound film"; From "black and white film" to "color" film. Consciously and actively use the action representation formed in the mind and make full use of imagination to practice technical actions. In this stage of teaching, teachers should strengthen the induction training for students, stimulate students' mental state with action representation through language prompts, hints, action demonstrations, etc., and guide students' mental state to the teachers' expectation of completing correct action representation to practice, to master correct technical actions as soon as possible. In teaching, teachers should be good at obtaining the information from students' feedback, consciously observe students' expressions, postures and actions, timely capture the transient feedback information in teaching, and adopt the feedback control teaching mode of practice - informing the non-standard actions in practice - the self-feedback adjustment of the practitioners. Teachers should find out the problems in teaching in time, inform the non-standard actions in practice, guide students to observe the difference between right and wrong actions, so that the students can repeat the correct action image in their mind through the imagination in their mind, so that the correct action representation can be clearer in the mind, and self-regulation and correction can be made timely under the guidance and help of teachers. In this exercise, we should pay attention to giving students more free time to practice alone, and form a group practice form, in order to help each other, help each other, learn from each other, and gradually cultivate students' ability to think independently and analyze and solve problems with their brains. Students should think more, see more, compare and analyze problems, consciously and actively use the sports images formed in their minds, and make full use of imagination to practice technical movements. Observation is a very important learning method. Many new technical actions can be learned from observation. Watch the teacher's demonstration, watch the classmate's action demonstration, learn the correct technical actions of others, use your brains to analyze the advantages of other people's actions, compare your own technical actions, and find out your own mistakes and why these mistakes occur. Then filter the recall of action representation several times in your mind, and practice in connection with action representation, to pay attention to correct it in the following exercises.

The imagery training method emphasizes the student-centered teaching activities under the effective control of teachers. Based on the original traditional teaching concept, it points out that the relationship and status between teachers and students in teaching have changed to some extent, and students' learning is no longer blind or passive. They will learn basic skills according to their own level and needs, deepen their understanding of basic football skills, and constantly improve their technical level. Thus, the imagery training method is a teaching activity which starts from giving full play to students' subjective initiative and combines leading and initiative under the effective control of teachers.

2. Research Method

(1) Research object

In this study, 120 students from a sports college in Yunnan were randomly selected, and 60 students were randomly selected from the control group and the experimental group.

Imagery training was added to the teaching of basic football skills for students in the experimental group. The control group was trained in four basic football skills: passing, dribbling, dribbling and shooting around the pole.

(2) Research tool

The Sport Imagery Questionnaire: Hall et al. (1998) developed the questionnaire, which contains five subscales, each subscale has one dimension. Measure five dimensions: the appearance of arousing special motivation and the appearance of arousing motivation. The scale has good internal consistency and structural validity (the Colomback coefficient is between 0.70 and 0.88, and the correlation coefficient of each dimension is between -0.45 and 0.32).

(3) Data processing

The data were analyzed and processed by SPSS22.0.

3. Investigation Results and Analysis

Table 1. The difference test of basic football technical performance between the experimental group and the control group before training

Variable	Control group		Experimental group		T	P
	M	SD	M	SD		
Pass	80.850	1.161	81.020	.318	-1.085	.282
Dribble	82.150	1.070	82.050	.219	.772	.443
Dribble	81.700	.907	82.383	3.252	-1.704	.094
Shoot	82.400	.741	83.483	2.091	.063	.950

It can be seen from table 1 that $P > .05$ indicates that there is no difference between experimental group and control group in basic football technical achievements before starting imagery training.

Table 2. Test of the difference between the experimental group and the control group before training

Variable	Control group		Experimental group		T	P
	M	SD	M	SD		
The appearance of stimulating special motivation	19.471	1.780	19.501	.504	-.130	.897
The appearance of arousal motivation	20.000	1.008	19.721	1.932	1.074	.287
The appearance of motivating control motivation	20.501	1.531	20.020	2.159	1.267	.210
The representation of special cognition	21.010	1.008	20.922	1.510	.350	.728
The representation of general knowledge	22.152	2.017	22.000	2.017	.550	.585

It can be seen from table 2 that $P > .05$ indicates that there is no difference between experimental group and control group in five dimensions of motor imagery before starting imagery training.

Table 3. The difference test of basic football technical performance between the experimental group and the control group after training

Variable	Control group		Experimental group		T	P
	M	SD	M	SD		
Pass	81.283	1.391	82.283	2.210	-2.876	.006
Dribble	83.366	1.594	84.333	2.972	-2.288	.026
Dribble	82.633	2.476	83.634	2.335	-2.091	.041
Shoot	83.300	3.109	84.600	2.762	-2.761	.008

It can be seen from table 3. that $P < .05$ can be seen in the scores of dribbling and spiking, which shows that there are differences between Control group and experimental group. That is to say, through the training of imagery training, the students' two grades have been improved obviously. $P < P < .01$ shows that there is a significant difference between Control group and experimental group in the basic skills of passing and shooting around the pole. That is to say, through the training of imagery training, the students' two grades have been improved obviously.

Table 4. Test of the difference in sports appearance between the experimental group and the control group after training

Variable	Control group		Experimental group		T	P
	M	SD	M	SD		
The appearance of stimulating special motivation	19.850	1.911	23.730	.504	-4.415	.000
The appearance of arousal motivation	20.466	1.908	23.516	7.181	-3.214	.002
The appearance of motivating control motivation	20.983	2.375	25.100	8.138	-3.779	.000
The representation of special cognition	20.750	1.322	24.883	6.548	-4.741	.000
The representation of general knowledge	23.050	4.378	25.483	6.585	-2.774	.007

As can be seen from table 4, $P < 0.01$ indicates that there are significant differences between the experimental group and the control group in the five dimensions of motion imagery before the imagery training. That is to say, through the training of imagery training method, the appearance of stimulating special motion, the appearance of outdoor motion, the appearance of moving control motion, the representation of special recognition and general cognitive imagery, the use of these five dimensions of imagery is significantly increased compared with the use of non-training. It shows that the imagery level of experimental group is much higher than that of control group after imagery training.

The imagery training method can obviously stimulate students' imagery ability, while the traditional teaching method cannot achieve the teaching effect of imagery training method. The use of imagery training in football teaching enables students to reproduce clear and realistic basic technical movements in their minds before practice, which can make students better prepare for these technical movements psychologically and physically. In practice, we use the previous representation to prepare and actively cooperate with the sensory organs of the body, such as sense of movement, touch, hearing, etc., so that the representation ability has been significantly improved. Because every basic technical action can be fully prepared, the students' scores have also been significantly improved.

Image training, a training method, enables students to improve the efficiency of learning basic skills through the appearance of images in their minds. In the training of basic football skills, the imagery training method can improve the training results and quality of the training students obviously compared with the traditional training methods.

The imagery training method can help students master the basic skills of football faster, which breaks the traditional training methods of basic skills of football, fundamentally changes the training methods of coaches, and helps students understand the essentials of basic skills more quickly and with high quality. Imagery training can stimulate students' memory of basic skills, improve their mastery of basic skills, improve their ability to use and ensure the effectiveness of their achievements. Moreover, imagery training can improve students' autonomy and interest in learning football and stimulate students' innovative thinking ability in the training process.

4. Conclusion

The imagery training method is a unique training method, which can improve learners' learning confidence, improve the training effect and achieve the expected goal better. The imagery training method accords with students' learning characteristics and absorption ability, which is beneficial for students to quickly understand and master basic football skills. Imagery training is one of the important ways of sports psychological training. It plays an important role in football teaching. As a physical education teacher, if he can't master sports psychological training in physical education, he can't really complete the teaching task. Only by carrying out physical education according to the law of students' psychological activities can the quality of physical education be improved.

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To Stimulate the Practicality of Military Vocational Education Curriculum with Typical Tasks as the Guidance

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Abstract. The military vocational education emphasizes the cultivation of post holding ability, which demands the practice of vocational education curriculum. By analyzing the differences between military vocational education and higher education in Colleges and universities, we can see that the apprentice inheritance mode of vocational education pays more attention to the explicit teaching development, while the training mode based on "typical tasks" is more conducive to the practical highlight of military vocational education. Furthermore, by analyzing the typical tasks of posts, we can complete the curriculum system of vocational education, optimize the thinking and methods of teaching organization, and improve the pertinence and effectiveness of military vocational education.

Keywords: Military Vocational Education; Curriculum; Typical Tasks; Teaching Organization.

1. Introduction

In essence, the vocational education of soldiers has a strong post orientation, which further puts forward high requirements for the practicality of vocational education curriculum. Therefore, the training goal of military vocational education should first be positioned at "doing" and "using", and then emphasize knowledge, that is, knowledge understanding in the process of "doing" and "using".

2. Differences between Military Vocational Education and Higher Education in Military Academies

From the perspective of teaching objectives, military vocational education clearly points to the cultivation of post holding ability, which is the quality requirement of practical operation ability with the goal of "doing" and "using", and emphasizes the explicit development; while the teaching in military colleges and universities focuses on the construction of basic subjects, theory first, and internal recessiveness of development.

From the practical point of view, the military vocational education should have a completely different teaching mode from the basic education in ordinary military schools. The military vocational education mode is more similar to the ancient apprenticeship teaching mode, which takes imitation in practice as the main mode, and consolidates the professional skills through repetitive and phased skill training; while the basic education in general military academy is mainly taught by teachers and students' learning, memory and understanding.

In terms of the construction of knowledge system, military vocational education focuses on "doing" and "training". The logic of knowledge system construction is to understand and summarize theory in continuous imitation practice, and internalize professional theory into application practice. The higher education in military academies establishes the knowledge system through the "learning feedback extension" mode dominated by theory, and then applies it to practice, which is a process from theory to practice.

It can be seen that military vocational education is independent of the higher education system of military colleges and universities, so it should not be regarded as the "low allocation version" of relevant majors in military academies, nor can the educational methods of military academies be simply applied to military vocational education. The curriculum design of military vocational education should not only be based on the relevant professional courses of military academies, but should directly point to the "practice" core, drive the theory with practice, and reasonably set up the course content.

3. Curriculum Design of Military Vocational Education Guided by Typical Post Tasks

CBE and MES are widely used and achieved good results in Vocational and technical education in western developed countries. Although CBE and MES have different emphasis on the object and scope, they basically reflect the development direction of modern vocational and technical education, that is, curriculum development technology with "task" as the core concept.

The "task" setting of the military vocational education curriculum should not be generalized, that is, the trivial and complex specific affairs of the specific post cannot accurately point to the post ability. The post competence should point to the general responsibility of the post. In order to form the "typical task" of the post, we should abstract, screen and summarize the general responsibilities. In the scope of teaching curriculum, typical tasks should be understood as a set of work processes, including the cross allocation of relevant personnel and material resources and the support of relevant professional knowledge.

Only by systematically setting up post typical tasks and vocational education content framework, organizing curriculum education content around post typical tasks, can students clearly understand the purpose of knowledge learning, clarify the application field of knowledge in the work process, and further grasp the specific path of knowledge application.

Therefore, the curriculum design of military vocational education guided by typical post tasks should follow the following ideas, as shown in Figure 1: firstly, the general responsibilities of posts are sorted out, analyzed and summarized, and the typical tasks corresponding to military vocational education are determined. Second, analyze and decompose the workflow of each typical task, the allocation of resources (human and material resources) and the content of professional knowledge implied in the process of task completion. Each operation step of the workflow corresponds to the professional implementation curriculum, and the implicit professional knowledge content (as well as the required basic knowledge extended knowledge) corresponds to the professional theoretical course. Finally, it summarizes the professional practice and theoretical knowledge, finds out the missing, and improves the military vocational curriculum.

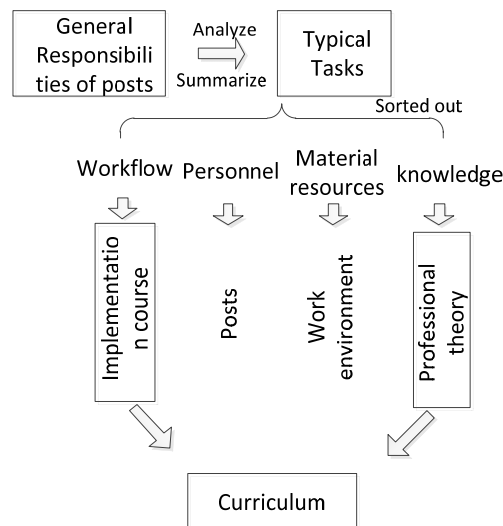


Fig 1. Curriculum design of military vocational education guided by typical post tasks

4. Teaching Organization of Military Vocational Education Curriculum based on Typical Tasks

The military vocational education system takes practice as the core of education and takes typical tasks as the main line. The focus of education lies in the decomposition process of each task, while the related professional theoretical knowledge (including basic knowledge and related extended knowledge) exists in the form of background knowledge in the training. The schematic diagram is

shown in Figure 2 (a). As shown in Figure 2 (b), the internal relationship between practical training and theoretical training is difficult to be directly represented, and it is precisely this internal link that determines the students' ability to learn and use. Therefore, reasonable teaching organization is particularly critical. The purpose of teaching organization should be to restore the structure between practice and knowledge to the implicit mode of "typical task", that is, the teaching logic shown in Figure 2 (a). Through the organic combination of subject training and theoretical knowledge of the items, the teaching design is organized in the form of structural modules. This kind of emphasis on the structure of theory and practice teaching content will help students to establish the cognition of post and improve the application ability of skills and theory.

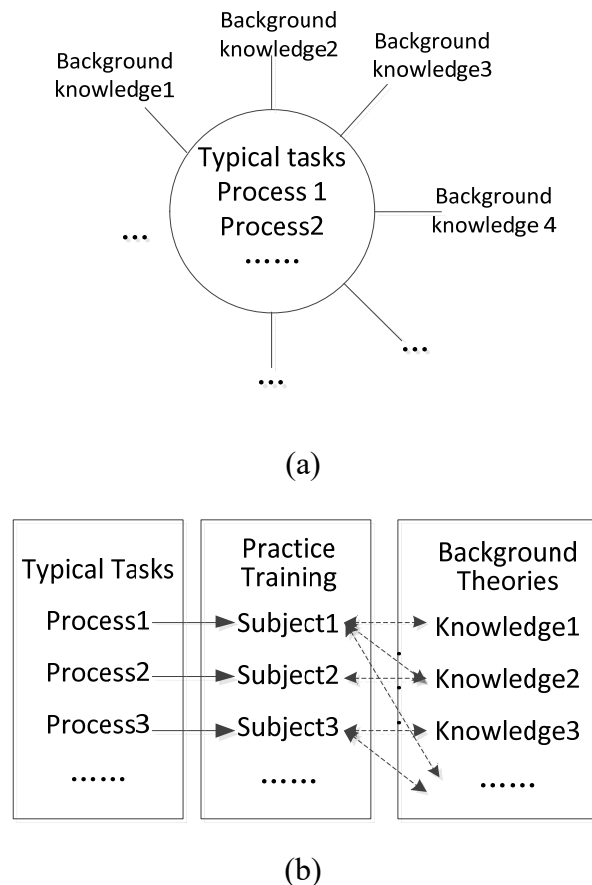


Fig 2. Practice and theory connection with "typical task" as the main line

The military vocational education, which aims at cultivating the post ability, essentially determines its high practical requirements. The curriculum design of military vocational education driven by the "typical tasks" of the post will help to clarify the teaching objectives and improve the teaching efficiency.

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Research on the Innovation of Linear Algebra Teaching based on Potential Science

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Abstract. Mainly discuss the linear algebra course in the case of fewer hours, combined with the actual situation of the school and team teaching experience, through the analysis of teaching content, teaching mode, assessment methods, etc., and think about how to advance and deepen the teaching of linear algebra. From the perspective of improving the effectiveness of classroom teaching, a series of in-depth research and discussion have been carried out around the teaching of linear algebra application cases. First, it briefly analyses the significance of linear algebra application case teaching; secondly, it introduces the specific application of teaching cases in linear algebra teaching in detail; finally, based on the above research, explores the points for attention in linear algebra application case teaching.

Keywords: Teaching of Linear Algebra; Assessment Methods; Potential Science.

1. Momentum and Teacher Teaching Information Potential

Everything in the world has momentum, indicating the state, situation and trend of the development of things, and momentum is an objective existence. Such as "power is like breaking bamboo", "advanced in the light of the situation", "ready to go", etc., all illustrate the objective existence of momentum. Lao Tzu said, "Tao-born, virtue-storing, material-shape, and power-forming" ("Tao De Jing"); Sun Tzu also said, "The urgency of rushing water, as for those who drifted the stone, the power is also" ("Sun Tzu's Art of War · Shi"). It can be seen that "power" is understood as an influence or function in traditional Chinese culture. A potential field is created, and the "potential" in physics is often associated with work and energy. For a system, it has the conditions to do work, which forms the internal driving force for the development of the system and the basic conditions for external competition, creating an information potential. Based on the above ideas, Professor Li Dechang (2008) of Xi'an Jiaotong University put forward the basic theory of potential science: $\text{potential} = \text{difference} \times \text{connection} = \text{difference} \div \text{distance} = \text{derivative}$. Think of the evolution of the universe and link the concept of potential with the concept of information. He believes that the development of individuals, organizations, and society is directly related to the promotion of momentum. The differences between things exist objectively, and information is generated, and the differences between things are linked together to form momentum. Therefore, potential science is a discipline that studies the mechanism of difference and connection. It has the following three basic laws:

(1) The law of the mechanism of potential: The operating mechanism of potential is that difference promotes connection and connection expands difference. Therefore, the "trend of potential" remains unchanged, the universe is accelerating and the development of society is accelerating, so it is called the "principle of potential increase."

(2) The law of evolution of potential: When the steady growth of potential reaches a certain critical value, the system will undergo non-equilibrium phase transitions and nonlinear bifurcations, thereby deriving new qualities, or generating innovation and risks, so it is also called "The law of bifurcation".

(3) The law of symmetry of potential: the growth of potential at a certain level will produce symmetry, that is, undamped material potential acts to form a substance group, and undisturbed information potential acts to form a quality group, thus forming personal quality harmony and organizational harmony with society is also called the "law of harmony".

Quality is not only the inherent characteristics of people and things, according to the interpretation of "Ci Hai", but also can be compensated in the practice and study acquired. Therefore, "the qualities of people and things are formed in various interactions, that is, 'action produces qualities'." Professor Li Dechang further pointed out from the perspective of information interaction.

"Effective amount of information" refers to the amount of information that has been integrated, based on the principle of information dynamics, the amount of information, and the amount of information that has internal connections after integration, generally refers to the "effective amount of information" (in fact, it is the information in science). For narrative convenience, it means effective information and effective information volume. According to the calculation of information theory, the information or amount of information mentioned in the field of potential science in the future, the information is expressed as negative entropy, which means order (increased entropy is an increase in chaos, which is disorder), and negative entropy means entropy Minus, order constitutes a gradient, which includes the process of eliminating the difference of phenomena and advancing to the limit of essential connections). Information is negative entropy, that is, order, that is, gradient, that is potential. Gradient is momentum (in this deduction process. Therefore, it can be simply said: Therefore, that is, a school that can generate more educational information is a good school. If we say that a school that can create a strong education is a good school, we can also say, and because potential is gradient, slope, and derivative, the school with the strongest derivative ability is a good school, and the school with the largest comprehensive derivative value is a good school.

It is further reflected in the following examples calculated according to the information theory, the equivalence relationship between the amount of information and the information potential, and the comparison of a single event. For example, things that are rare in a hundred years have a large amount of information, and those with a small probability of events have a large amount of information and things that will not happen in a hundred years happen. This is because things that are rare in a hundred years are more different in the same connection from ordinary things. A large amount of information is evenly distributed with equal probability., Shockingly bigger, random field comparisons are more uncertain than judging two opponents with disparity in strength." For example, judging two evenly matched opponents will win, with the most information and the greatest potential, because the two evenly matched opponents are symmetrical---the difference is the biggest and the connection is the tightest. There are many basic events, in terms of equal probability random fields. For example, the uncertainty of choosing one of three is greater than choosing one of two." The average amount of information is larger, and the greater the potential, the higher the system complexity. It is because the more factors, the greater the difference in the same connection.

In fact, so the potential is big-rich and powerful; the amount of information and the information potential are equivalent. The wealthy people have a large amount of information, so they are powerful and powerful (the currency numbers in the account are large); the knowledgeable people have a large amount of information, and the powerful people have a large amount of information (the essence of power is The greater the possession of information, the greater the power, the more people report to him), so it is powerful-knowledge is power; the possession of information is large, so it is powerful-there are many people and many people; people with many friends have aesthetic ability The amount of effective information (art information) possessed by good people is huge. For a person, the amount of effective information possessed by people with great virtual abstract ability is huge. The amount of information he possesses expresses that the amount of internal information possessed at a certain moment and the amount of information received at that moment are two different things. It is a representation of his ability and a guarantee for dealing with external uncertainties. Order is a variety of organically connected information that has been integrated, so the more orderly thinking and actions that can be controlled, the greater the amount of information a person or organization has at a certain time, the greater the potential. When the subject's information potential is greater than the environmental information potential or the information potential of the facing object, the more external uncertainties that can be eliminated, the uncertainty disappears.

Therefore, the information potential of the school should also include all the above content. The school is an organization in a broad sense, but the educational information potential of the school and

the information potential of the curriculum setting in the major mainly refer to the knowledge structure of the school talents. Information potential, the information potential of the school's professional settings, etc., the information potential of the school's textbook structure.

"Modern pedagogy theoretical research from the perspective of potential science" provides an effective macroscopic research approach to the complexity of information society education, and lays a logical foundation for the reconstruction of pedagogy theory on the basic level of studying information interaction.

The order of information is knowledge, the order of information is information, the order of knowledge is method, and the order of method is wisdom. In addition, order is gradient, or slope, as the famous physicist and thinker David Bohm pointed out: "In fact, we must understand the order of the definable form of matter, with the help of which we will have hope to understand intelligence. ". That is the derivative, so the second derivative of knowledge and wisdom are the derivative of method and the third derivative of information. Therefore, it can also be said that the second-order potential of knowledge, wisdom is the third order potential of method and information.

Imbalance is the source of order, and the learning quality of students is the orderly structure and function of the object and imbalance can only be produced under the general trend. It is under the influence of great emotional potential-great passion, great love, and psychological imbalance for linear algebra learning-to produce pursuit and exploration to achieve knowledge and methods in an orderly and great interest. Therefore, you can learn linear algebra effectively and produce wisdom qualities.

2. Internal Factors of Students' Linear Algebra Learning Ability based on Potential Science Theory

The most important quality in the talent quality structure, in the information society, the specific manifestation of learning quality is learning ability, which may be learning quality.

We can give a scientific and logical definition of learning ability, based on the theory of potential science: the potential of knowledge information is multiplied by the emotional damping (emotional stickiness) of the individual or organization for this kind of knowledge and information, and learning ability is that of the individual or organization. The inherent information power of an individual or organization. It can be given by the following formula

$$F = f \cdot M \cdot A = f \cdot M \cdot dv/ds = f \cdot M \cdot dv \cdot dl$$

In the formula, M is information damping, that is, the emotional stickiness or emotional dependence of the affected person on this type of information in a certain information environment; A is "information" or "information potential", generally refers to the amount of effective information $A = dv/ds$; dv as information difference; Information distance; d is information contact $dl = 1/ds$.

Ignore the uncertainty coefficient of the environment f , that is, the learning environment is considered certain, $f = 1$, and the learning ability is

$$F = M \cdot A = M \cdot dv/ds = M \cdot dv \cdot dl$$

Because it is the "difference x connection" of the individual's original knowledge, that is, the intrinsic knowledge information potential A and M are information damping, that is, emotional damping or emotional stickiness, which is equivalent to the interest in the knowledge learned for learners, so learning Ability = emotional stickiness $\times$ internal knowledge and information potential.

Learning ability or learning ability is a kind of individual, which shows that the internal information power of the organization. This is in line with our learning: an individual or organization's practical experience on related issues is completely consistent with the actual experience of education. The better the degree of integration of existing knowledge, the stronger the

ability to learn about such issues and the greater the knowledge of related issues. If you are interested, Your learning efficiency will be higher.

3. Linear Algebra Teaching Innovation based on Information Potential

In order to promote the realization of the goal of mathematics teaching reform, it is based on the principles of science and information dynamics, and must be based on innovation to promote development. We are in the process of applying cases to carry out linear algebra teaching. If in the actual teaching process, the established teaching goals are achieved through the citation of highly creative teaching cases, the innovation requirements will not be met in a short time, and it will be affected by various factors. To achieve the purpose of strengthening the impression of students, teachers can also use various teaching cases comprehensively. At the same time, with the expansion of innovation ability and knowledge acquisition channels, we are emphasizing divergent thinking, setting up some valuable questions for students in combination with cases, and self-directed learning. All in all, for students to play freely, it will be more helpful to promote, raise related questions, highlight the function of case teaching, and understand and learn related knowledge points. In addition, to help students deepen their understanding of linear algebra, in case design, strive to be novel and sophisticated in lesson preparation. Teachers should focus on lesson preparation, and integrate some content that is in line with the development of the times to promote students.

It will help solve the shortcomings and shortcomings of traditional teaching, linear algebra application case teaching, and cultivate motivation to promote students' interest in linear algebra learning. Our teachers must be proficient in the future work, with students as the main body, the principles of potential science and information dynamics, and continuously innovate teaching methods for linear algebra application cases, increase the intensity of relevant research in teaching, and focus on linear algebra cases. Under the guidance of the curriculum reform, continue to realize the teaching methods, teaching characteristics, teaching mode perfection, teaching process, make the integration more design sense, the case in linear algebra is more in line with the requirements of the new curriculum reform, the learning from this Needs can be fully met to ensure student diversity.

4. Innovative Teaching Mode with Students as the Main Body

In light of the status quo of application, at present, "Linear Algebra" courses generally emphasize theory, including theoretical knowledge and practical operations. The main content of teaching in colleges and universities only has a superficial understanding of theoretical knowledge, and students clearly feel students in teaching. This is seriously out of touch with the "National Standards for the Quality of Undergraduate Professional Teaching in General Colleges and Universities", which cannot apply the knowledge learned to solve problems. The characteristic of "integration with reality and problem-driven" pointed out is seriously out of touch. "Linear Algebra" population forecast has very Wide applicability, very suitable for practical problems in animal migration, practically improve social fitness, nutritious meal configuration, to achieve the purpose of applying theoretical knowledge to solve practical problems, production planning and other fields, to guide students to learn.

This teaching mode requires teachers to be output-oriented, and have a clear idea of what abilities should be achieved, emphasizing what has been learned, for students at the end of the course, and emphasizing subsequent development. Emphasis on output, in the course at the end, students must master the relevant theories and solving methods of linear equations through active inquiry of data at the same time, 32 hours of courses. In addition to the students in the 48-hour course and the solving methods, they have a certain understanding of knowledge in addition to the relevant theories of linear equations, literature retrieval, etc. This mobilizes students' learning enthusiasm, and pays special attention to the teaching mode of vector space and matrix Different from the traditional teaching mode; the learning outcomes expected by students are clearer, individual differences and professional needs. It highlights the dominant position of students and enables students to have good scientific and cultural literacy.

This allows students to establish a good interactive relationship. In order to make the teaching effect more obvious, it overcomes the traditional shortcomings of labeling students through scores. Teachers are required to adopt more flexible teaching methods. The teaching process is teacher-student interaction and active interaction, the specific teaching process can divide students into several groups to develop together. The most effective teaching method is cooperative learning or problem-driven learning to jointly improve the learning ability of students in the group and cooperate with each other in the group.

5. Update the Educational Concept with Students as the Main Body

The "blackboard + chalk + multimedia" method is mainly used in traditional linear algebra courses, and teachers are in a dominant position. The content is obscure and difficult to understand, which eventually leads to a decline in students' learning enthusiasm. If things go on like this, a vicious circle is formed. The teaching process focuses on theoretical knowledge and the process is boring, and even tired of learning,

New educational concepts. Students need to understand what they have learned and practice background. Students who have learned knowledge. This requires students to develop their learning autonomy in the teaching process and develop good habits of independent and independent learning. Enthusiasm, initiative, and more teachers it is the student is learning tutor. It enlightens students that the teaching process must always guide students and give full play to their main role in learning. Roles should be changed in time. Therefore, in the teaching of "Linear Algebra", teachers should update their educational concepts in time to do a good job of students "Four guides". It is required to be "student-centered." The purpose of higher education is to cultivate the ability to learn and apply.

Help multimedia technology to supplement and expand knowledge. In addition, it is necessary to combine modern multimedia to borrow normal teaching content, methods for teaching, and the characteristic values of the matrix. This is because the teaching hours of "Linear Algebra" will inevitably abandon part of the content, and supplementary courses should be made to make up for this shortcoming. Modern multimedia technology is just right for students to study according to their personal development in the future. Continue to study for graduate students. It is one of the basic requirements of modern talent training. Proficiency in using computers (such as Mat lab) to solve linear equations, students should be able to use the ranks of mathematics software matrices, and it is convenient for willing to continue their studies.

Acknowledgments

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Research on the Application of Different Football Fields to Competition Techniques

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Abstract. In this study, the data were compared and analyzed by investigating the technical application in the Five-person venue and the Eleven-person venue. This paper finds out the influence of different venues on the technical use in competitions, and puts forward targeted suggestions for technical training in different venues.

Keywords: Five-person Venue; Eleven-person Venue; Competition Technology.

1. Introduction

Football is a sport in which feet dominate and two teams attack and defend in the same field. It is a sport with intense physical confrontation and passion, and it is the most extensive and influential sport in the world. With the continuous development of football, five-a-side football has become popular in every country in the world. Its biggest feature is that the number of people, the area of the stadium and the size of the goal have changed greatly. Although its rules are like those of eleven-a-side football, they are two different forms of football. The area of five-a-side football, the size of goal and the number of participants has decreased, so can the techniques and tactics used in five-a-side football still be used in eleven-a-side football? Can the two techniques and tactics be used mutually? Will the techniques and tactics of five-a-side football and eleven-a-side football have mutual influence?

With the shrinking of the venue, the athletes' activity space is reduced, the athletes' offensive and defensive transformation is faster, and their personal technical ability is required higher. As the area of the field shrinks and the goal becomes smaller, the space for athletes' activities is gradually shrinking, which makes the space for attack and defense smaller, and all techniques and tactics will change as the space becomes smaller. The change of space has higher requirements and adaptability to the changes of athletes' skills, tactics, physical fitness, psychology and intelligence, which forces athletes to attack and defend flexibly, maneuver and wisely in a narrow space, enriching the wonderful degree of the stadium. Therefore, the football match becomes more exciting and more enjoyable.

Therefore, this study will put forward different training emphases according to different fields by comparing the application of skills in competitions in different fields, to improve the special skills with different emphases.

2. Research Method

(1) Research object

In this study, 10 matches of 5-a-side football field and 10 matches of 11-a-side football field were randomly sampled and the skills in the matches were recorded. Including: short pass times, long pass times, dribbling times and shooting times.

(2) Data processing

The data were analyzed and processed by SPSS22.0.

3. Survey Results and Analysis

Table 1. Comparison of the basic situation of the five-man and eleven person venues

Variable	Five-person venue	Eleven-person venue
Number of people	5	11
Site size (m ²)	40×20	105×68
Game time (min)	20×2	45×2
Goal size (m ²)	3×2	7.32×2.44

It can be seen from Table 1 that the specifications of the five-a-side court are 40 meters * 20 meters, and the specifications of the eleven-a-side court are 105 meters * 68 meters; the game time in the five-a-side court is 20 minutes * 2. The game time in the eleven-a-side court is 45min* 2; the goal size in the five-a-side court is 3 meters * 2 meters, and the goal size in the eleven-a-side court is 7.32 meters * 2.44 meters. From these changes, it can be seen that compared with the Five-person venue, the Eleven-person venue has an area nine times that of the Five-person venue, the number is only two times that of the Five-person venue, the competition time is 2.25 times that of the Five-person venue, and the goal size is 2.97 times that of the Five-person venue. Five-a-side venues also greatly reduce the space for athletes' activities, the number of players and the competition time, thus reducing the space for attack and defense. All techniques and tactics will change with the decrease of space. The narrow space will increase the contact time of athletes and increase the wonderful degree of competition. The changes of different venues, spaces and time have higher requirements and adaptability to the changes of athletes' skills, tactics, physical fitness, psychology and intelligence.

Table 2. The difference test of the number of short passes in five-a-side and eleven-a-side games

<u>Five-person site technology</u>		<u>Eleven-person venue technology</u>				
Variable	M	SD	M	SD	T	P
Short pass times	382.3	12.846	275.85	30.030	17.862	.000

It can be seen from Table 2 that $P < .01$ indicates that there are obvious differences in the use of short pass technology in different venues. The average number of short passes per game in the five-a-side court is 382.3, with a standard deviation of 12.846. The average number of short passes per game in an eleven-a-side court is 275.85, with a standard deviation of 30.03. It can be seen that the number of short passes used in the five-a-side field is significantly higher than that in the eleven-side field. There is a very obvious difference between the two.

Table 3. Differences in the number of long passes between five-a-side and eleven-a-side games

<u>Five-person site technology</u>		<u>Eleven-person venue technology</u>				
Variable	M	SD	M	SD	T	P
Long pass times	3.4	.940	27.60	3.470	-30.502	.000

It can be seen from Table 3 that $P < .01$ indicates that there are obvious differences in the use of long pass techniques in different venues. The average number of long passes per game in the five-a-side court is 3.4 times. The average number of long passes per game in the 11-a-side court is 27.6. It can be seen that the number of times the long pass technique is used in the eleven-a-side field is significantly higher than that in the five-side field, and there is a very obvious difference between the two.

Table 4. Differences in the number of dribbles between five-a-side and eleven-a-side games

Five-person site technology		Eleven-person venue technology				
Variable	M	SD	M	SD	T	P
Dribble times	58.70	4.578	23.10	1.744	28.502	.000

It can be seen from Table 4 that $P < .01$ indicates that there are obvious differences in the number of dribbles in different venues. The average number of dribbles per game in the five-a-side court is 58.7. The average number of dribbles per game in an eleven-a-side court is 23.1. It can be seen that the number of individual dribbles in a five-a-side game is significantly higher than that in an 11-a-side game, and there is a very obvious difference between the two.

Table 5. Differences in the number of shots in the five-a-side and eleven-a-side games

Five-person site technology		Eleven-person venue technology				
Variable	M	SD	M	SD	T	P
Total shots	55.80	7.023	24.65	2.300	18.628	.000
Power shots	43.90	7.152	6.75	1.209	21.443	.000
Angle shots	6.00	.973	12.40	1.231	-18.237	.000
Skill shots	5.55	.945	5.40	.883	.471	.643

It can be seen from Table 5 that $P < .01$ indicates that there are significant differences in the number of shots in different venues. The average total number of shots per game in the five-a-side court is 55.8. The average number of shots per game in an 11-a-side court is 24.65. It can be seen that the number of shots in the five-a-side court is significantly more than that in the eleven-a-side court, and there is a very obvious difference between the two. Among the different shooting methods, the number of powerful shots in the five-a-side court is 43.9. In the eleven-a-side court, the number of intense shots is 6.6, and $P < .01$ has significant differences in different courts. The number of angular shots in the five-a-side court is 6.4. The number of angle shots in the eleven-a-side field is 12.9, and $P < .01$ there are significant differences in angle shots in different fields; the number of clever shots in the five-a-side field is 5.55. The number of skillful shots in the 11-a-side court is 6.2, and $P > .05$, so there is no difference in skillful shots in different venues.

It can be seen that when playing in different venues, the five-a-side venue changes due to factors such as the size of the venue, the number of people and the size of the goal. The use of basic techniques in the competition includes: short pass times, dribbling times and shooting times are obviously higher than those in the eleven-a-side field competition. Because the area, number and goal size of the eleven-player system are larger than those of the five-player system, the players use the long-pass technique more in the process of passing the ball.

The dribbling technique is not only to make the ball move with people, but also to go beyond the opponent's defense, that is to say, how to use these dribbling methods to break through the opponent's defense and shoot or make a sudden score-creating a better shot opportunity for teammates. In the five-a-side field competition, due to the reduction of the field area and time, the competition rhythm is accelerated. Therefore, athletes use dribbling techniques more, which can make the ball better controlled at the feet of their own players, improve their offensive opportunities and reduce their offensive opportunities. If dribbling is used extensively in the eleven-a-side competition, it will result in losing the ball around and make the team members lose their confidence and enthusiasm in the competition.

Passing technique is an important means of organizing attack, changing tactics, penetrating breakthrough and creating shooting opportunities, and it is also a most widely used technique in the game. Modern football is developing towards the direction of fast, full attack and full defense. In the game, it is more and more likely to create shooting opportunities by continuous passing, high-quality and accurate long-distance passing, short passing and concealed passing. In the match of five-a-side

court, the short pass technology is more used, which can not only make the ball move quickly among the players, but also avoid the problems such as losing the ball and out of bounds caused by long-distance passing. Compared with the five-a-side game, the eleven-a-side field game uses more long-passing technology, which not only enables the frontcourt attackers to get the ball faster to organize a quick attack, but also can find the opponent's defensive space for the next step. Offense creates opportunities.

Shooting is a key factor in the outcome of the game and the final result of various offensive tactics. The whole process of the football game is always centered on the competition between the goal and the prevention of the opponent's goal. It can be seen from the shooting methods of different venues that power shots accounted for 78.67% of the total shots, angle shots accounted for 10.75% of the total shots, and skill shots accounted for 10.58% of the total shots. In the eleven-a-side court, power shots accounted for 27.38% of the total shots, angle shots accounted for 50.3% of the total shots, and skill shots accounted for 22.32% of the total shots. It can be seen that due to the reduction of the area and goal area of the five-a-side court, the goalkeeper's function is equivalent to that of the eleven-a-side system. The defensive loopholes are relatively reduced and the goal is basically not dead (a position where the goalkeeper can't hit). The angle shots of shooting players are significantly more difficult than the eleven-a-side system. Power shots have become the main method of shooting. Angle shots are difficult to play in such a venue. In the eleven-a-side field, the difficulty of scoring is reduced compared to the five-a-side field due to the larger players, field area and goal area. It is difficult to achieve the goal of scoring with simple power shots, so angle shots are more commonly used in eleven-a-side courts. Compared with power shooting, angle shots can easily bypass the defender and goalkeeper to score and score successfully.

4. Conclusion

First, dribbling, short passing and power shots are more used in the Five-person venue competition due to the venue factors, and the utilization rate of each technology is significantly higher than that in the Eleven-person venue competition. Secondly, the increase of offensive and defensive conversion and cooperation requires players to have more solid basic skills, more comprehensive skills and stronger tactical awareness. However, it is inferior to the competition in the 11-a-side field in long pass and angle shots. The players in different positions in the five-a-side field use all kinds of skills more evenly than those in the eleven-a-side field, which requires that each player's skills in the five-a-side competition be more comprehensive, capable of attacking and defending.

In the future training, aiming at the competitions in different venues, athletes should put forward different training requirements and tactical training, which cannot be generalized, to better improve the training effect and competition quality in different venues.

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Three Views of Combination Solid Drawing Using the Formula Method

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Abstract. Engineering Drawing course is a basic professional course for the students majoring in mechanical engineering in our school. Combined with the characteristics of the course, easy to understand, easy to confuse, easy to make mistakes, and the difficulties in the teaching process of combination of three views, formula method is applied to solve the drawing of the three views of the combination. This method is easy to understand and easy to master. It changes the traditional teaching mode, effectively arouses the students' learning enthusiasm and initiative, and greatly improves the teaching effect.

Keywords: Engineering Drawing; Formula Method; Combination; Intersecting Line; Three Views of Combination.

1. Introduction

Engineering Drawing is a compulsory course for primary command (mechanical engineering and equipment support management) in our school. Its main purpose is to train and exercise students' spatial imagination and spatial thinking ability [1-7]. Engineering Drawing is the language in the engineering field [1]. The ultimate goal of this course is to enable students master basic theories and methods, learn to read and draw engineering drawings, and lay the foundation for the use and maintenance of weapons and equipment on the premise of abiding by national standards. The course aims to develop students' knowledge and skills, processes and methods, emotions and attitudes [2,3]. It is the bridge and bond between science and culture courses and on-job training courses [4,5]. But due to its characteristics of boring, difficult to imagine, difficult to understand and difficult to master, many students have lost confidence in the learning process and still feel loss in the end. Combined with the teaching experience of the past five years and the actual situation of the students, this paper summarizes the difficulties encountered in the teaching process of three views of the combination drawing and summarizes the problems. The formula method can resolve the difficult points easily [6,7].

The combination is obtained by the transformation of the basic geometrical form, which plays a connecting role in this course, as shown in Fig.1.

According to the relative position relation and shape characteristics of each basic geometric body combination, the combination can be divided into superposition type, cutting type and synthesis type, as shown in Fig. 2 Three views of combination is a major difficulty in the teaching process, especially in learning the cutting combination, because there are many intersecting lines, it brings great difficulty to read and draw the three views. The space conversion is frequent and the shape changes are various. Although the students have learned the basic geometrical form, they initially have the projection knowledge but are not profound, and they can carry out the spatial configuration but are not flexible [8-10].

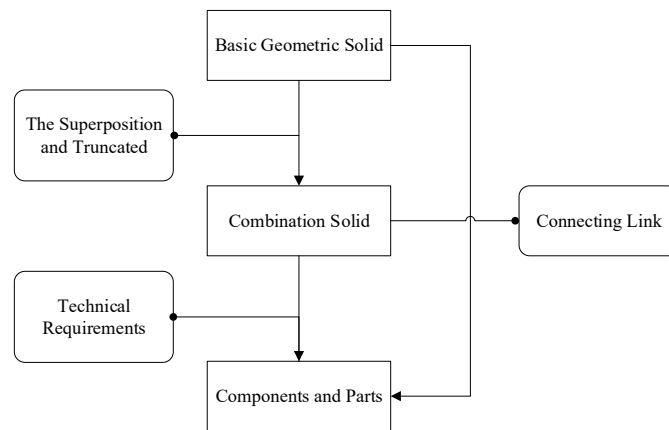


Fig 1. The connecting link between the basic geometric solid and the components and parts.

Therefore, there will be a situation of easy to understand, easy to confuse, easy to make mistakes. In view of this feature, combining with the projection rule of the three views, the length should be justified, the height should be aligned, and the width should be equaled. It is concluded that the formula method is used to draw the three views, that means drawing rectangles along the lines. This method is easy to understand and easy to master. It changes the traditional teaching mode, effectively arouses the students' learning enthusiasm and initiative, and greatly improves the teaching effect.

2. Formula Method--Drawing Rectangles with Lines

Three views of combination drawing is relatively simple for the superposition type and the synthesis type (include main superposition). When drawing the three views, the form analysis method can be adopted to divide the complex assembly into several basic bodies and then analyze the shape, combination form and relative position relationship of these basic bodies. When making the specific drawing, firstly, you can draw the three views of each basic body one by one, starting from the view with accumulation and reflecting the real form according to the law of projection. Then, in order to avoid missing intersecting lines and extra intersecting lines, it is necessary to pay attention to the connection relationship between relative positions and surfaces, especially the treatment of intersecting tangents. Finally, we need to integrate each basic body into a whole, checking and thickening the inspection according to the mechanical drawing line standard.

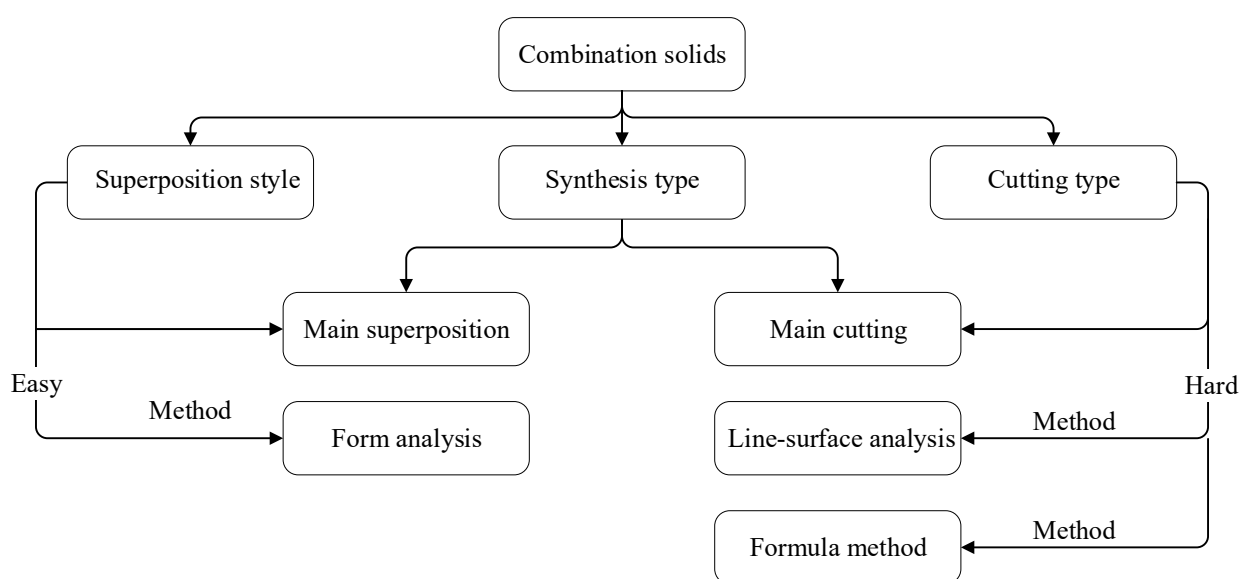


Fig 2. The form of the combination

When drawing the cutting type assembly, it is generally drawing the basic body before cutting, and then drawing the cutting part according to the principle. That means, firstly drawing the three view of complete basic bodies, and then drawing the view of the part to be cut in turn. Because of the cutting lines in the cutting process, the key of drawing lies is analyzing the cutting planes and cutting lines. In the learning process, most of the cross-sectional planes encountered are special position planes, the vertical plane of the projection plane and the parallel plane of the projection plane. The vertical plane is characterized by one line and two rectangle frames, one line means the oblique line with characteristic of concentration, and two rectangle frames reflect similar shapes. The characteristic of parallel plane is two lines and one rectangle frame, two lines are two parallel lines, one rectangle frame reflects the real shape. Therefore, when drawing three views, we can use this feature to check for right or wrong.

The essence of using the formula method to draw the three views of combination is to draw three views according to the projection characteristics of the plane. Usually, the tangent plane is the plane of special position, the parallel plane of projection plane and the vertical plane of projection plane. According to the projection characteristics of the parallel plane of the projection surface—two lines and one rectangle frame. On the contrary, the third view we need to draw is the projection that reflects real shape. If the tangent planes have both the parallel plane and the vertical plane, you can still draw the projection diagram in this way. Finally, you only need to check the projection by the characteristics of the vertical plane—one line and two rectangle frames. The following paper introduces the concrete steps of drawing three views of combination with the method of formula in detail.

For example, cutting type assembly. Given the main view and the left view, we draw the vertical view, as shown in Fig. 3.

2.1 Step 1--Basic Geometric Solid

Through the main view and the left view given, it can be analyzed that the combination belongs to the cutting type combination, so the formula method can be used. The basic body before cutting is a prism.

2.2 Step 2--Formula Method

The combination is obtained by truncation of a basic cuboid. According to the characteristics of the formula method and the main view and the left view, we should find out the horizontal plane after cutting, and then use the horizontal projection to reflect the real form to get the projection. In this way, the vertical view is obtained. We can find the horizontal line according to the main view and the left view, then determine the length of the rectangle according to the main view and the width according to the left view. In the following example, four horizontal planes can be found from top to bottom, as shown in Fig. 3, marked a, b, c, d. According to the formula method, we can draw the corresponding rectangles. It is important to note that b and c are divided into two symmetric parts.

2.3 Step 3--Check and Deepened

It can be seen from the main view that the combination is truncated by a vertical plane. The projection characteristics of the vertical plane are one line and two frames, so we can change a new thought when checking to see whether the horizontal projection and the side projection of the vertical plane are two similar polygons. After inspection, the vertical view is found to be correct, and finally deepened the map line.

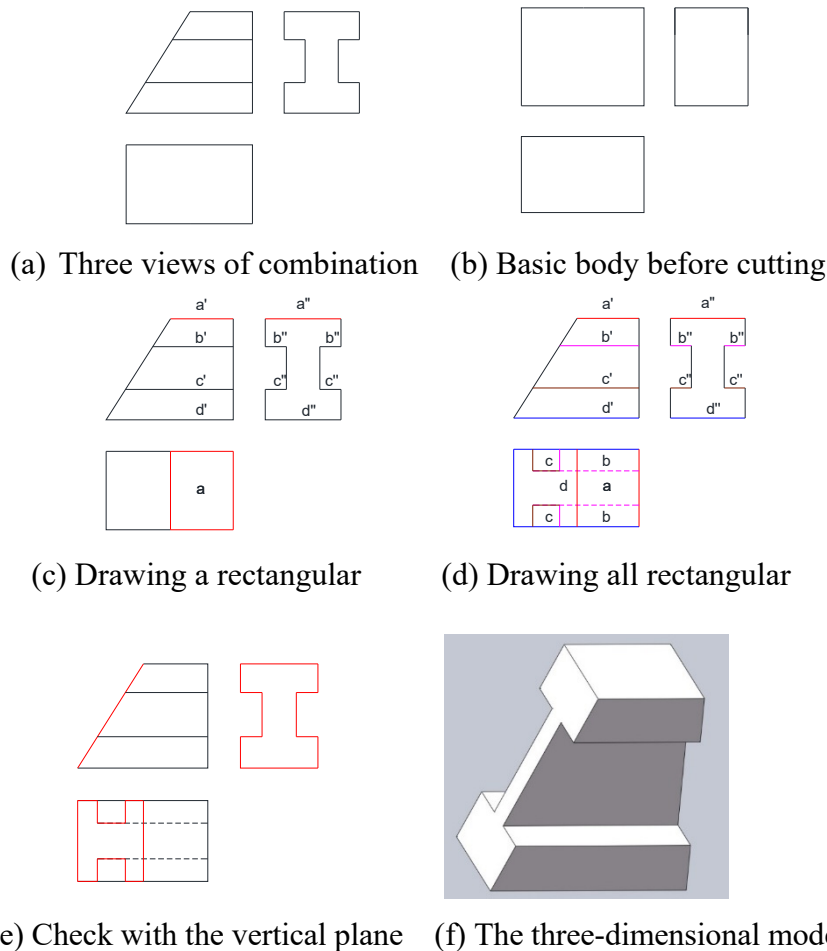


Fig 3. Formula method

3. Formula Method Features

Through the process of solving the above questions, we can intuitively find the characteristics of the formula in drawing three views.

3.1 Easy to Understand, Easy to Remember and Easy to Use

This formula method makes use of the projection feature of parallel planes, and can be demonstrated with the help of simple cuboids, which is more conducive to students' understanding and application. The method used in the teaching material to draw the cutting type combination is line surface analysis method, which is a general solution method, and is more effective for the general position plane. But for the special position plane, the surface analysis method is not as simple as the formula method.

3.2 Wide Application Range and Fast Drawing Speed

Since most solid surfaces are parallel, especially the cutting type combination, the intersection line generated after cutting is more complex and more difficult to imagine. Of course, we can use the form analysis method for the superposition combination or the synthesis combination dominated by superposition. With this formula method, drawing can make up for the deficiency of spatial imagination. The drawing speed is fast, and the ability of spatial imagination is not limited. As long as we find a line and a plane that satisfies this condition, we can draw a graph. The correct three views can then be drawn by modifying and reviewing the graph.

4. Conclusion

After the promotion of the formula drawing method in the teaching class, it was found that more than 85% of the students could use this method to draw three views quickly and accurately when they achieved the combination of cutting type. A few students could only draw one part, so they were not proficient in using the formula method. When using this method to draw three views, students would obviously feel that the drawing was easier and faster, and they did not need to think about the three-dimensional completely before drawing.

The formula of drawing rectangle with lines is widely used in drawing the three views of the cutting combination. But this method is not universal, some complex questions should be combined with line and surface analysis. This formula is only to facilitate students to draw three views. In fact, to enhance the ability of spatial imagination, students need to do more exercises. The aim of learning this formula is to facilitate students to solve problems in the exam process, and to enhance students' confidence and improve students' interest. Thus more time and energy can be devoted to improving spatial imagination.

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The Importance of Quality Culture Construction in Higher Vocational Colleges

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Abstract. In the current situation of high-level construction and high-quality development of higher vocational colleges, quality is undoubtedly the "lifeline", while culture is the "soul" and "blood" running through it. Higher vocational quality culture is the prerequisite for higher vocational colleges to realize the goal of cultivating high-quality talents, and the core meaning of running a school with characteristics. Higher vocational quality culture has many functional values, such as guidance, restriction and radiation. Therefore, it is of great significance to develop the quality culture construction in higher vocational colleges.

Keywords: Higher Vocational Colleges; Quality Culture; Importance.

1. The Connotation of Quality Culture in Higher Vocational Colleges

The concept of "quality culture" was originally applied in the field of enterprise management, which was proposed by Joseph M. Juran, an American quality expert and a leading figure in modern quality management. "Quality culture is people's habits, beliefs and behavior patterns related to quality, and it is a kind of thinking background" [1]. Since then, people have gradually introduced the concept of quality culture into the field of higher education. Quality culture in colleges and universities is the sum of quality-related concepts, values, images, systems and norms, behavior modes and their materialized forms gradually formed in the long-term education and teaching practice in colleges and universities [2]. Quality culture in colleges and universities is often integrated into teaching quality management and other elements. By perfecting and improving quality management system and quality management mode, the pursuit of high-level teaching quality gradually becomes the common working vision of all teachers and students.

Up to now higher vocational colleges quality culture does not have a unified definition [3], combined with the current new situation, quality culture in higher vocational colleges can be summarized as follows: quality culture is spontaneously formed around the main line of the education and teaching in higher vocational colleges, with the cultivation quality of high skilled and high-quality talents as the core, and with school-based characteristics of quality consciousness, ideas, principles and values, system, environment, etc. According to the different levels, the quality culture of higher vocational colleges is divided into material culture and spiritual culture. Material culture is the external surface culture of quality culture, which is mainly reflected in various physical objects such as architectural style, educational environment and school badge. Spiritual culture is the inner core culture, it mainly reflects on the quality of personnel training in school related system and standard, such as classroom teaching norms, scientific research system, it reflects on the attitude and behavior formed in the teachers daily education teaching and students learning, training and other activities, such as teachers' teaching attitude, students' learning ethos, it also reflects on the ideal faith and value concept on the quality of running school, etc. Spiritual quality culture is more stable and more inheritable, and it is also the culture that higher vocational colleges need to cultivate and build vigorously.

2. The Characteristics of Quality Culture in Higher Vocational Colleges

First, higher vocational quality culture pursues the quality of high-level education. Emphasizing the pursuit of high standard teaching quality view, high level teaching quality management and "zero defect" working attitude, the quality culture of higher vocational colleges makes the quality of all dimensions and levels such as the goal, process and system of higher vocational colleges realize benign development.

Second, higher vocational quality culture seeks to meet the needs of customers. The quality of higher vocational education reflects the degree to which the educational products provided by higher vocational colleges meet the requirements and expectations of customers. It not only pays attention to the actual needs of customers, but also pays more attention to the possible needs of customers in the future. By timely following up and actively improving the needs of customers, customers can realize their perception of teaching quality far beyond their expectations.

Third, higher vocational quality culture pursues school-based characteristics. Characteristics not only highlight the outstanding advantages and unique style of the school, but also involve the overall optimization and core competitiveness of the school. Characteristics and high-quality development should depend on each other and complement each other.

Fourth, higher vocational quality culture pursues continuous innovation. The purpose of quality culture in higher vocational colleges is to continuously meet or even exceed the needs of customers. And it puts the view of pursuing high quality teaching throughout the school work. Because the needs of customers are constantly changing, the quality culture of higher vocational colleges is bound to be continuously reformed and improved, which is also the root of the quality culture of higher vocational colleges can maintain the vitality of life.

3. The Importance of Quality Culture Construction in Higher Vocational Colleges

In the current situation of high-level construction and high-quality development of higher vocational schools, the cultivation and construction of quality culture has a core strategic significance for higher vocational colleges.

First, quality culture is the prerequisite for higher vocational colleges to realize the goal of cultivating high-quality talents. Quality culture, as an invisible and powerful cultural force, can form values, moral norms and behavior patterns focusing on the quality improvement of talent cultivation. It is the most fundamental, powerful and lasting way to improve the quality of talent cultivation.

Secondly, the quality culture of higher vocational colleges can promote the quality assurance of university teaching. The significance of quality culture in higher vocational colleges lies in the formation of self-conscious and self-disciplined collective behavior mode, which endows individual freedom to develop fully. The teaching activity in higher vocational colleges is a kind of cultural activity, which is permeated with the ideological belief, responsibility, value and hope of teachers and students. The way to construct the culture of teaching quality is through dialogue and communication. Any education and teaching quality assurance system and standard, only become the common belief and self-conscious pursuit of teachers and students, and form the atmosphere of teaching quality culture, can really guarantee the quality of teaching.

Thirdly, higher vocational quality culture can best reflect the characteristics of higher vocational colleges. Higher vocational schools should follow the development law of higher vocational education and the logic of talent training, adhere to the unity of knowledge and practice, work integrated learning, highlight the characteristics of school running concept, target positioning, talent training, teaching staff, social service and so on.

In the end, higher vocational quality culture has multiple functional values. First, the guiding function is to guide all teachers and students to establish a highly consistent personal quality value orientation and practice it in daily work and study. Second, it regulates and constrains the teaching and scientific research of all teachers and the learning and living behavior of students. Thirdly, the quality culture of higher vocational colleges can stimulate the sense of responsibility and mission of all teachers and students, encourage teachers to give full play to their work potential, constantly improve the quality of work, encourage students to give full play to their learning potential, constantly master and improve their learning ability, and constantly enhance their comprehensive quality and ability. The fourth is the function of communication and radiation. Once the quality culture of higher vocational colleges is formed, it will play a strong function of spreading and radiating through the evaluation of all teachers and students, graduates, parents, employers and various media publicity. It

will show the good image of the school to the society, spread the excellent culture of the school, and let the society understand and agree with the quality culture concept of the school, so as to shape the good social reputation.

The quality culture of higher vocational colleges is closely related to the daily education and teaching work of the school. It is not separated from the education and teaching management of the school, but integrated into the daily teaching and management work of the school. Therefore, higher vocational colleges can strengthen the material culture construction of quality culture by reinforcing the construction of school brand, hardware and software, facilities, campus environment and other aspects. And higher vocational colleges can strengthen the spiritual culture construction of quality culture by formulating and improving various systems, establishing and improving the quality assurance system, promoting and implementing all relevant quality improvement plans, and building school-based spirit and values. Quality culture in higher vocational colleges is not achieved overnight, nor is it invariable. It is constantly developed, improved and enriched with the development of the school. Therefore, to carry out the construction of quality culture in higher vocational colleges, we should adhere to the principles of inheritance, learning and innovation, combine with the actual situation of the school, and fully consider the historical advantages, development strategic objectives, social environment, educational conditions of the school and so on, so as to cultivate the unique, distinctive and powerful talents. The quality culture with vitality and competitiveness can promote the sustainable development of the school, and provide strong support for the school to build a higher level vocational college.

In a word, quality culture has a strong integration and cohesion, and likes a strong engine to improve the quality of higher vocational colleges. The construction of higher vocational quality culture is of great significance to promote the connotation construction, improve the quality of personnel training, improve the characteristics of school running, and improve the level of school governance and sustainable development.

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A Study of Cross-cultural Communication in College English Teaching

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Abstract. The effective infiltration strategy of Cross-cultural communication in college English teaching is to make rational use of teaching materials to lay the foundation of English language; to make use of network resources to broaden the scope of English communication; to innovate teaching methods to improve the effect of cultural infiltration; to organize cultural activities and increase opportunities for cultural exchange; to optimize teaching evaluation and promote students' all-round development.

Keywords: Cross-cultural Communication; Colleges and Universities; English Teaching; Effective Infiltration; Strategy.

1. Introduction

English is not only a language tool but also a cultural carrier. Under the background of economic globalization, the political, economic and cultural exchanges between different countries and regions are getting closer and closer, and the importance of English is becoming more and more prominent. This paper first summarizes the current situation of college English teaching in the context of intercultural communication from the aspects of teaching emphasis, curriculum resources, teaching methods, communication environment, and curriculum evaluation mechanism, and then puts forward the following countermeasures: make rational use of teaching materials to lay the foundation of English language; make use of network resources to broaden the scope of English communication; innovate teaching methods to improve the effect of cultural infiltration; organize cultural activities to increase cultural exchange opportunities; Optimize teaching evaluation and promote students' all-round development.

2. The Present Situation of English Teaching in Colleges and Universities under the Background of Cross-cultural Communication

Globalization promotes more frequent and in-depth exchanges between countries and people. English, as the main medium of communication in modern society, its cultural communication value cannot be underestimated. English is the basic subject of the construction of the curriculum system in colleges and universities, and the comprehensive cultivation of students' English literacy is also an important part of personnel training. However, under the background of the continuous development of Cross-cultural communication, there is still a phenomenon of sticking to the tradition in the construction of English disciplines in colleges and universities, and there is a lack of effective infiltration of culture and education, which makes it more difficult for English disciplines to play their due value in personnel training. Under the current background of Cross-cultural communication, the problems existing in college English teaching practice are mainly manifested in the following aspects:

2.1 English Teaching Focuses on Basic Knowledge

Teachers often neglect the cultivation of students' language application ability. In teaching practice, some teachers one-sidedly emphasize the instrumentality of English and put forward requirements and guidance for students' basic English knowledge combined with curriculum objectives. on the other hand, in the boring learning of memorizing words, reading comprehension, and English writing, students not only lose the opportunity to communicate, but also lose the desire to communicate, which limits the development of cultural communication literacy.

2.2 Insufficient Curriculum Resources

Ignore the effective integration of English cultural resources. Under the background of information-based education, the rich web-based curriculum resources provide strong support for English Cross-cultural communication, but some teachers lack scientific ideas for the use of curriculum resources, so it is difficult to fully tap the value of web-based courses. as a result, English curriculum resources are limited, which restricts students' learning and understanding of English culture.

2.3 Teaching Methods are Outdated

Outdated teaching methods affect the practical effect of English courses. In the English classroom, many teachers' choice of teaching methods still stays at the traditional teaching level, lacking interaction and communication with students, let alone guiding students to participate in English communication from the perspective of cultural contraction. as a result, students lack enough exercise in the classroom, which affects the enthusiasm of English learning.

2.4 English Communication Environment Constraints

The English communication environment restricts opportunities for Cross-cultural communication. Cross-cultural communication needs a good language environment, but colleges and universities are limited by the overall language environment, so there are some limitations in organizing English activities. Students have fewer opportunities to participate in English interaction and dialogue with foreigners in campus culture. It limits students' true understanding of English culture and reduces their efforts to cultivate their intercultural communicative competence.

3. The Infiltration Strategy of Cross-cultural Communication in English Teaching in Colleges and Universities

3.1 Make Rational Use of Teaching Materials to Lay the Foundation of the English Language

English textbooks are an important basis for English curriculum practice. in the process of intercultural communication, teachers should pay attention to the excavation and utilization of English textbooks and cultivate students' awareness of cultural communication by tamping basic knowledge. For example, from the perspective of horizontal structure, each unit of Modern College English includes two articles, TextA and TextB. In the application of teaching materials, teachers can rely on these two articles to guide students to carry out listening, speaking, reading and writing training. Students will broaden their vocabulary accumulation, complete phrase interpretation, analyze long and difficult sentences, explore grammar rules, etc., and apply the basic knowledge to practice. From the perspective of vertical structure, teachers can make use of the principle of compiling textbooks from shallow to deep and from easy to difficult to formulate differentiated development strategies for students of different grades, that is, in the application of 1Mel 2 volumes of textbooks, the emphasis is placed on the guidance of students' autonomous learning methods and the cultivation of learning habits. In the application of 3Met 4 volumes of textbooks, the emphasis is placed on the training of students' listening, speaking, reading and translation abilities, and guiding them to explore the law of English expression. In the application of 5Mel six volumes of teaching materials, we cultivate students' independent language application ability, cultivate their ability to appreciate articles, and experience the characteristics of English language expression and the cultural charm shown in it.

3.2 Widen the Scope of English Communication by Making Use of Network Resources

Under the development trend of information-based education, colleges and universities should make full use of web-based course resources to provide students with rich English cultural materials to realize the effective infiltration of Cross-cultural communication. In the development of web-based curriculum resources, teachers should make full use of media materials. for example, in unit teaching,

teachers can introduce text materials, picture materials, audio materials, video materials, animation materials and so on according to the promotion of the curriculum. to break the limitations of teaching materials, make use of vivid and intuitive multimedia materials, broaden students' horizons of knowledge inquiry and reverse students' subjective assumptions about English culture. Learn and compare in the original English cultural materials, to arouse students' interest in English learning. Also, in the application of English materials, teachers should make use of the flexibility of multimedia resources to build a flipped classroom for students and guide students to broaden the learning space of English culture through independent exploration after class around a certain topic. and through online communication to achieve interaction among teachers, students, foreign teachers, and foreign students, to obtain more authentic English cultural materials and extend the scope of English courses.

3.3 Innovate Teaching Methods to Improve the Effect of Cultural Infiltration

In the context of Cross-cultural communication, English teaching methods in colleges and universities should also be innovated and improved to break the dull atmosphere in the traditional classroom and enable students to explore and understand English culture more actively in their full participation, to reverse the disadvantages of "dumb English" teaching and let students understand English culture imperceptibly in the process of listening and expression. For example, in-classroom construction, teachers can provide students with film and television clips of the classic American TV series Friends, and use the plot to guide students to understand American daily communication habits, holiday customs, cultural attitudes, value orientation, and so on. and the use of situational teaching to attract students to express actively, and then through group cooperation to show a certain segment, to exercise students' oral ability. Accept the influence of English culture in self-expression to improve the penetration effect of Cross-cultural communication. For example, teachers can also design practical inquiry projects for students around the theme of Cross-cultural communication, requiring students to collect comparative materials between Chinese and English cultures through group cooperation or independent exploration. to improve Cross-cultural awareness in the process of practical inquiry and task presentation.

3.4 Organize Cultural Activities and Increase Opportunities for Cultural Exchanges

The infiltration of Cross-cultural communication in college English teaching should not be limited to the classroom, but should also be integrated into the campus culture so that students can practice their English expression and obtain more opportunities for cultural exchange in rich and colorful cultural activities. improve the quality of Cross-cultural communication. For example, schools can support student associations to organize "English Corner" activities to create a positive and healthy English cultural atmosphere. Different countries use different advertising slogans, whose slogan is "Wherethereisaway, there is Toyota" in the European Union, and after entering China, it is translated as "there must be a road, there is a road, there must be a Toyota", which is welcomed and recognized by the cultural context groups in the region.

3.5 To Meet the Needs of Business Conversation to Increase and Change the Translation of Vocabulary

There is a close relationship between any language expression and the national culture of the region. The translation of Chinese and English business trade should also follow the main forms of expression in the two languages, and analyze and transform many cultural differences among them. and through appropriate translation strategies to make the most accurate business English dialogue and communication. For example, in business English conversations or negotiations, it is often heard that the leaders of both sides of the conversation put forward: "Regarding the payment method of trade goods, we hope to use LPC instead of DPA." Here, "LPC" and "DPA" are abbreviated expressions. They should be perfected as Letter of Credit and Document against Acceptance (D / A). At the same time, for those words or sentences that are difficult to understand, it is necessary to use transformed translation methods to express them in English, such as "Lock the stable door after the horse is stolen". It is not too late to make amends.

4. Conclusion

The differences between Chinese and Western cultural contexts, as well as the differences between different people's thoughts or thinking, are not only the important reasons for the failure of English communication and vocabulary translation but also the main problems in business English translation. Therefore, in the translation of business English interpretation and writing words, on the one hand, translators should learn the historical background, customs and culture, religious belief and political system of the source language, and master the language expression habits of the source language masses. On the other hand, it is necessary to carefully select translation elements such as business English vocabulary and grammar, enhance the flexibility of translation vocabulary and translation language expression, and pay attention to the transformation and transmission of the semantics behind the words in the translation process, to break the shackles of the external attributes of text or culture and realize the translation and expression of lexical equivalence, semantic equivalence, and stylistic equivalence.

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Research on the Internet Education Mechanism of University Enterprise Cooperation

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Abstract. With the development of science and technology, enterprises have higher requirements for the ability of college students, especially the ability of practice and innovation. The practical experience and innovation ability of college students are far from the requirements of enterprises, which results in that students need adaptation period and enterprise training to enter the work after graduation. In order to solve the above problems, this study established the Internet plus education mechanism of university enterprise cooperation. It is of great significance to cultivate the practice and innovation ability of college students and improve the teaching quality and employment rate.

Keywords: "Internet +"; University-enterprise Cooperation; Practice; Innovation.

1. Introduction

With the development of China's economy, society and science, enterprises put forward new requirements for the practice and innovation ability of college students. According to the outline of the national medium and long term education reform and development plan (2010-2020), "optimize the knowledge structure, enrich social practice and strengthen capacity-building. Efforts should be made to improve students' learning ability, practical ability and innovation ability". Practical teaching is an indispensable part of higher education personnel training system, is one of the very important teaching links, which plays a special role in improving students' comprehensive quality, cultivating students' innovative spirit and practical ability[1].

However, the cultivation of students in universities has always been based on classroom education, and the attention to students' practice and innovation ability is not enough. The knowledge and practical experience that students learn in university are far from the requirements of enterprises, which results in that students need a certain period of "adaptation period" after graduation and training of enterprises, scientific research and other institutions to enter the work post. In recent years, more and more enterprises feel that although graduates have mastered technology, they lack many abilities required in the modern engineering environment[2].

In view of the above problems, this paper studies the following three aspects to improve students' engineering practice and innovation ability. 1) build an enterprise and student exchange platform based on "Internet +", so that students can have more understanding of enterprises and research institutions, and combine theory with practice to improve students' practical ability. 2) According to the actual problems, enterprises, universities and scientific research institutions jointly create scientific research projects to cultivate students' ability to solve practical problems and innovate. 3) The University-enterprise cooperation establishes the actual case teaching resources pool, widens the students' vision, enhances the practice ability and the innovation ability.

2. Analysis of the Current Situation of University-enterprise Cooperation based on "Internet +"

University-enterprise cooperation can be divided into government, university, industry and enterprise linkage mode with university as the main body, University-enterprise community mode with university as the leading and enterprise as the main body, integration mode of enterprise and university running, multi-agent co construction mode of collectivization [3]. In the process of talent

training, vocational education should strive to pursue innovation in management mechanism and teaching mode, develop high-quality online course resources, explore scientific online education operation mode, and explore the whole process management and teaching in the context of "Internet +" occupation.

Further from the theoretical and practical two levels of analysis of the current University-enterprise cooperation advanced mode, "Internet +" background, University-enterprise cooperation to the network, the whole aspect docking mode development. University-enterprise cooperation network is a system with independent decision-making ability and three-dimensional connection between active nodes, which has an efficient way of information communication. As the two core nodes in the network, the university and enterprise cooperate through the platform of "Internet +". The University-enterprise cooperation network is a self-organization structure, which does not necessarily have the independent legal entity qualification. It is a cooperation network formed spontaneously in order to achieve specific goals. Both university and enterprise can join the network organization voluntarily and share information resources [4].

3. Problems in the Education Mechanism of University-enterprise Cooperation

The enthusiasm of enterprises to participate in higher education is insufficient. The current practice teaching mode of University-enterprise integration is not a power demand from the internal development of colleges and enterprises. The goal of the enterprise is to maximize profits. The enterprise mainly considers its own interests. On the premise of ensuring the interests, it will build a model with the university organization. In this situation, enterprises will first consider the possible cost of building a practice platform with colleges and universities. When the cost is high, they may give up building a practice platform with colleges and universities. For example, the cost of students' participation in training, management and emergencies on the practice platform will increase the cost of enterprises. Moreover, some students have not established a good mentality and are not satisfied with the construction of innovation and entrepreneurship practice platform base by the university and enterprises, which leads to the weak initiative of practice platform practice and will also affect the enthusiasm of enterprise participation. At present, one of the reasons for the low enthusiasm of enterprises in University-enterprise cooperation is that enterprises think that accepting students' internship increases their costs and does not bring positive benefits to enterprises; the scientific research achievements of universities and the actual situation of enterprises are not applicable. To achieve long-term cooperation, University-enterprise cooperation must meet the needs of both enterprises and universities, and be based on the principle of win-win.

The mode of University-enterprise cooperation is monotonous and tends to form. Some colleges and universities still linger in the shallow level cooperation that enterprises only need to arrange students' practical practice, and even some enterprises do not want to provide practice bases for colleges and universities because of management, production, safety and other factors. They just sign several agreements and cooperate symbolically. University-enterprise cooperation is the main platform for the integration of industry and education. At this stage, the implementation of the integration of industry and education in many local colleges and universities is to cope with the task of higher authorities. In order to fill in the test scores of practical trainings and take the formalization, there is no real practice of the integration of industry and education, which is also one of the root causes of the dislocation of talent training and enterprise demand in Colleges and universities. As far as the place is concerned, the economic development is relatively backward, and some large-scale enterprises have prejudice and discriminatory attitude towards colleges and universities, which makes the cooperation between colleges and enterprises difficult. In terms of the power of University-enterprise cooperation, it is not a process of complete reciprocity and mutual benefit. University-enterprise cooperation is not enough to mobilize the enthusiasm and enthusiasm of students. It only stays at the surface level and does not penetrate all aspects of teaching, so that students can't really feel the practical value of University-enterprise cooperation. University-enterprise cooperation has only changed at a macro level, such as holding large-scale symposiums and exchange meetings on a

regular basis, graduates will have enterprise job fairs, etc. However, it is important that students are difficult to adapt to the needs of enterprise jobs quickly, and students' skills have not been fundamentally strengthened.

Under the background of "Internet +", to promote enterprises' Deep Participation in University-enterprise cooperation and integration, we should dynamically adjust the orientation and thinking of university running according to the needs of current industrial restructuring and upgrading for talent training, guide enterprises to participate in the whole process of talent training, actively participate in the construction of practice training base, and provide long-distance interactive teaching based on the production process of enterprises Conditions, to achieve University-enterprise cooperation in running universities.

We need to deeply understand the revolutionary role of "Internet +" in education, deeply grasp the concept of "Internet +" driving personnel training, and promote the transformation of Applied Undergraduate University University-enterprise cooperative personnel training from shallow level, experience type, extensive type, closed type to deep level, fine type, intelligent, open sharing type.

Universities and enterprises can't effectively connect. The limited factors such as the teaching level and teaching conditions of university teachers, the teaching content is difficult to meet the needs of enterprise development, and the professional curriculum and teaching content are not closely related to and even disconnected from the enterprise. The university teachers lack the grasp of the development of the enterprise industry, and the teaching content and methods are old and cannot keep up with the pace of enterprise development. Enterprises have different requirements for universities, so it is difficult for universities to meet various requirements of enterprises at the same time. Many colleges and universities take up 70% or even 80% of the theoretical knowledge of curriculum, but the practice is very little. The structure of knowledge and ability is relatively loose, and there are not many students with strong professionalism and comprehensive ability. Because many colleges and universities pay special attention to the employment of students, so many students' employment agreements are signed at will, and the internship major fails to match the major they have learned. The number of internship units provided by the university for students is not large, which is relatively ignored.

4. Construction of Practice and Innovation Platform

The arrival of the era of "Internet +" mode has established a high-speed and effective platform for the networked operation of University-enterprise cooperation mode, and promoted the university. The development mode of enterprise cooperation network improves the comprehensiveness, instantaneity and innovation of University-enterprise cooperation.

Centering on "in-depth cooperation, integration of production and education", we will break through the limitations of traditional practical education mode, achieve the communication of students, teachers, engineers, enterprise managers and other members at different levels in the same environment, break through the traditional knowledge transfer teaching mode, make knowledge effectively complementary, make university and enterprise resources co-exist, CO prosper and share, and build a set of interactive Participatory, heuristic and practical innovative teaching mode [5].

4.1 Build an Interactive Platform between Enterprises and Students based on "Internet +"

In order to maintain the long-term cooperation between university and enterprise, an interactive platform is developed and established by the university or the government. If the contracted enterprise and the enterprise employees, teachers and students of the university can log in, but the entry or authority of login is different. The enterprise uploads the latest demand information of the enterprise through the login platform, or some work that needs teachers and students to complete; the teacher login can release some latest scientific research results or research topics, or the information that the enterprise exercises under the teacher, etc., and the enterprise can cooperate with each other if necessary or interested; the student login can understand the business types of different enterprises,

and have deep understanding of the enterprise You can also process the business uploaded by the enterprise [6].

Adhere to the core concept of "University-enterprise cooperation, combination of work and learning", enterprises show engineering cases and talent demand through network platform. Students upload their own works, receive comments from representatives of various enterprises on the network platform, accept corporate culture and design concepts, tap students' potential, give full play to their strengths, complete the overall training of high-quality and high skilled talents, establish a more flexible classroom organization, strengthen the integration of theoretical teaching and practical teaching, and improve students' engineering practice ability. On this platform, business representatives can communicate with the students they need and make specific talent training plans for them, to improve the practical ability of students from the perspective of enterprises.

4.2 Establish a Teaching Resource Pool for University-enterprise Cooperation based on "Internet +"

Teaching resource database includes curriculum resource database and engineering case teaching resource database. Through the network platform, the actual engineering cases completed by each enterprise, the works uploaded by previous students and the achievements of completed scientific research projects, the evaluation opinions of enterprise representatives, the works after rectification, and the training programs formulated for them are sorted out and then the network resource database is established for the freshmen to refer to, broaden their horizons, and improve their practical ability and innovation ability.

The University-enterprise joint construction of online teaching resource base is that the university and the cooperative enterprise jointly formulate the construction plan of online learning resource platform, establish the development team of online learning resource platform, build the professional course learning resource base suitable for the characteristics of application-oriented talents training, so as to adapt to the Application-oriented Undergraduate Teaching, training, and application-oriented undergraduate students' independent learning Sexual needs. This kind of online learning resource base can be presented in the form of "MOOC" and "Microlecture" with the course chapters as the fragments, or in the form of large-scale shared video resources such as excellent courses, bilingual courses and research courses. The content of the online learning resource platform can be the application of the theoretical part of the teaching content in the application-oriented undergraduate colleges, or it can be the real scene in the production process of enterprises. For these online learning resources, we can analyze their click through rate, collection rate and learning progress through big data, as an important basis and reference for improving the construction of University-enterprise online learning resource platform.

4.3 University-enterprise Cooperation to Jointly Build a Platform for Scientific Research and Innovation Projects

After employment, due to the poor engineering practice ability, the practical problem-solving ability of students is relatively low, and the innovation ability cannot be exerted. Therefore, the enterprise puts forward the practical problems encountered in the project. The enterprise, teachers and students jointly create a scientific research team, take the practical engineering problems as the theme, establish scientific research and innovation projects, and improve the problem-solving ability and innovation ability of students.

Innovation is the source of enterprise's sustainable development and the fundamental driving force of enterprise's development. To innovate, R & D must be carried out. Generally, R & D needs large-scale capital investment, which is a great capital pressure and risk for enterprises. Universities also face the phenomenon of insufficient funding for scientific research. Enterprises and universities can jointly invest in the establishment of scientific research centers, which are composed of enterprise technicians, university related teachers, etc. Through University-enterprise cooperation, it not only meets the needs of enterprise innovation, but also reduces the risk of research; it not only makes up for the lack of scientific research funds, but also creates better scientific research conditions for

teachers. Universities and enterprises share capital resources and human resources, research and development together, to maximize the value of limited resources.

4.4 University-enterprise Cooperation to Build Management Assessment Platform

Set up a special management organization for the University-enterprise network cooperation platform, such as the University-enterprise network learning database and innovation practice platform, to provide basic network maintenance for it. To improve the objectivity and impartiality of the teaching quality evaluation of the application-oriented undergraduate colleges, we should establish the evaluation system of the integration of university and enterprise, and use the Internet technology such as "big data processing" to evaluate the teaching effect of teachers and the innovative practice ability of students. The standard of evaluation is to carry out teacher evaluation, student evaluation, and student mutual evaluation by combining professional performance and comprehensive performance. With the evaluation system as the basis, students can clearly understand the shortcomings. In this way, the university will adopt corresponding strategies, re-establish talent training programs, increase the strength of practice and training, adjust the content and proportion of practice courses, and reconstruct the teaching evaluation system of local colleges and universities to create a relatively suitable environment for the integration of industry and education.

5. Conclusion

In the process of University-enterprise cooperative education, there are still many problems, such as lack of polarity, monotonous mode of cooperation and tend to form. This paper constructs the interactive platform of enterprises and students, the teaching resource pool of University-enterprise cooperation, the innovation project platform and the management evaluation platform respectively through the "Internet +" mode, effectively solving some problems existing in the process of University-enterprise cooperation, improving the students' innovative and practical ability, and reducing the gap between the students' ability and the requirements of the enterprise talents. In order to cultivate the practice and innovation ability of college students and improve the quality of teaching and employment rate, some feasible and effective methods are put forward.

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Model Construction of Influencing Factors of Self-efficacy of Students in Physical Education Higher Vocational Colleges

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Abstract. The development of Self-efficacy has an important influence on the development of the individual entire personality, which is one of the important indicators of mental health, and it has an important protective effect for mental health. By surveying the Self-efficacy of students in physical education higher vocational colleges, its influencing factor model was established in this study, which lays the foundation for improving the Self-efficacy of students in physical education higher vocational colleges.

Keywords: Self-efficacy; Physical Education; Higher Vocational Colleges; Model Construction.

1. Introduction

Self-efficacy is one of the important parts of the individual self-system; its development has an important influence on the development of the individual entire personality. It has an important influence on the cognition, motivation, emotion, morality and social behaviors of students in physical education higher vocational colleges, and it is one of the important indicators of mental health and has an important protective effect for mental health. But so far, empirical research on the Self-efficacy of students in physical education higher vocational colleges is relatively lacking.

In recent years, the country has vigorously promoted the development of higher vocational education, has increased support for higher vocational education, and has also emphasized the importance of mental health in vocational education. As the base for training sports talents in our country, physical education higher vocational colleges pay attention to the development of physical and mental health of these students, so that the educate can become the talents needed by the society and occupation. It is an important part of national educational undertakings, is an important style to promote economic, social development and employment, and it is also an important channel for the full development of human personality. However, due to the small number of physical education vocational colleges and students, they are often ignored by researchers, therefore; this research mainly focuses on the research on the influencing factors of students' Self-efficacy in physical education vocational colleges.

Albert Bandura, a famous psychologist at Stanford University in the United States, first put forward the conception of Self-efficacy in 1977, after nearly ten years of research and development, its formation mechanism, control and regulation of human behaviors were elaborated in Bandura's great book "Social Foundations of Thought and Action: A Social Cognitive Theory" published in 1986, "it is ability judgment, belief or subject self-control and feeling whether oneself can complete an activity at a certain level".

People who have high Self-efficacy are full of confidence in what they study and work, they are not afraid of difficulties and are willing to make numerous attempts, however, students with poor mental health are lower in Self-efficacy, and they lack self-confidence in learning and have fear of difficulty, this has a direct impact on facing and overcoming difficulties better for them, and affect their academic achievement, the backward or mediocre academic achievement will affect their learning enthusiasm and make them difficult to form a sense of achievement. Lack of learning motivation and self-confidence caused by Self-efficacy is a common learning mental health problem; therefore, the influencing factors of students' Self-efficacy in physical education vocational colleges is studied in this research and appropriate improvements strategy is proposed.

2. Research Methods

2.1 Research Objects

In this study, 86 samples were obtained from a physical education higher vocational college in Kunming. Finally, there are 82 effective answer sheets, and the recovery rate reaches 95%.

2.2 Tools

2.2.1 General Self-efficacy Scale (GSES)

The Chinese version of GSES also has good reliability and validity. The internal consistency coefficient is .87, and the retest reliability of one-week interval is .83. In validity, the correlation between the 10 items of GSES and the score of the total scale is between .60 and .77. Factor analysis extracts one factor, explained variance is 47.09%, and it shows that GSES has good structural validity.

2.2.2 Academic Self-efficacy Scale

This scale was prepared by Liang Yusong and Zhou Zongkui of Central China Normal University, they consulted the relevant dimensions in the academic Self-efficacy questionnaire prepared by Pintrich and De Groot, and divided academic Self-efficacy into two corresponding dimensions, including learning ability Self-efficacy and learning behavior Self-efficacy. The Cronbach coefficient of the learning ability Self-efficacy dimension is 0.7941, the learning behavior Self-efficacy is 0.6162, and the total scale is 0.8171.

2.2.3 Attribution Style

The higher the questionnaire score, this shows that the individual is more inclined to this aspect. The reliability and validity of the scale: effort attribution factor $\alpha=0.65$, luck attribution factor $\alpha=0.76$, task difficulty attribution factor $\alpha=0.82$, There is a high validity. [1]

2.2.4 Social Support Rating Scale (SSRS)

The two-month retest total score consistency of this scale is 0.92 ($P<0.01$), and the consistency of each item R1-10 is between 0.89-0.94, it shows that the questionnaire has good retest reliability.

2.2.5 Adolescent Life Event Scale

The adolescent life event scale was prepared by Professor Liu Xianchen and was used; the split-half reliability coefficient was 0.88. The retest reliability coefficient was 0.69. [2]

2.2.6 Simple Coping Style Questionnaire

This questionnaire is a self-rating scale, adopts 4-point scoring method. The retest correlation coefficient of the scale is 0.89, and a coefficient is 0.90; a coefficient of the active response subscale is 0.89; a coefficient of the passive response subscale is 0.78. The questionnaire has good validity. [2]

2.3 Data Processing

The data was processed with SPSS22.0 for regression analysis and Amos24.0 for path analysis.

3. Research Results

3.1 The Multiple Regression Analysis of Self-efficacy and its Influencing Factors of Students in Physical Education Higher Vocational Colleges

In order to further investigate the influencing mechanism of general Self-efficacy and academic efficacy of students in physical education higher vocational colleges, this research is based on Bandura's Self-efficacy theory, life events and social support are the reasons. The mental discomfort or physical symptoms caused by this is the results. Response and attribution play an important role in regulating stressors and stress responses.

The maximum likelihood method is used to evaluate the hypothetical model, and the model is modified on this basis, the standardized path diagram of the revised model is shown in Fig 1, and the

structural model fitting and index in the model is shown in Table 1, the standardized path coefficients among the variables in the model are shown in Table 2.

Table 1. Fitting index of the structural model of Self-efficacy influencing factors

χ^2	df	χ^2/df	p	GFI	NFI	IFI	TLI	CFI	RMSEA
65.966	20.36	3.239	0.000	0.985	0.978	0.985	0.979	0.985	0.056

From the point of view of the fitting index, the fitting indexes have reached the requirements of the structural model; usually the value of GFI, CFI, NFI, TLI, IFI above 0.95 shows a good fitting, and the value of RMSEA is equal to 0.056, it shows that this model fits well, and the fit results below 0.08 are also acceptable. Therefore, the model fits well with the hypothetical model and is acceptable.

3.2 Model Construction

The social support, life events, attribution, and response of students in higher vocational colleges are exogenous variables, which together affect the Self-efficacy this endogenous variable, the relationship model is shown in Fig.1:

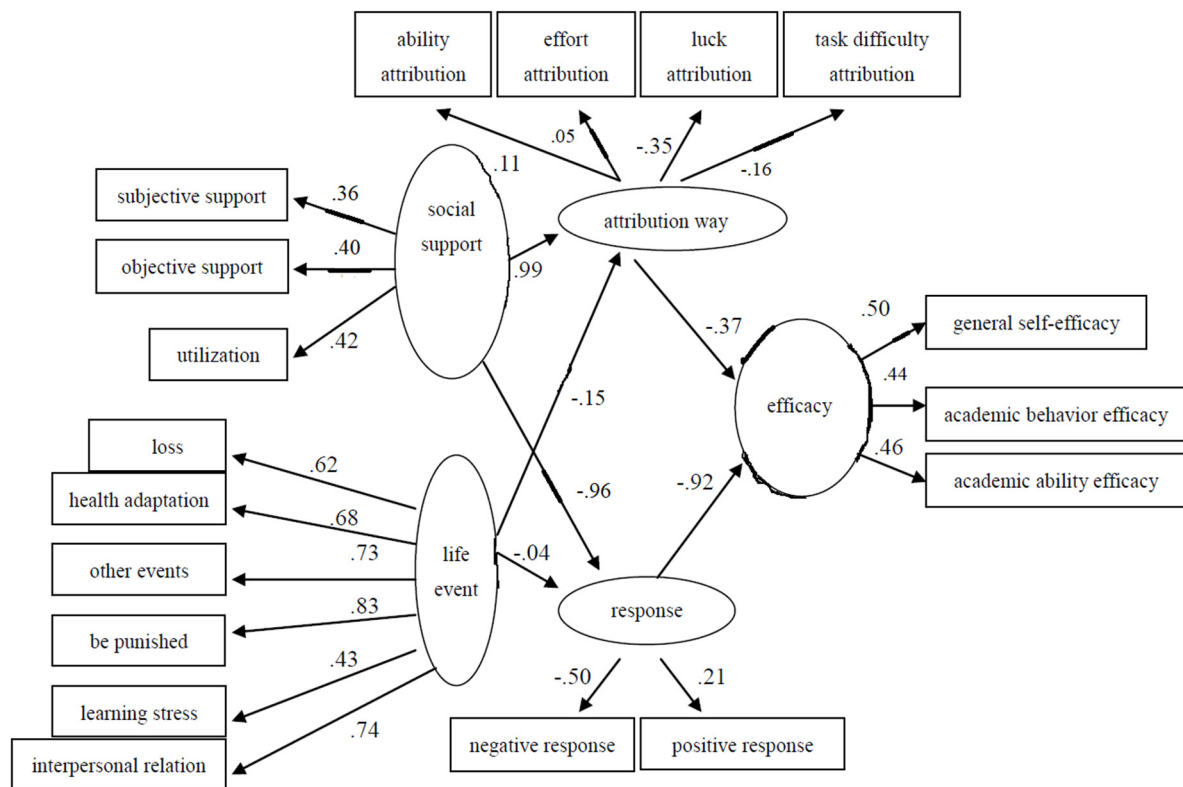


Fig 1. The structural model roadmap of Self-efficacy of students in higher vocational colleges

It can be seen that through the established structural equation model:

Response and attribution style have a direct effect on the Self-efficacy of students in higher vocational colleges. Social support has an indirect effect on the Self-efficacy of students in higher vocational college through response and attribution style these two mediating variables; life events have an indirect effect on the Self-efficacy of students in higher vocational college through response and attribution style these two mediating variables.

According to Weiner's attribution theory, ability attribution is internal, stable, and uncontrollable, effort attribution is internal, unstable, and controllable, luck attribution and task difficulty attribution are external, unstable and uncontrollable. In addition, it is found through interviews that most students believe that ability can be changed and improved through hard work, like hard work, it can be

controlled through subjective will. Therefore, when students attribute failure to insufficient ability and effort, they will not have inferiority complex. On the contrary, they believe that if they attribute their failure to bad luck or too difficult tasks, it is often an attitude, making excuses, and not dare to face the reality; instead, they will always withdraw and lose self-confidence, thus resulting in lower self-evaluation.

Table 2. Standard regression coefficients among various factors in the structural model

relationship among factors	regression coefficient	relationship among factors	regression coefficient
attribution style <- life events	-0.155	learning pressure <- life events	0.433
response <- life events	-0.036	be punished <- life events	0.832
response <- social support	-0.958	loss <- life events	0.617
attribution style <- social support	0.988	health adaptation <- life events	0.683
Self-efficacy <- attribution style	-0.368	others <- life events	0.728
Self-efficacy <- response	-0.921	general Self-efficacy <- Self-efficacy	0.501
ability attribution <- attribution style	0.108	academic ability performance <- Self-efficacy	0.437
effort attribution <- attribution style	0.053	support utilization <- social support	0.415
luck attribution <- attribution style	-0.347	subjective support <- social support	0.402
task attribution <- attribution style	-0.163	objective support <- social support	0.363
negative response <- response	0.210	positive response <- response	-0.504
interpersonal relation <- life events	0.504	academic behavior efficacy <- Self-efficacy	0.461

Response can be simply understood as the methods, means or strategies when people deal with internal and external environmental requirements and related emotional distress. Self-efficacy is the core content of self-awareness, which directly affects the level of individual self-acceptance, using a positive attitude to deal with sudden stress events is more conducive to smooth and effective resolution of things, and the more successful experience the individual accumulates, the higher the Self-efficacy level is. Individuals with low Self-efficacy will think too much about personal deficiencies when interacting with the environment, and see potential difficulties as more serious than they are. This kind of thinking will produce mental pressure, which makes them more focus on possible failures and adverse consequences, rather than how to effectively use their ability to achieve goals; individuals with high Self-efficacy levels will focus on the requirements of the situation, and are inspired by obstacles to make greater efforts. Facing stress events, students with high Self-efficacy will adopt more positive response, and less negative self-evaluation, the higher the students' general Self-efficacy, the more likely they are to be optimistic, active cognitive or behavioral methods such as help seeking and problem solving are used to deal with various life events.

4. Conclusion

As can be seen that from this study, since social support and life events affect Self-efficacy through the individual own response and attribution style, response and attribution style can be used as independent variables and play a role in the Self-efficacy of students in higher vocational colleges, moreover, they are also intermediary variables when life events and social support affect the Self-efficacy of students in higher vocational college. Life events, social support, response, and attribution style do not independently play a role in the Self-efficacy of students in higher vocational colleges, but are integrated and synergy.

When it is necessary to improve the Self-efficacy of students in sports higher vocational technical colleges, we cannot believe that changing some negative events in life or increasing some social support can well improve the Self-efficacy of this type of group, we should help them realize the

difficulties faced by blind evasion, they may be able to get relief for a while, but in the long run, it is not conducive to their own growth, they only perceive the unreasonable part of the style they deal with problems and the style of attribution in life events, accept them, make corresponding changes and practice it, so that their Self-efficacy can be truly improved and growth can walk a crucial step.

Therefore, in order to improve the Self-efficacy of students in sports higher vocational colleges, we must first consider the influencing factors of their Self-efficacy, and then formulate a series of intervention programs based on this, namely intervene in the response, attribution style and social support of students in higher vocational colleges, so achieve the purpose of improving students' Self-efficacy.

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Study on the Construction of Chemical Scientific Research Innovation Team in Local Higher Vocational Colleges

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Abstract. Taking the current situation of the scientific research and innovation team of chemical engineering in local vocational colleges as a starting point, this article aims to analyze the problems existing in the construction of scientific research team, and puts forward a series of targeted measures, including guaranteeing scientific research funding, increasing training efforts, enhancing cohesion, reforming mechanisms, and strengthening cultural construction and platform construction, to promote the scientific research innovation team construction and improve the research level and the innovation ability of the team.

Keywords: Scientific Research; Innovation; Team; Higher Vocational Colleges.

1. Introduction

1.1 Connotation and Nature of the Scientific Research Innovation Team

As an important place for cultivating advanced skilled and applied talents, local higher vocational colleges undertake the significant mission of developing the regional economy. Therefore, its focus should be on applied technology research and vocational education teaching research [1]. It is composed of backbone teachers of higher vocational colleges. The core of the scientific research innovation team in higher vocational colleges is the research and innovation of applied technology, and the transformation of scientific and technological achievements into actual products or teaching resources.

1.2 Overview of Our Chemical Research Innovation Team

The scientific research innovation team of our institute is a scientific research team formed by absorbing scientific research and technical personnel from chemical enterprises on the basis of the teaching team of chemical major. The team mainly provides scientific research and technical services for the Yibin chemical industry, and has achieved good results in education, teaching, scientific research and technical services. In 2010, the team was selected as the Provincial Excellent Teaching Team by the Provincial Department of Education.

2. Construction Status and Problems of Our Chemical Scientific Research Innovation Team

2.1 Construction Status of Our Chemical Scientific Research Innovation Team

Our chemical research team consists of 10 members, mainly teachers of the college. Among them, full-time teachers from the front-line account for 30%, and part-time teachers from the fields of administration, teaching and scientific research account for 50%. 70% of these teachers have working experience in chemical enterprises, so they have a deep understanding of the current production status of chemical companies. In addition, current technicians from chemical enterprises account for 20%, who are the important backbone of the enterprise [4]. Team members have a relatively high level of culture, among which 80% have a master's degree or above and 20% have a bachelor's degree. They all have the experience of hosting or participating in scientific research innovation projects as well as the comprehensive quality of scientific research innovation.

2.2 Problems Faced by the Construction of Our Chemical Research Team

2.2.1 Insufficient Scientific Research Funding

Due to its particularity, the price of experimental equipment required for chemical scientific research is generally expensive. Due to the serious shortage of scientific research funding, our college is unable to purchase the necessary scientific research equipment, which makes it difficult to carry out or continue the research-oriented scientific research projects on campus. In addition, insufficient investment has a serious impact on teachers' enthusiasm for scientific research innovation [5].

2.2.2 Lack of Training and Further Education Opportunities for Scientific Research Team Members

Our school attaches great importance to education, teaching and training, and prepares sufficient budgets and formulates detailed training plans every year. However, the budget for scientific research training is very small, so that teachers conducting scientific research must spend the allocated funds on relevant training and further education. Nevertheless, due to the limited allocation of scientific research funds, there is a lack of opportunities to participate in relevant training, further education and exchange, which will undoubtedly seriously hinder the improvement of teachers' scientific research innovation ability, the achievement transformation efficiency, and the social service level.

2.2.3 Heavy Teaching Tasks of the Research Team

Teachers of chemical engineering in our college undertake relatively heavy teaching tasks. In addition to the actual teaching workload of about 400 hours per person per academic year, they are also responsible for a series of work such as professional construction, curriculum construction, teaching reform and school-enterprise cooperation. The heavy pressure prevents them from devoting themselves to scientific research and innovation work, which objectively causes serious damage to the competitiveness of our chemical research innovation team.

2.2.4 Unfocused Research Team Cohesion

Our chemical research innovation team lacks deep-level cooperation concepts, which not only weakens the cohesion of the team, but also severely restricts the evolution of the team into an excellent team. Weak team cooperation leads to a lack of common goals. The team lacks the atmosphere of knowledge sharing and the driving force of learning and innovation. The project leader simply selects the participants who meet the requirements according to their educational background, age, and professional title. When the project is successfully declared, the cooperative research and division of labor among team members seem to be just a form of namelessness, which is finally transformed into the independent research and promotion of individual members.

2.2.5 Single Research Team Incentive Mechanism

The overall investment of our college in scientific research innovation is not much, and the incentive mechanism is not perfect. So far, there is no necessary incentive mechanism for the chemical scientific research innovation team, which greatly inhibits the initiative and enthusiasm of team members to participate in scientific research innovation work.

2.2.6 Weak Awareness of Scientific Research Team Culture Construction

At present, the combination of chemical research and innovation team in our college is not close enough. Due to the inadequate communication, the team's deep-level harmony concept is weak, and the team cohesion is not high, which makes it impossible to promote team cooperation in a deep level, and ultimately leads to a significant adverse impact on the overall performance of the team. Admittedly, it is difficult to improve the research atmosphere and culture of chemical research innovation team, which largely depends on the team leader. Furthermore, members only pay attention to the completion of scientific research projects, rather than the construction of team culture. It is hard to form a working atmosphere of mutual cooperation, mutual assistance, mutual learning, mutual encouragement, harmony and relaxation, which is not only bad for the innovation of scientific

research work, but also leads to the motivation of follow-up research and the generation of high-quality scientific research innovation results [6].

2.2.7 Lack of Scientific Research Platform

Through the full use of the interdisciplinary and systematic integration, the innovation platform aims to provide teachers in higher vocational colleges with opportunities to engage in scientific research and improve their scientific and technological innovation capabilities. It must be admitted that our chemical scientific research innovation team also has the problem of no display platform. The scientific research achievements of the team cannot be quickly converted into actual products or teaching resource achievements, and all parties (teachers, students, schools and enterprises) cannot benefit from it.

3. Effective Ways to Improve the Construction of Our Chemical Research Innovation Team

3.1 Guarantee Scientific Research Funding

Scientific research funding is one of the prerequisites for the establishment of scientific research innovation teams, as well as the basis of scientific research innovation work, which are used to solve specific scientific and technical problems and to ensure the normal development of scientific research projects. If the scientific research funding is seriously insufficient, then the team can neither continuously improve the scientific research innovation ability, nor obtain fruitful results.

3.2 Increase Training

Our chemical scientific research innovation team is an applied research team, and all the projects studied have certain practicability. Therefore, all team members need to have sufficient theoretical knowledge reserve and innovation consciousness, which requires continuous training, communication, and practice to improve the comprehensive quality of the team.

3.3 Enhance Internal Cohesion

The stronger the cohesion within the team, the stronger the members' sense of identity and belonging to the team, which is conducive to the standardization and orderly operation of team management. In addition, with the enhancement of the sense of belonging and identity, members' trust, loyalty, work enthusiasm and creativity will be improved to a certain extent. They will fully develop the spirit of ownership, and closely integrate the individual and the group. The growth of the individual is integrated into the growth of the team.

3.4 Reform the Institutional Mechanism

Mechanical and quantitative assessment makes the researchers of higher vocational colleges tried to cope with, not to mention producing original and high-level scientific research results. It is necessary to build a reasonable and incentive mechanism based on the characteristics of scientific research and innovation teams. Through the combination of spiritual incentive and material incentive, as well as individual reward and collective reward, the work enthusiasm of all team members can be fully mobilized. In the initial stage of construction, the college should provide adequate guarantees in energy input, political treatment, office funds, and allowances for principals. After the gradual progress, the college can give preferential policies to talents introduction, title promotion, scientific research awards and social welfare, to ensure that team members can continue to actively participate in scientific research and innovation.

3.5 Strengthen the Construction of Team Culture

As the soul of the team, team spirit is a must for high-performance scientific research and innovation teams. More specifically, team spirit refers to a willingness and work style to cooperate with each other in order to achieve team goals and benefits [7]. A fair, just and open stage is necessary,

so that each team member can give full play to their enthusiasm and stimulate their original innovation ability. These “harmonious concepts” related to team development permeate all aspects of scientific research work, so that team members consciously follow. At the same time, the scientific and reasonable personnel management mechanism, talent evaluation mechanism and distribution incentive mechanism are established with competitiveness and mobility as the core, to form an atmosphere that attracts and stabilizes outstanding talents to give full play to their intelligence [8].

3.6 Build a Scientific Research Innovation Platform

There is a need to actively build a scientific research innovation platform. The scientific research innovation platform that interacts with the team positively is one of the important carriers of scientific research. Nowadays, scientific research innovation platform has become the main way to cultivate scientific research and innovation team. First, in view of the different situations of ordinary undergraduate and higher vocational colleges, the government should coordinate the construction of a multi-form and multi-level scientific research and innovation platform, to promote the positive interaction between the scientific research innovation platform and the construction of scientific research innovation teams. Secondly, higher vocational colleges should be the main body, and external resources should be fully utilized. Due to the weak scientific research strength of higher vocational colleges and the lack of national or provincial key laboratories and engineering research centers and other scientific research innovation platforms, it is difficult to gather high-quality scientific research resources. In view of this, various innovation platforms should be built through active participation in the construction of scientific research innovation platforms and cooperation strategies [9]. Considering that our college is the governing unit of Yibin Science and Technology Innovation Promotion Association, it is necessary to make full use of this research innovation platform to establish links with scientific research projects.

4. Conclusions and Recommendations

4.1 Problems in the Scientific Research Innovation Team

Research and innovation in higher vocational colleges have problems such as insufficient investment in scientific research funds, insufficient cohesion, insufficient training in scientific research ability improvement, imperfect team management mechanism, insufficient construction of scientific research innovation platform and lack of long-term mechanism for scientific research achievements transformation. The main reasons are the late start of scientific research innovation activities in higher vocational colleges, insufficient attention to the scientific research innovation team and its construction, the passive position of scientific research innovation team, the lack of relevant thematic research, and the lack of guidance from government departments.

4.2 Methods of Improving the Scientific Research Innovation Team in Higher Vocational Colleges

Through the analysis of the problems existing in the construction of scientific research innovation teams in higher vocational colleges, this paper puts forward a series of suggestions, including guaranteeing scientific research funding, increasing training efforts, enhancing team cohesion, strengthening cultural construction, improving team management mechanisms, and promoting construction of scientific research innovation platform, so as to provide ideas and theoretical reference for the construction of scientific research innovation teams in higher vocational colleges.

Acknowledgments

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Reform and Practice of Urban Rail Electromechanical Technology Specialty in Higher Vocational Colleges

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Abstract. Based on our urban rail reform and practice of professional mechanical and electrical technology as an example, detailed tells the story of the implementation of the reform of the major process to overcome the teaching effect is not ideal, theory and technology integration is not deep, practical skills training characteristics is not outstanding, the chasm between talents training and social practice, Ideological and political and professional combination degree is not high problem method, through the practice proved that the reform is a long-term and effective implementation way, provides the related reform and practice of very valuable reference.

Keywords: Specialty Construction; Reform and Practice; Urban Rail Mechanical and Electrical.

1. Introduction

Our school track traffic development professional in-depth professional mechanical and electrical technology, discovered the existence of the major teaching in the teaching effect is not ideal, theory and technology integration is not deep, practical skills training characteristics is not outstanding, the chasm between talents training and social practice, ideological and professional is not high, spent research began to implement a series of teaching reform[1].

Professional by relying on the depth of cooperation between colleges and the certificate of the teaching and information fusion, 1 + X oriented enterprise requirements and standard integration, knowledge and technical skills training, ideological and political and professional integration of four integration platform, to build a hybrid teaching and autonomous learning, practice, practice, knowledge and skills, classroom education five cultivation system implementation plan of teaching reform. Through a series of teaching reform implementation programs, we have cultivated high-quality rail electromechanical professional technical skills talents in the new era who can take root in local areas and serve the national rail transit industry chain.

2. The Main Teaching Problems Solved by the Reform and Practice

- (1) The problem that the teaching effect is not ideal in the teaching implementation.
- (2) Lack of deep integration of theory and technology and lack of prominent characteristics of practical skills training.
- (3) the problem of the disconnection between talent training and social reality.
- (4) The problem of low degree of combination between ideology and politics and specialty.

3. The Reform and Practice to Solve the Teaching Problems

- (1) Relying on the school's teaching cloud platform, build an online course system and explore mixed teaching

Using the "flipped classroom" and "offline teaching mainly + online learning self-established online course system supplemented by" teaching mode. The project needs to be solved by disassembling the knowledge points. The students form a team to complete the project by using online online courses and other online and offline teaching resources. At the same time, teachers can impart knowledge in class and other mixed teaching forms, supplemented by homework completion, question-answering, PPT presentation and other activities. The comprehensive solution to the traditional teaching resources single, classroom interaction is not ideal, difficult to cultivate independent innovation, team quality and other shortcomings. Through this task-driven hybrid

teaching mode, high quality teaching results are achieved to ensure that students learn knowledge and teachers' teaching ability and means are diversified [2].

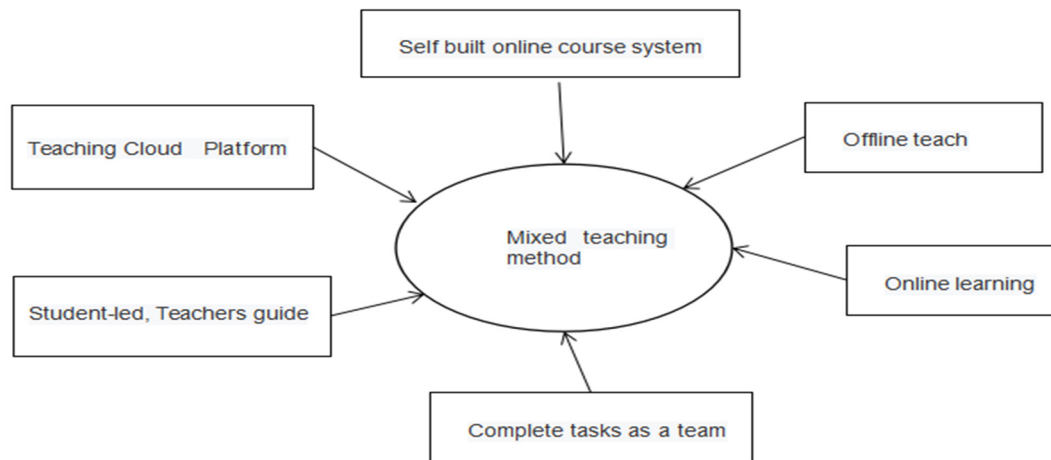


Fig 1. Mixed teaching method

(2) The integration of theory and technology is driven by skill competition, and the professional characteristics of track electromechanical technology are highlighted

Rail transit electrical technical team to actively participate in national, municipal, rail transportation such as electrical and mechanical technology and traditional intelligent manufacturing control areas of the city, through the spread of spirit ideology, professional infection in all the students took an active part in various skills contest, selection, training and competition to promote learning, to learn to help technology, strengthen the integration of skills and knowledge. At the same time, in the practice of the model, it has formed the professional characteristics of rail transit electromechanical technology, which has a solid professional foundation of track electromechanical technology and robust intelligent control technology.

(3) Guided by the ability of "1+X Certificate", cultivate the most needed talents in the track industry

The goal of track electromechanical technology major in higher vocational colleges is to train talents for rail transit construction. Therefore, without in-depth communication with enterprises and professional school-enterprise cooperation, the industry will not be able to cultivate the most needed talents. The rail mechanical and electrical team went deep into the front line of enterprises and established a good communication and cooperation relationship with well-known enterprises in the industry. The team went deep into the front line of enterprises to learn about the industry with education, understand the needs of enterprises, learn the latest technology of enterprises, and timely use it in teaching. At the same time, we actively invite excellent enterprise engineers to teach in our school. According to the ability requirements of 1+X certificate of rail transit, the standard training manual is prepared for professional training[3].

In addition, the college also makes use of the advantages of professional cluster, docking with the traditional intelligent control of excellent enterprises, between education and industry to establish a deep connection. On this basis, according to the actual needs of the CRC and the rail transit equipment manufacturing industry, we forced the teaching reform and carried out targeted practical training through school-enterprise cooperation, thus cultivating the most needed talents in the rail industry.

(4) Docking of classroom ideology and politics with talent training objectives

In the theoretical classes, the patriotic craftsman spirit is integrated into the classroom content, and the actual cases of the craftsmen in the track mechanical and electrical major are taken as the means for students to share their relevant deeds in class, talk about their experiences, and share their experiences. Through interaction, the collective identity is strengthened and the sense of professional identity of students is improved. In the link of practice, the introduction of the orbit mechanical and electrical operation site standards, on the theory of ideological elements in the "spirit", let students

experience in practice respect-work spirit, patriotic spirit and innovative spirit, and also asked that the students take the initiative to understand the training content, the motherland has developed the most advanced science and technology, stimulate students' patriotic pride. On the basis of this accumulation, we set up the ideological and political topic of track electromechanical major, and further strengthen the integration of track electromechanical technology and ideological and political science with the driving force of the completion of the subject [4].

4. The Main Achievements of the Reform and Practice

(1) Achievements in construction

Under the promotion of this reform, teachers actively go into the production line of enterprises, work together with enterprise personnel to carry out production technology research and development, production process improvement, actively participate in the construction of curriculum resources, teaching ability competition has also achieved very good results. This major has built several university-level quality online resource courses of rail transit, one of which has been recognized as a municipal quality online open course, and built two training rooms for rail specialty with enterprises. Many teachers have won awards in various teaching competitions, and guided students to win several national, provincial and ministerial skills competitions. The team has published dozens of articles solving technical problems in the industry in domestic and foreign journals, and successfully applied for 1+X vocational skill level certificate pilot based on rail transit major[5].

(2) Application effect

This reform has been fully carried out in the major of track mechanical and electrical technology in our school, and the teaching results are remarkable, and hundreds of students have benefited from it. In the application of this reform, the comprehensive quality and professional skills of the students in this major have been greatly improved. At the same time, relying on the city level, national level and industry top skills competitions in the field of automation and rail transit, the competition promotes teaching, learning, reform, construction and cooperation. Through skill competition, professional skills are polished to solve the integration of theory and technology, and at the same time, the practical skills training characteristics of the mechanical and electrical technology team of rail transit are formed.

(3) Promotion Achievements

The effect of this reform is very good, and it has been widely promoted in the related majors of our school, and has been well received. At the same time, other colleges and universities also actively adopt the reform model of this major, and carry out extensive and in-depth exchanges. Students of this major were also invited to the fraternal colleges for a two-day exchange of results. The results have also been widely adopted by relevant enterprises, which has played a very good effect on the training of new employees and the development of employees' vocational skills.

5. Summary

After nearly three years of reform and practice of the teaching reform is successful to solve the teaching effect is not ideal, the theory and technique characteristics of fusion is not deep, practical skills training is not outstanding, the chasm between talents training and social practice, ideological and professional is not high, spent gradually formed the orbit electrical and mechanical professional teaching reform practice, satisfactory results have been achieved. This reform has cultivated high-quality rail electromechanical professional technical skills talents in the new era who can take root in local areas and serve the national rail transit industry chain, and has played a leading and exemplary role in the teaching reform of rail transit specialty in higher vocational colleges.

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Classification of the Five Echelons of the World Higher Education System

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Abstract. In order to better understand the development of higher education in the world, this essay introduces how to divide the world higher education system into five echelons through cluster analysis and analytic hierarchy process, and rank them according to their advantages and disadvantages.

Keywords: Higher Education; Cluster Analysis; Analytic Hierarchy Process.

1. Five Echelon Classification based on Cluster Analysis

As an example, we have selected 10 representative countries with a wide distribution of higher-education development level gradients. The following uses our model to evaluate the health of their higher-education system.

1.1 Establish a Comprehensive Evaluation Index System

Judging whether a higher-education system is healthy and sustainable requires many perspectives. On the one hand, higher-education relies on higher-education institutions. The development of higher-education is mainly reflected in the scale and quality of higher-education institutions. On the other hand, one of the goals of higher-education is to increase innovative talents for the society. The level of education can also be compared to a country's scientific research capabilities and the scale of scientific researchers. In addition, the pulse of the higher-education system is closely related to international talent exchanges and capital investment.

In summary, following the principle of comparability, we selected nine evaluation indicators from five aspects of higher-education, as shown on the figure below [1].



Fig 1. Evaluation index system

1.2 Data

Nine index values in a recent year are shown on the table below [2] [3].

(The original data of the 9 indicators selected based on (1) Are all taken from the World Data Atlas, World Bank Public Database and National Bureau of Statistics?)

Among them: x_1 is the graduation rate of higher-education(%); x_2 is the number of Nobel Prize winners; x_3 is the number of top 500 universities around the world; x_4 is the teacher-student ratio of higher-education (the number of students divided by the number of teachers); x_5 is the national education fund (100 million); x_6 is the proportion of students going abroad for higher-education(%); x_7 is the gross enrollment rate of higher-education; x_8 is the proportion of public education expenditure in GDP(%); x_9 is the number of researchers per million people.

Table 1. Original Data

	X1	X2	X3	X4	X5	X6	X7	X8	X9
United States	64.3	381	135	9.8	8786.92	4.8	88.2	5	5042.5
United Kingdom	50.7	132	34	11.9	1463.11	2.1	60	5.5	4391.7
Germany	56.1	108	34	11.2	1664.35	3.3	70.2	4.8	4878.3
Japan	49.1	29	17	13.7	1386.71	2.3	63.6	4.5	5210
Singapore	45.2	2	2	14.2	910.31	8.8	64.8	4.5	5729.7
Mexico	26.3	1	1	16.1	790.6	0.8	40.2	4.2	428.1
China	30.7	2	46	19.1	2260.13	2.1	49.1	4.0	1205.7
Russia	35.5	26	2	14.5	1560.46	1.2	51.9	3.8	2979.1
India	20.4	5	1	29.8	811.2	0.7	27.4	3.8	216.2
Indonesia	15.2	0	0	26.6	120.13	0.7	26.4	3.6	179.2

1.3 R-type Cluster Analysis

Qualitatively inspecting nine evaluation indicators in five aspects that reflect the development of higher-education, it can be seen that there may be strong correlations between certain indicators. For example, there may be a strong correlation between the graduation rate of higher-education, the gross enrollment rate of higher-education, and the teacher-student ratio of higher-education, and there may be a strong correlation between the number of top 500 universities in the world and the national education fund.

In order to verify this idea, use MATLAB software to calculate the correlation coefficients between the nine indicators. The correlation coefficient matrix is shown in the following table.

Table 2. The Correlation Coefficient Matrix

1	0.7385	0.6702	-0.8824	0.6353	0.5719	0.9754	0.8467	0.9125
0.7385	1	0.9293	-0.5498	0.9262	0.2768	0.7465	0.6459	0.4835
0.6702	0.9293	1	-0.4897	0.9643	0.2767	0.7240	0.5369	0.3896
-0.8824	-0.5498	-0.4897	1	-0.4733	-0.4797	-0.8917	-0.7592	-0.8134
0.6353	0.9262	0.9643	-0.4733	1	0.3035	0.7126	0.4308	0.3811
0.5719	0.2768	0.2767	-0.4797	0.3035	1	0.6426	0.4183	0.7235
0.9754	0.7465	0.7240	-0.8917	0.7126	0.6426	1	0.7564	0.8892
0.8467	0.6459	0.5369	-0.7592	0.4308	0.4183	0.7564	1	0.7332
0.9125	0.4835	0.3896	-0.8134	0.3811	0.7235	0.8892	0.7332	1

It can be seen that there is indeed a strong correlation between certain indicators, so we can consider selecting several representative indicators from these indicators for cluster analysis. To this end, nine indicators are clustered in R type according to their correlation, and then representative indicators are selected from each category. First, standardize the data on each variable (indicator) separately. The similarity measure between variables uses the correlation coefficient, and the calculation of the similarity measure between classes uses the class average method. The clustering tree diagram is shown in the figure below.

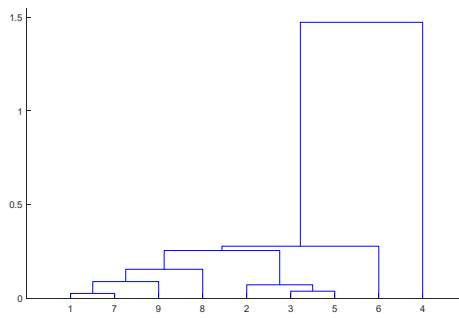


Fig 2. R-type clustering tree diagram

As we can be seen from the cluster diagram, the two indicators of higher-education graduation rate and higher-education gross enrollment rate, the number of top 500 universities in the world and the national education fund have a greater correlation, and they are the first to be brought together. If the 9 indicators are divided into 6 categories, six selected analysis indicators are:

- x₂ The number of Nobel Prizes won;
- x₄ Higher-education teacher-student ratio;
- x₅ National Education Fund;
- x₆ The proportion of students going abroad for higher-education;
- x₈ The proportion of public education expenditure in GDP;
- x₉ Number of researchers per million people.

1.4 Q-type Cluster Analysis

Based on these six indicators, a cluster analysis was performed on 10 countries.

First, the data of each variable is standardized separately. The similarity between samples is measured by Euclidean distance, and the calculation of the distance between classes uses the class average method. The clustering tree diagram is shown below.

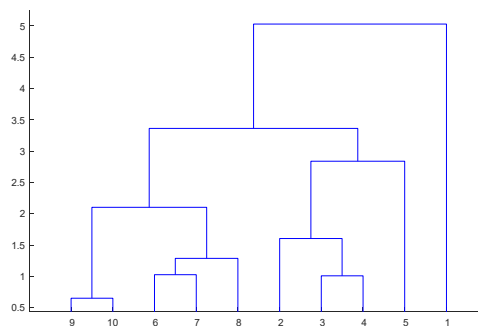


Fig 3. Q-type clustering tree diagram

1.5 Case Study Results

From the clustering tree diagram in (4), it can be seen that there are big differences in the development of higher-education in various countries. Based on the analysis of the above indicators, we have decided to divide the world higher-education system into five echelons. It should be noted that:

It is just a rough division, which is intended to reflect the current world higher-education quality pattern and power pattern from a macro perspective, and to provide an enlightening classification for objectively judging the position of countries in the world higher-education system and classifying countries one by one. If 10 countries are divided into five categories according to the development of higher-education in each region, the result is:

- 1) The first category: The United States;
- 2) The second category: Singapore;
- 3) The third category: Britain, Germany, Japan;
- 4) The fourth category: China, Russia, Mexico;
- 5) The fifth category: India, Indonesia and other regions.

We can extend this cluster analysis method for the health status of the higher-education system to every country in the world, and the health status of the major higher-education countries in the world is distributed as follows.

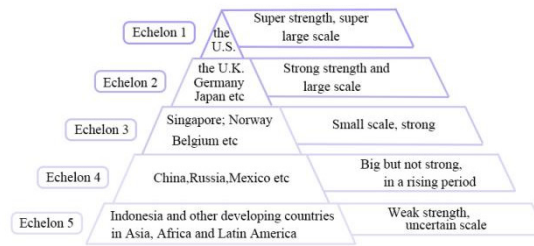


Fig 4. Overall health status

2. Evaluation in Different Echelon based on Analytic Hierarchy Process

After dividing 10 countries into five echelons, in order to more accurately assess the health of a country's higher-education system, we will use the analytic hierarchy process to get the rankings and pros and cons of each country's higher-education system in different echelons:

Note: Here we take the three countries in the fourth echelon:
China, Russia, and Mexico as examples.

2.1 Build a Hierarchical Model

The decision goal is the choice of the country with the best health status of the higher-education system; the decision criterion is the six indicators selected by the R-type cluster analysis in 4.1; the decision-making objects are three countries.

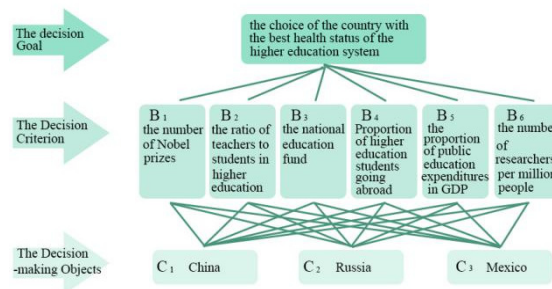


Fig 5. Hierarchical Model

2.2 Construct a Judgment Matrix

First, construct a paired comparison matrix (6×6) between the target layer and the criterion layer, and comprehensively consider the criterion layer judgment matrix A. Then construct 6 paired comparison matrices (3×3) between the criterion layer and the scheme layer. According to the data of the six indicators corresponding to the three countries, comprehensive consideration can be obtained from the program level judgment matrix B_{1-6} .

2.3 Result of the Total Ranking

The result of the total ranking calculated by matlab is shown in the following table:

Table 3. Total Ranking

Criterion		B ₁	B ₂	B ₃	B ₄	B ₅	B ₆	Total ranking weight
Criterion-level weight		0.267	0.133	0.267	0.067	0.133	0.133	
Scheme layer single order weight	C ₁	0.2	0.143	0.571	0.5	0.333	0.333	0.347
	C ₂	0.7	0.571	0.286	0.333	0.167	0.556	0.458
	C ₃	0.1	0.286	0.143	0.167	0.5	0.111	0.195

3. Conclusion

According to the total ranking weight of the hierarchy, it can be concluded that the health status of higher-education in China, Russia, and Mexico is ranked as follows:

Russia>China>Mexico

In the end, the evaluation model for analyzing the health status of higher-education in different echelons of countries by the analytic hierarchy process is shown above.

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Exploration of University Ideological and Political Education from the Perspective of Multi Culture

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Abstract. With the gradual deepening of global economic integration, cultural exchanges among countries, regions and ethnic groups have become increasingly frequent. Under the infiltration of multi-cultural thoughts and different values, some college students are lack of spirit, weak legal concept, vague values, lack of moral belief and so on. Therefore, multi-cultural has also had a great impact on the development of China's higher education, especially put forward higher requirements and challenges to the ideological and political education in the new era. The ideological and political education of college students is the top priority of the current education work in Colleges and universities. In this paper, combined with their own work experience, from multiple perspectives for the university ideological and political education of multicultural perspective are discussed and analyzed. Firstly, it points out the severe challenges faced by the current ideological and political education in universities. Secondly, in view of the challenges from the perspective of multiculturalism, it actively explores effective education strategies, to lead the thought from multiple perspectives, conduct all-round education, and promote the steady development of university ideological and political education from the perspective of multiculturalism.

Keywords: Multi Culture; Vision; University Ideological and Political Education; Exploration.

1. Introduction

With the vigorous development of Internet information technology and the gradual deepening of global economic integration, cultural exchanges between different countries, regions and ethnic groups are becoming increasingly frequent. The collision and fusion of cultures gradually produce the phenomenon of multi culture. Multiculturalism has a great influence on the development of China's higher education, especially on the ideological and political education in universities in the new era. The ideological and political education of college students is the most important part of the current education work in colleges and universities. It is a system composed of multiple subjects. Under the influence of multi-cultural thoughts and different values, some college students are lack of spirit, weak legal concept, vague values and lack of moral belief, which puts forward higher requirements and problems for ideological and political education in colleges and universities. Facing the continuous impact of multi culture, educators in colleges and universities should seize the opportunity, meet new challenges and conform to the trend of the times on the basis of traditional ideological and political education, we should actively explore new ways of ideological and political education, lead our thoughts from various angles, educate people in an all-round way, and effectively promote the steady development of ideological and political education in universities from the perspective of multi culture.

2. New Challenges of University Ideological and Political Education from the Perspective of Multi Culture

Multiculturalism is formed by the collision and fusion of different cultures of many nations and countries over a long period of time, which affects the development and progress of society from all aspects. For the development of our nation, it is both an opportunity and a challenge. When the foreign culture is integrated with the national culture, it is conducive to inheritance of the culture. On the contrary, when the foreign culture conflicts with the national culture, it is not conducive to the spread of the national culture. Therefore, the development of multiculturalism is bound to have a strong impact and guidance on college students' thinking and behavior, so that college students can not make the right choice in their study and life.

Firstly, the development of multi culture breaks through the shackles of single culture. Under the condition of multi culture, there will inevitably be conflicts between different values. Multiculturalism is complex, which includes the conflict between eastern and Western cultures and the difference between modern culture and traditional culture. The continuous invasion of western hostile culture gradually led to some people began to deny the national culture. The bad culture of the west is bound to have a negative effect on the whole society, especially on the college students with weak self-protection consciousness. Therefore, in the multicultural perspective, the university ideological and political education is facing more severe challenges.

Secondly, the brand-new cultural media makes the multi-cultural communication more rapid, and the breeding of some bad information in the society hinders the effective implementation of ideological and political education in universities. At present, the rapid development of multimedia information technology, all kinds of bad information, all pervasive, which has a great impact on the dominance of ideological and political education. The goal of university ideological and political education is to help college students establish a correct world outlook, outlook on life and values. The spread of social culture hinders the ideological and political education and weakens the discourse power of university ideological and political education.

Third, the rapid development of the Internet is another big challenge for ideological and political education in universities. The Internet is the main carrier of multi-cultural communication, and all kinds of good and bad information is full of the network. College students are the main users of the network, daily access to these information, due to the lack of discrimination, it is easy to cause adverse effects, resulting in confusion of their values, forming a wrong ideology.

3. The New Path of University Ideological and Political Education from the Perspective of Multi Culture

In the new historical period, the development of multi culture is the trend of the times. How to absorb the foreign culture adapted to China's mainstream culture in the complex international environment, and how to resist the influx of western money worship, hedonism, individualism and other negative thoughts, so that college students can establish a correct world outlook, outlook on life and values, and enhance their national self-confidence respect, self-confidence and pride are the mission and responsibility of moral educators in colleges and universities. The author thinks that we should start from the following points.

First of all, we should give full play to the ideological leading role of party building in colleges and universities. We should conscientiously strengthen the construction of student party organizations and party members, absorb advanced elements from college students into the party team, and give full play to the exemplary vanguard role of student party members among students. Give full play to the positive role of the Communist Youth League and student organizations in the ideological and political education of college students. To guide the League organization to cultivate excellent League members, fully implement the quality development plan of college students, and serve the growth and success of college students.

Secondly, we should strengthen the construction of ideological and political teachers. In a narrow sense, college ideological and political teachers mainly include party and government cadres, counselors, head teachers and ideological and political theory Teachers in charge of student affairs. To build a high-quality ideological and political education teacher team is the key to the ideological and political education in universities. Colleges and universities should constantly improve the cultivation and training system of ideological and political education teachers, organize various forms of learning and training activities, constantly improve the evaluation mechanism of ideological and political education teachers, and actively do a good job in the construction of student work team, especially the construction of counselors and class teachers. At the same time, in the work of school evaluation, we should give proper preference to ideological and political education teachers, and constantly improve the policy of professional title evaluation of ideological and political education teachers.

Third, the ideological and political education should be integrated into the campus culture to cultivate the cultural consciousness of college students. In the multi-cultural perspective, we should actively create a harmonious and healthy campus culture, organize and carry out rich and colorful campus cultural activities, guide students to pay attention to traditional culture, cultural hot spots and focus, make students form a conscious subject consciousness and innovative spirit, comprehensively improve the cultural quality and spiritual taste of college students, and further deepen the ideological and political education under the multi-cultural background.

Fourth, integrate ideological and political education with classroom teaching, and make full use of classroom position to carry out ideological and political education for students. Teaching and educating people is the bounden duty of all teachers. Therefore, in the process of teaching, non ideological and political education teachers should also integrate ideological and political topics according to the teaching content, enrich classroom teaching and improve students' cultural heritage and moral sentiment by excavating curriculum connotation.

Fifth, we should make full use of the new network media to strengthen the ideological and political education. From the perspective of multi culture, it is one of the important contents of ideological and political education in universities to fully grasp the new media technology and quickly occupy the network position. Network new media is one of the important ways for college students to express their thoughts and feelings, which affects their life and study, as well as the cultivation of values and moral quality. However, network new media is a double-edged sword, which has both advantages and disadvantages. The Internet is full of all kinds of good and bad information, which is easy to be misled for teenagers with poor discrimination ability. Therefore, colleges and universities should formulate education programs that are in line with the diversified development of college students, so that the network new media can become an important network position for colleges and universities to cultivate morality, cultivate talents and gather spirit. Therefore, colleges and universities should strengthen the construction of campus new media team and cultivate a group of ideological and political education communicators who are familiar with network technology. Teachers must constantly learn network knowledge and technology, keep up with the pace of the network era, master students' ideological trends, and timely correct and prevent. We should make full use of the Internet, establish wechat, microblog and other network carriers, establish a new platform for ideological and political education, open up a new space for ideological and political education, actively guide students to care about national affairs, national development, understand good and evil, distinguish right from wrong, and establish a correct world outlook, outlook on life and values.

4. Conclusion

To sum up, with the continuous development of economic world integration, multiculturalism is also booming. The university ideological and political education from the perspective of multiculturalism is facing new challenges and new problems, which puts forward higher requirements for university educators. Educators in colleges and universities should be fully aware of the severe challenges brought about by multiculturalism, grasp the new characteristics of college students, make full use of the ideological and political education platform of network new media, lead the thought from multiple angles, conduct all-round education, and promote the steady development of ideological and political education in colleges and universities from the perspective of multiculturalism.

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The Cultivation of Cultural Confidence of College Students in the New Era in Chinese American Literature Teaching

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Abstract. Chinese American literature is an important part of American literature, whose works fully reflect the hybrid of Chinese and American culture. Chinese American literature contains many elements of Chinese culture, and Chinese cultural symbols are deeply rooted in Chinese American history and culture. The paper attempts to start from the history and status of Chinese American literature, and then fully explain the connotation of Chinese culture in Chinese American literature, which will ultimately help Chinese American literature teachers fully understand the blend and combination of Chinese literature and American literature embodied in Chinese American literature, and actively guide the new era students to identify with Chinese traditional culture in the teaching process, so as to cultivate their national cultural self-confidence. Cultural self-confidence is the core of cultural soft power, and college students in the new era are the inheritors of cultural self-confidence, the mainstream and key of cultivation. The teaching of Chinese American literature has its particularity. Through the teaching of the history and works of Chinese American literature, the teachers can make the college students increase their knowledge of Chinese traditional culture, which is an effective position for the cultivation of cultural confidence.

Keywords: Chinese American Literature; College Students; Cultural Confidence; Cultivation.

1. Introduction

Chinese American literature is a special literary phenomenon between Chinese literature and American literature, which has experienced the stages of initiation, development and prosperity. It was once only regarded as the overseas continuation of Chinese literature. The works of Chinese American literature fully embody the hybridity of Chinese and American culture, and condense many Chinese cultural elements. Most of the works reflect the living status of Chinese in American society, from nostalgia and racial discrimination in the early days to identity and cultural identity, and then to the writing style of complete Americanization. At present, due to the impact of multi-cultural society, the lack of attraction of local culture, the blind identification of foreign culture and other reasons, resulting in the lack of national culture self-confidence of some college students in the new era. Therefore, the classroom teaching of Chinese American culture plays a very important role, and the teaching of the connotation of Chinese culture in Chinese American literature is bound to stimulate college students' cultural self-confidence and enhance their sense of national cultural identity.

2. The History and Development of Chinese American Literature

Chinese American literature began in the mid-19th century, when the first group of Chinese arrived in the American continent, bringing with them ancient Chinese civilization and culture. They hope to improve their status in the United States by writing protest letters. This is the rudiment of Chinese American literature at this stage. With autobiographical themes as the main entry point, the representative works are *Father and Glorious Descendant* (1943) and *Fifth Chinese Daughter* (1945) which show the ethnicity of Chinese American literature. From 1960s to 1970s, Chinese American literature developed. At this stage, the literary works mainly focus on the study of cultural identity and Chinese social identity, to explore the differences between Chinese culture and American culture. The representative works are *Roots: An Asian American Reader* (1971), *Asian American Authors* (1972), *Aiiieeeee! An Anthology of Asian-American Writers* (1974), etc. These works show the indomitable fighting and rebellious spirit of Chinese Americans, and gradually change the image of Chinese in the hearts of Americans, and effectively spread Chinese culture. Since the 1970s, Chinese American literature has entered a stage of prosperity and has been gradually accepted by the

international literary world. *The Woman Warrior* (1976), the representative work of Chinese American writer Kingston, is a masterpiece of Chinese American literature. It can be said that Chinese American writers have created many works that have attracted worldwide attention on the basis of American cultural values by learning from Chinese traditional culture. Obviously, Chinese American literature has gradually integrated into the mainstream of American literature and become an integral part of American literature.

3. Chinese Elements in Chinese American Literature

Chinese American literature fully reflects the fusion and blend of Chinese culture and American culture, and also fully reflects the influence of Chinese culture on Chinese American literature. Chinese American literature contains many elements of Chinese culture, and Chinese cultural symbols are deeply rooted in Chinese American history and culture.

3.1 Chinese Family Culture in *The Woman Warrior*

Hua Mulan's artistic image first appeared in *Mulan Ci*, a folk song of Yuefu in the Wei, Jin and southern and Northern Dynasties. In the folk song, Hua Mulan was a heroine who joined the army for her father and made great achievements in the war. In the works of Chinese American writer Maxine Hong Kingston, the artistic image of Hua Mulan is completely adapted. Hua Mulan in *The Woman Warrior* is more masculine, not only physically strong, but also highly skilled in martial arts. In terms of details, Hua Mulan joined the army for her father to repay her current worries and resentments to her mother. The description of the immortal imparting Hua Mulan's martial arts also has the color of Chinese mythology and chivalry. Hua Mulan's description of killing the rich and helping the poor and helping others in the face of injustice reflects her chivalrous demeanor. However, at the end of the story, Hua Mulan kneels in front of her mother-in-law and goes to marriage and family, which shows the bondage of female image in Chinese culture and reflects the traditional Chinese family culture.

3.2 Chinese Filial Piety Culture in *The Joy Luck Club*

Filial piety culture is one of the most important cultures of the Chinese nation. In China's traditional ethics system, filial piety has a far-reaching impact on the masses. This kind of deep-rooted concept is particularly apparent in the family, mainly reflecting the respect and obedience of the younger generation to the elders. *The Joy Luck Club* (1989), a Chinese American literary work, fully embodies the content of Chinese filial piety culture. In *The Joy Luck Club*, Hsu An-Mei is a typical representative of filial daughter. However, the author of the novel, Amy Tan, does not have any respect for Hsu An-Mei's ignorance and filial piety. Similarly, at present, the Chinese Americans daughters who are influenced by American culture are required to be filial to their parents, not disobey their parents, and abide by Chinese filial piety, while the daughters are rebellious and eager for equality and freedom, which is a model of the collision between Chinese filial piety and Chinese American literature. This also fully reflects the influence of Chinese culture on Chinese American literature.

3.3 Chinese Tea Culture in *Eat a Bowl of Tea* and *Tea That Burns*

Chinese tea culture, broad and profound, originated from the Confucian culture in the pre-Qin period. Cooking tea and listening to music has always been the leisure way of literati. Chinese tea art integrates tea, morality and art, which fully embodies the golden mean of Chinese traditional culture and makes people feel the wonderful effect of tea culture in purifying people's hearts. Tea is an indispensable Chinese element in Chinese American literature. In *Eat a Bowl of Tea* (1961) and *Tea That Burns* (1998), the author takes tea as a clue to tell and promote the development of the plot. In the works, tea is a medium to maintain family affection, friendship and love, which fully embodies the values of traditional Chinese culture.

In short, Chinese culture has a profound impact on the emergence and development of Chinese American literature. Chinese American literature fully embodies the great vitality of Chinese culture. Chinese American literature is an effective medium for the dissemination of Chinese culture.

4. The Cultivation Methods of Cultural Confidence of College Students in the New Era in the Teaching of Chinese American Literature

The cultivation of College Students' cultural self-confidence in the new era is of great significance to the country, nation and individual. In today's multi-cultural environment, contemporary college students, as the fresh blood and important carrier of the development of the new culture of socialism with Chinese characteristics, should establish a firm cultural confidence, which is directly related to the further development of the country's excellent traditional culture and advanced culture. At present, due to the impact of multi-cultural society, the lack of attraction of local culture, the blind identification of foreign culture and other reasons, resulting in the lack of national culture self-confidence of college students in the new era. It is for sure that strengthening school education is a fundamental way to cultivate college students' cultural self-confidence in the new era. Because of its own particularity, Chinese American literature teaching is a very effective carrier and platform. Therefore, it is suggested that Chinese American literature teachers can start from the following two points to turn classroom teaching into a theoretical position to cultivate college students' cultural self-confidence.

First, from the perspective of enhancing college students' self-confidence in Chinese culture in the new era, we should scientifically optimize the teaching of Chinese American literature. By tracing back the development history of Chinese American literature, we should explore the characteristics of Chinese American literature, and make a horizontal and vertical comparison among Chinese American literature, American literature, and Chinese literature, so as to deeply explore the connotation of Chinese culture in Chinese American literature and expand the scope of teaching. The greater international influence of Chinese culture can enhance the cultural self-confidence of college students and enhance their national pride.

Second, in the teaching of Chinese American literature, we should constantly integrate Chinese traditional culture and Chinese literature. Carrying forward Chinese traditional culture and literature is an urgent requirement to enhance college students' national cultural confidence in the new era, which also puts forward higher requirements for Chinese American literature teachers in the new era. We should not only be familiar with the history and important works of Chinese American literature, but also have a solid grasp and understanding of Chinese traditional culture. In the process of teaching, teachers should correctly deal with the relationship between Chinese traditional culture, Chinese American literature and American literature, constantly strengthen college students' national cultural self-confidence and cultural awareness, and enhance their sense of national cultural identity and pride.

5. Conclusion

To sum up, whether from the history of the development of Chinese American literature or from the works of Chinese American literature, it fully reflects that Chinese American literature is inextricably linked with Chinese culture, and plays a positive role in promoting the external dissemination of Chinese culture. Therefore, from the perspective of enhancing college students' cultural self-confidence, teachers should deeply explore the Chinese elements and show the connotation of Chinese culture in Chinese American literature, as well as deeply compare the similarities and differences between Chinese literature and Chinese American literature and American literature, so that college students can have a more comprehensive understanding of Chinese American literature, and further enhance their national pride and cultural self-confidence.

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Analysis of the Current Situation and Countermeasures of Discipline Construction in Universities Affiliated to Jiangsu Province from the Perspective of Double First Class

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Abstract. Based on the current situation of discipline construction of N University and the background of "Double First-class" strategy, this paper analyzes the status quo of discipline development in N University. And on this basis, it tries to put forward constructive Suggestions for the discipline development of the university, to make contributions to improving the comprehensive strength of the university, enhancing the comprehensive strength of the school, enhancing the level of higher education, and promoting the development of the disciplines of N University.

Keywords: Double First-class; Discipline Construction; Status Quo and Countermeasures.

1. Introduction

In October 2015, after the State Council issued the "Overall Plan for Promoting the Construction of World-Class Universities and First-Class Disciplines", various provinces have issued the implementation plan for the construction of "Double First-class". The upsurge of "Double First-class" construction, with "Chinese characteristics and world-class as the core" and "subject as the foundation", has brought severe challenges and rare opportunities to the discipline construction of colleges and universities. At present, the higher education in China is in the important stage of accelerating the differentiation, integration and promotion. How the higher education carries on the discipline construction in this stage is related to the overall situation of the higher education reform. As a major education province in China, Jiangsu occupies an important position in the construction of Double First-class disciplines. In this context, this paper takes the practical exploration of discipline construction in universities affiliated to Jiangsu Province as the research content, and takes the "Double First-class" discipline construction of N University as a case analysis, thus concluding the feasible program of discipline construction of universities affiliated to Jiangsu Province, aiming to provide theoretical guidance and reference for the "Double First-class" discipline construction of similar universities.

2. Analysis of the Status Quo of Discipline Construction at N University

2.1 As the Level of Discipline Construction Continues to Rise, the Standards for Measuring Academic Leaders Need to be Further Adjusted

Discipline construction is the core of university construction and it is the basic platform for carrying out the three functions of cultivating high-level talents, creating high-level scientific research achievements and improving high-level social services. In recent years, N University adheres to the discipline construction as the leader, constantly strengthens the connotation development, and comprehensively improves the discipline construction level. The university now has 1 post-doctoral research station in applied Economics, 1 national doctoral program in special needs, 12 first-level disciplines authorized for master's degree, 42 second-level disciplines authorized for master's degree, and 13 professional disciplines authorized for master's degree, among which there are 3 advantageous disciplines in Jiangsu universities, 1 key discipline in Jiangsu Province, and 5 key cultivating disciplines in Jiangsu Province. In addition, the university has selected 2 advantageous disciplines, 5 key disciplines and 4 key construction disciplines, which has initially formed a multi-level and well-developed discipline construction layout. In 2017, the school was selected as a project construction

unit for doctorate awarding from 2017 to 2023 in Jiangsu Province. In the fourth round of national subject evaluation, the three advantageous disciplines of applied economics, business administration and food science and engineering of N University have all entered Class B discipline, ranking top 30% of the same disciplines in China. Food science and engineering has also been ranked among the top 300 in the world in the 2017 "World-class Disciplines of Soft Science" of Shanghai Soft Science.

At present, the weighing of academic leaders in N University is more about their scientific research level, but ignores the leadership and coordination abilities that a discipline "general" should have. The academic leader should have certain leadership ability, which is mainly reflected in the ability to grasp the direction of academic research and main attack correctly, and guide the members to master the latest knowledge and academic trends in this direction; To formulate and implement discipline construction plans; To organize members of this discipline and related disciplines to jointly undertake national major scientific research projects, etc. To take a good team spirit discipline team, have the ability to coordinate the relationship between internal is crucial, which requires academic leaders to be broad-minded, have a good style of academic democracy and cooperation, be able to correctly handle the relationship between fame and wealth between individuals and groups, be good at solving the contradictions between discipline members, and create a working atmosphere of unity and cooperation.

2.2 The Scientific Research Strength has Improved Significantly, and the Scientific Research Ability Needs to be Further Improved

No matter in the extension development or the connotation construction of the university, the scientific research strength of the university plays a decisive role. Since 2015, with the goal of building a distinctive and high-level university of finance and economics, N University has continuously strengthened its scientific research work and made remarkable achievements. School teachers published 1,815 award journal papers as the first or corresponding authors, including 99 papers in the award journals and 174 papers in the first class. It has won 31 scientific and technological achievement awards at the provincial and ministerial level and above, including 6 first-class awards of Jiangsu Philosophy and Social Science Outstanding Achievement Award and 2 second-class awards of "Science and Technology Progress Award" of the Ministry of Education. Teachers have presided over 394 longitudinal projects at and above the provincial and ministerial level, including 164 national projects and 6 national major (key) projects. Research funds have been growing steadily. In the past five years, the amount of research funds received by the university in both vertical and horizontal directions has exceeded 240 million yuan. Therefore, the research strength of N University has been further improved, which provides an important academic guarantee for the discipline development of the university.

However, the overall scientific research capacity of N University needs to be further improved, which is mainly reflected in the following aspects. The discipline platform can be further expanded. The number of projects funded by the social sciences and natural sciences at the national, provincial and ministerial levels, the number of papers in first-class journals and the prize-winning achievements at or above the provincial level shall be further increased. Efforts and capabilities to serve local economic and social development need to be strengthened, efforts should be made to improve the social benefits of scientific research results, and actively carry out cooperative research with local enterprises and institutions; the research direction needs to be merged, integrated, condensed and strive for innovation according to the actual situation of the school, combined with social needs and local economic characteristics; The way of academic exchange needs to be further optimized to create more academic exchange opportunities for teachers. The research direction of the research team is not clear, and the cohesion of the discipline needs to be strengthened.

2.3 The Construction of the Faculty is Remarkable, and the Proportion of the Faculty Structure Needs to be Further Optimized

Teaching staff is the most important resource for colleges and universities, the pillar of discipline and specialty construction, and the main force for colleges and universities to realize the three

functions of talent training, scientific research and social service. Since 2015, remarkable achievements have been made in the construction of N University's faculty team. The university has a teacher team which has won the title of "Huangdanian-style Teacher Team", which has achieved the breakthrough of the national teacher team. Two teachers were selected into the "Four Batch" talent project of the Publicity Department of the CPC Central Committee, two teachers were selected into the "National Hundreds of thousands of Talents Project", and one teacher was awarded the title of "Special Allowance Expert of the State Council". Two teachers were selected as "Distinguished Professors" of Jiangsu Province, and one teacher was awarded the title of "Famous Teacher of Jiangsu Province". Two teachers were awarded the title of "Young and Middle-aged Experts with Outstanding Contributions in Jiangsu Province", 6 teachers were selected to the second level of project 333, and 14 teachers were selected to the third level of Project 333. Two teacher teams won the "Blue Project" science and technology innovation team, 32 teachers were selected into the "Blue Project" training objects, 12 teachers were selected into the province "six talent peak" talent project.

N University continues to implement the "Talent Introduction Program". Since 2015, a total of 191 outstanding talents have been introduced full-time, including 15 people in the "Excellence Program", 37 people in the "Climbing Program", and 95 people in the "Cultivation Program"; In addition, 3 non-full-time high-level experts have been hired, and 9 doctors have been introduced flexibly. The introduction of high-level talents accounted for only 8.87%. Lack of leading talents and academic leaders, especially the lack of highly sophisticated talents, such as academicians of the Chinese Academy of Sciences and Chinese Academy of Engineering, Yangtze River Scholars, national Outstanding Young Scholars, etc., cannot meet the needs of discipline construction in colleges and universities. In terms of age structure, in recent years, the school has been actively supplementing teachers, and most of the introduced personnel are young teachers, whose age groups are too concentrated. In the structure of professional titles, the proportion of senior titles is low and the distribution of professional titles is uneven. In terms of the distribution of disciplines and majors, there are often many excellent teachers in key disciplines and majors, but the lack of teachers in new disciplines and majors leads to the unbalanced development of majors and disciplines.

3. Strategies to Advance the Discipline Construction of N University

3.1 Scientific Selection of Academic Leaders, and Create a Good Business Environment and Service Environment

The school should establish the sense of responsibility of cultivating academic leaders, and make and implement the plan of selecting and cultivating excellent talents. With discipline as the center and according to the strength and advantages of the discipline, academic leaders should be selected and cultivated in a scientific way, not only in terms of qualifications and academic qualifications, but also in terms of actual achievements and practical results. With a broad vision, excellent academic leaders should be selected and cultivated to make the discipline a base for attracting and attracting excellent talents. To create excellent academic leaders, we should not only rely on high wages and high treatment, but also on a good career environment. The university must strengthen the construction of the discipline base, improve the equipment conditions of the discipline development, shorten the gap with 211 and 985 colleges and universities, improve the discipline competition ability, so that the discipline can have the conditions to undertake large scientific research projects, but also increase the attraction for outstanding talents. It not only promotes the rapid growth of academic leaders, but also helps to improve the structure of academic echelon and the academic level of teachers. At the same time, academic leaders should be surrounded by a support service system with reasonable structure. The service functions of administrative departments such as educational administration, scientific research and personnel should be brought into full play, and a good service environment should be created.

3.2 Further Tap the Potential of Scientific Research and Enhance Scientific Research Capabilities

First, we should keep our direction concise and build an excellent scientific research team. Direction construction is the key to scientific research. Relatively stable research direction is of great significance to the accumulation of scientific research and the output of high-level achievements. The university should continue to build a scientific research team, concentrate on carrying out scientific research activities on frontier issues and apply for national projects based on the university's scientific research institutions. The school also needs to actively explore the incentive mechanism of both team research performance and individual performance, so as to form a good situation of both the overall development of the research team and the individual individuality of the members. Second, plan ahead and do a good job in project declaration. The university should make great efforts to organize and do a good job in the application of national and provincial scientific research projects, strengthen the guidance and examination of the application projects through the university academic committee, academic lectures and other channels, and improve the quality of the application and the rate of project approval. Third, we will improve the incentive mechanism for scientific research and create favorable conditions for scientific research. We will improve the evaluation and incentive mechanism oriented by innovation and practicability of scientific research results and contribution of scientific research to talent training, and establish a classification and evaluation standard with clear guidance, reasonable classification, objective and just classification, equal emphasis on incentives and constraints, and an open and diversified evaluation method. We will increase the rewards for national key projects and high-level papers, and further enhance teachers' enthusiasm for scientific research in combination with the reform of merit pay. At the same time, in addition to stable teaching and research direction, each teacher is required to find their own service objects in the industry, provide intellectual services for relevant industries, find problems from practical departments and carry out applied research, and seek social support for discipline construction.

3.3 Continue to Increase Efforts to bring in Talents and Build a Contingent of High-quality Teachers

In the introduction of talents, first of all, schools should improve and implement a series of specific measures to attract talents. For example, certain preferential policies and policies can be given to the housing, establishment, salary treatment, employment of spouses and enrollment of children for the introduction of talents, so as to attract outstanding talents to work in universities and ensure the healthy and orderly development of scientific research activities in universities. Secondly, colleges and universities should actively attract young talents to take positions on campus. In terms of the introduction of young talents, both at home and abroad, it is necessary to focus on the introduction of talents with overseas study experience, such as the recipients of the National Outstanding Youth Fund, the winners of the national Hundred Outstanding Doctoral dissertations and the doctoral graduates from well-known foreign universities. Thirdly, in terms of talent selection, some advanced talent assessment tools can be used to select high-level talents with a strong sense of mission and responsibility that are in line with discipline development and school values.

In terms of the construction of teaching staff, the first is to encourage young teachers to carry out cooperative research with older teachers with strong scientific research ability by implementing the mentoring system of young teachers, so as to strengthen the construction of scientific research echelon. Second, we made full use of the opportunities offered by China Scholarship Council, the Provincial Department of Education and schools to send key teachers and young teachers to study in first-class universities in China. Third, we will encourage teachers to take temporary jobs in real institutions to improve their practical ability, deepen school-enterprise cooperation, and comprehensively improve their practical ability. Fourth, we should formulate effective incentive measures, create a loose and active teaching and research atmosphere, and strengthen the training of famous teachers. Fifth, based on the direction of teaching and scientific research, a number of stable teaching teams should be formed. In combination with the direction of scientific research, regular communication should be conducted, and team-based teaching reform, teaching mode innovation, and teaching reform project

application should be encouraged, so as to realize the complementary advantages, mutual learning and common progress among team members. Sixth, the introduction of external intelligence, enhance the thickness of teachers. External experts, scholars and industry elites are invited to open comprehensive courses to broaden teachers' vision and improve their comprehensive quality in an all-round way.

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Analysis of Higher Education Situation in 28 Nations

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Abstract. With the development of higher education in this modern world, it is meaningful to build some constructive factors, in order to analyze the condition of higher education system in a randomly-selected nation. In this paper we analyze the system of higher education in 28 nations based on 3 related factors: scientific and technological innovation, social contribution and talent cultivation. We also rank them according to synthesis scores given by our model. Applying grey relation analysis, we find that Gini index, Enrollment Gender Parity Index and staff compensation as % of total expenditure can be ameliorated by local government or some other stakeholders to improve the higher education system in that country. We also study the potential influence of policies that can be implemented.

Keywords: Higher Education; Factor Analysis; Grey Relation Analysis.

1. Introduction

1.1 Background

In the past half century, the expansion of higher education has become the main trend of the development of higher education around the world, which has had a profound impact on the society of all countries. Higher education has always been a hot research issue in the international academic circle. Educational opportunity is a resource to guarantee social equity. The reform of education is not only generated with the change of economic and social production demand, but also has a direct impact on the development and even transformation of the society. Martin Trow [1] understands the expansion of the scale of education as a social factor. The most important thing in the education system is higher education. Higher education is an important front for cultivating high-quality talents, promoting scientific and technological innovation, accelerating scientific research, thus becoming an important part of a country's comprehensive strength. Governments all over the world have always attached great importance to the development of the higher education system, but how to test the health and sustainability of the higher education system has become a problem faced by them. At present, there are some indicators to evaluate the education system in the world, such as the OECD Education Index, but they measure the comprehensive education level of each country rather than the higher education system. [3] The QS World University Rankings can only reflect the level of a certain University, but it is difficult to measure the status of the whole country's higher education system. Therefore, in order to effectively measure the health of the higher education system, this paper proposes a model for evaluating the national higher education system: the stethoscope of the higher education system.

1.2 Literature Review

With the continuous development of higher education, the scale of students continues to expand, so the organizational structure of higher education is increasingly differentiated and stratified, especially the differences between different countries are growing. Competition among higher education institutions is also becoming more intense. Under such circumstances, it is particularly important to evaluate the education system.

At present, there have been many studies reflecting the correlation between higher education system and social development. Dill [4] analyses the impact of policy changes in OECD countries on higher education systems, and Lane [5] tests the link between higher education and economic development. In addition, the evaluation index is also rich. Lisbon Commission and Anatelli et al. [6]

selected different factors from different dimensions to construct the evaluation system. Due to the different developers of different indicators and their different perspectives, the evaluation system developed presents diversity and complexity, which is difficult to be applicable to any country. [7] In order to establish a universal and comprehensive evaluation index of higher education system, the model constructed in this paper measures from three aspects: talent cultivation, scientific and technological innovation and social contribution. To some extent, these three dimensions reflect the strengths and weaknesses of the higher education system.

As is known to all, due to the different levels of development in countries, the distribution of educational resources is not uniform, leading to the differences in the higher education systems. [8] This stethoscope is useful for governments to find out what is wrong with their domestic higher education system and whether it is competitive internationally. Once the fundamental problems in the education system have been identified, the government can formulate policies to promote the development of the education system. [9] In addition, the model is also helpful for students to choose schools, especially those who intend to study abroad. They can focus on the dimensions they care about and choose countries according to their comprehensive scores. The country's attraction to top students will also increase.

1.3 Framework

By creating a model that can be applied to any country, countries can measure the condition of their higher education system. This stethoscope can reflect the problems of the higher education system, and the government can use this model to formulate corresponding policies to ensure the sustainable and healthy development of the education system.

we will proceed as follows:

- 1) Build a model to evaluate the situation of higher education system.
- 2) Formulate corresponding policies to improve the state of higher education system.

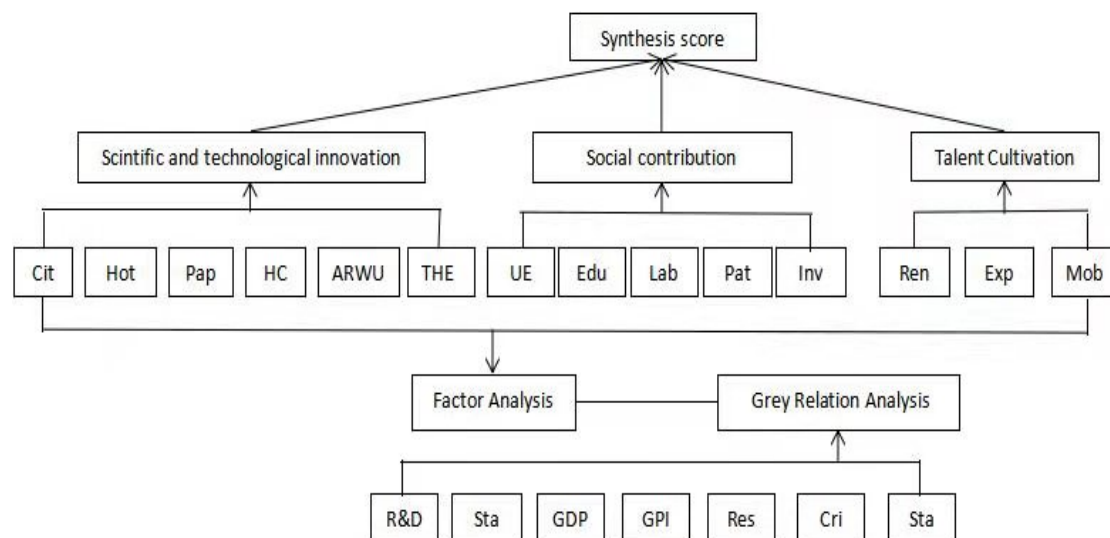


Figure 1. Mind mapping

Above is our mind map. Firstly, the whole evaluating system can be divided into three subsystems: talent cultivation, scientific and technological innovation and social contribution. Each subsystem has different influence factors from different aspects. In this way, based on the factors chosen, we can establish the sustainability evaluation model to measure the situation of higher education system. Secondly, we use the model to evaluate the selected country, thus giving the improvement strategy. Thirdly, we evaluate the effectiveness of the policies and we figure out the influence.

2. Data Sources and Notations

2.1 Notations

Table 1. Symbols and meanings

Symbols	Meanings
Cites	Total number of citations of papers published in ESI
HC_pap	Number of highly cited papers published in ESI
Hot_pap	Number of hot cited papers published in ESI
Pap	Total number of papers published in ESI
UE	The degree to which higher education meets economic needs
ARWU	Proportion of Academic Ranking of World Universities (top 500)
THE	Proportion of Times Higher Education Ranking of World Universities (top 500)
Exp	School life expectancy(years)
Inv	International co-inventions(per million pop)
Pat	Patent application(per million pop)
Ren	Gross enrollment ratio of higher education
Mob	Number of students studying abroad, expressed as a percentage of tertiary enrolment
Res	Government's responsiveness to change
Edu	Tertiary education for those aged 15+
GDP	GDP per capita
Cri	Critical thinking in teaching
GPI	Enrollment gender parity index
R&D	Research and development expenditures as percentage of GDP

2.2 Data Source

All data in this paper are from statistical reports of international authoritative organizations and public databases, and the time node is mainly in 2019, or adjacent years are selected for supplement. Among them, School life expectancy, patent applications (per million pop) international co-inventions (per million pop) government's responsiveness to change, critical thinking in teaching and mean years of schooling are from the Global Competitiveness Report. Number of citations of papers published in ESI, numbers of highly cited papers, hot cited papers and all the papers are from Web of Science. Other data come from UIS statistics and World Bank Database.

3. Model

3.1 Sample

A total of 28 countries are selected from all continents and stages of development. Factor analysis method was used to rate the system of higher education of the selected nations.

3.2 Evaluation of Higher Education --Based on Factor Analysis

In this model, the original indexes to be studied are firstly treated with nondimensionalization and Z value standardization. After processing, we do KMO statistical test on the data, inferring the KMO value of 0.6648, which means that the analysis is effective. Meanwhile, we do the Bartlett spherical test, knowing that Bartlett P test for sphericity is 0.00, which is less than 0.01, showing that the 14 scoring indexes selected are suitable for factor analysis. Upon completion of the inspection, we use principal component analysis and use the maximum variance method to rotate the data. It turns out that there are three factors with eigenvalues greater than 1, the cumulative interpretation variance is

83.93%. Among them, Factor 1 concludes Cites, HC paper, Hot paper, Pap, ARWU and THE. Six factors explained that the total variance of higher education score was 41.25%. Factor2 contains Edu, UE, INV and Pat, a total of 24.86% of the total variance is explained. Factor3 includes Exp, Ren and Mob, a total of 17.83% of the total variance is explained. The following table presents the score coefficients of the three factors corresponding to each index data.

Table 2. Comparison the score coefficients of the three factors

Variable	Factor1	Factor2	Factor3
cites	0.14103	-0.10749	0.00628
highlycite~s	0.14207	-0.10414	0.01074
hotpapers	0.13616	-0.10698	0.00248
paper	0.13228	-0.12561	-0.00032
university~n	0.10097	0.13327	-0.13317
arwu	0.14101	-0.10605	0.02096
the	0.13857	-0.05700	0.03364
expectancy	0.05590	0.17206	0.39673
intercoin~s	0.06225	0.14901	-0.39132
patentperm~p	0.07694	0.13387	-0.35876
grossenrol~o	0.06116	0.11082	0.54559
tertiarye~15	0.07357	0.14446	-0.01283
inboundmob~y	0.05103	0.16423	0.04361
researcher~c	0.08462	0.18380	-0.02063

3.3 Application

3.3.1 Synthesis Scores of Higher Education

Based on the above factor analysis model, we calculate the synthesis scores of higher educations (short for SSHE) of 28 countries with complete data in F_1 (scientific and technological innovation), F_2 (social contribution) and F_3 (talent cultivation). Now, we get this equation:

$$SSHE = \left(\frac{0.4125 * F_1 + 0.2486 * F_2 + 0.1783 * F_3}{0.8393} \right)$$

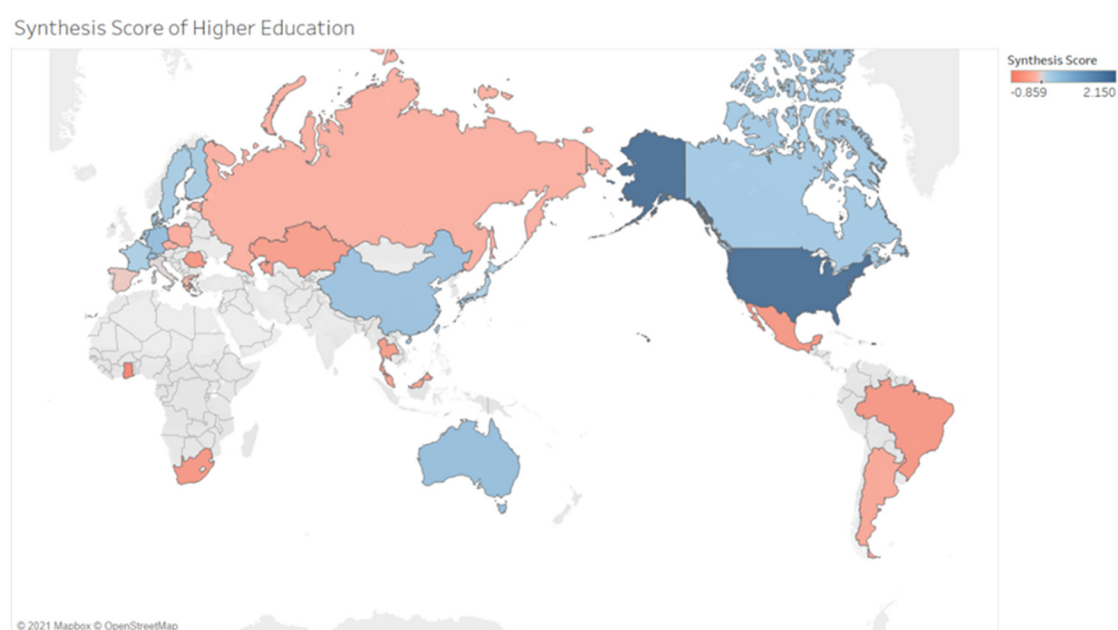
We use this equation to calculate the SSHE of higher education in each country. Results are as follows:

As can be seen from the map, North America, Western Europe, Australia and East Asia have performed better. In fact, factor of scientific and technological innovation has the largest weight in the evaluation model, which means that the above countries/regions with good performance in this factor make huge advantages. While for some developing countries, they need to work out some polices to enhance their SSHE.

Table 3. Ranking of those 28 countries

Ranking	SSHE	Countries/regions	Ranking	SSHE	Countries/regions
1	2.15	USA	15	-0.20	Greece
2	0.63	Germany	16	-0.26	Russia
3	0.61	Australia	17	-0.27	Czech
4	0.51	China	18	-0.28	Estonia
5	0.46	Switzerland	19	-0.31	Poland
6	0.38	Canada	20	-0.39	Argentina
7	0.37	Netherlands	21	-0.45	Malaysia
8	0.34	Finland	22	-0.53	Kazakhstan
9	0.32	Sweden	23	-0.54	Thailand
10	0.32	Denmark	24	-0.61	Mexico
11	0.28	France	25	-0.61	Romania
12	0.23	Japan	26	-0.61	Brazil
13	0.01	Italy	27	-0.62	South Africa
14	-0.08	Spain	28	-0.86	Ghana

In order to intuitively present the SSHE, we reflect them on the map by using Tableau:

**Figure 2.** SSHE of 28 countries

4. Policy for Improvement

4.1 Policy

In order to improve the higher education system, this paper we put forward the corresponding policies from the perspectives of economy, research innovation and talent cultivation.

The economy is the foundation of a country's development, so it is vital to increase GDP.[10] Implementing loose monetary policy and stimulating consumption can indeed boost GDP in the short term, but it is not a long-term solution. The government can increase GDP through industrial transformation, focusing on tertiary and high-tech industries, and create more high-quality jobs, attract high-quality talents at the same time, thus promoting the development of higher education.[11]

The world is changing, and so will the demand for talents. The government should improve its own responsiveness to change and adjust its strategy in time. [12] The government can also encourage

scholars to participate in international exchange activities to learn from experience and make the higher education system more advanced.

The government can change the educational methods, such as creating diversified classes and changing the boring assessment method, focusing on cultivating students' critical thinking. It is helpful to cultivate innovative talents.

In order to improve the capacity of scientific and technological innovation, the government should give funds to the corresponding institutions.[13] The government could increase Research and development expenditures, provide universities with adequate funds for research, or create incentives such as reducing the basic salary of faculty and staff but increasing their research funds and bonuses. This will encourage faculty to carry out scientific projects.

In addition, a healthy higher education system is equitable. The government is committed to maintaining social equity especially gender equality. The government can require schools to follow the principle of gender equality in enrollment and not discriminate any student. The government should not only ensure that everyone has equal access to education, but also safeguard income equity.

4.2 Analysis of the Relevance Factors of the System of Higher Education

Based on the above policy and the results of the national higher education scores, the model then uses the grey relation analysis to analyze the correlation factors affecting higher education with three factors. In order to explore the impact of other index data on higher education scores in various countries, and to verify the feasibility of the proposed policy.

4.2.1 Overall Relevance of Influencing Factors in SSHE

According to the previous research and the characteristics of higher education itself, it shows that the country will influence higher education from the macroeconomic and microeconomic levels. This study identified seven factors. Through the nondimensionalization processing of the original data, the correlation coefficient of the index system is calculated, and the gray correlation is calculated, and finally the influence degree of the selected influencing factors on the three factors is obtained. And as a reference to evaluate the credibility of the policy. After that, the Pearson correlation analysis was used to reflect the influence direction and extent of each factor on the three factors by coefficient and significance. Finally, after combining the two observations, the possibility of higher education being affected by the policy is obtained, and the effectiveness of the policy is tested. The following table shows the correlation degree and correlation coefficient between each indicator and the three factors.

Table 4. Degree and correlation coefficient

	F_1		F_2		F_3	
V1GDP	0.686	-0.291	0.634	0.201	0.643	0.167
V2RES	0.860	0.023	0.787	0.148	0.773	0.013
V3Cri	0.852	-0.144	0.783	0.062	0.769	0.193
V4GPI	0.880	-0.010	0.837	-0.045	0.802	0.384**
V5R&D	0.806	-0.125	0.734	0.051	0.726	0.052
V6Sta	0.883	-0.758***	0.852	0.181	0.813	0.036
V7Gini	0.873	0.036	0.828	-0.328*	0.791	-0.145

(Ps: V1-V7 has two columns of data corresponding to each column of F_1 - F_3 , The first column of data is the correlation degree of each influencing indicator corresponding to each sub-item, data on Column two is the correlation coefficient. In the second column, * Represents significant levels of 0.1, ** Represents significant levels of 0.05, *** indicates significant at 0.01 level.)

From the table above, the correlation degree of each influencing factor is more than 0.6, which indicates that there is a close correlation between the selected higher education influencing indicators and the factors. After Pearson correlation analysis, it was found that there were only three significant correlations, accounting for relatively low proportion. However, the correlation coefficient of the

significantly related factors is greater than 0.8, which indicates that these indicators are persuasive. V6, V7, V4, in short, is feasible and effective in the process of policy implementation.

4.3 Influence

Through the data analysis above, we find that some policies have great help to promote the higher education system, while some policies have no significant impact.

Some policies may not be able to significantly promote the development of the higher education system, but they have a huge impact on the whole country. As GDP per capita increases, the government will spend the money on all aspects of society, not just education. Compared with developed countries, developing countries generally have backward infrastructure and are faced with industrial transformation and other problems.[14] Their overall education system is also inadequate, so the government may give priority to basic education rather than higher education. But the GDP growth has undoubtedly contributed to the progress of the whole society, improving the infrastructure and people's lives. Students will also be better educated, and the higher education system will be healthier over time.

Our finding shows that controlling faculty pay properly can significantly improve the higher education system also. Underperformed countries' educational resources lag far behind those of countries such as Canada, so the research capacity of its staff is limited. Appropriate control of basic wages, increasing bonuses and other incentives can stimulate their enthusiasm.[15] This can not only improve the scientific research and innovation ability of teachers and students, but also promote the development of the whole society.

In addition, social equity is a prerequisite for the development of higher education. Income equality and gender equality are also necessary conditions for training talents. Research shows that narrowing the income gap helps to cultivate talent and develop the higher education system. Gender equality is conducive to creating a fair society, where people earn more when they are more capable. [16] People's awareness of the importance of education will not only promote the development of education, but also improve the level of the labor force. High-quality talents are more likely to make great contributions to society.

However, we have to admit that it is difficult to change the current state. Few policies can significantly promote the development of the higher education system in a short time.

5. Weakness

The primary weakness of this model is the shortage of some special data. A more abundant data resource can guarantee a better result in our models. For example, there are regions where data is so lacking that we can't select these countries for our study, so it is impossible for us to analyze most of the countries around the world. In calculating the time line, some assumptions are used to make up for the lack of data.

Another weakness that could be corrected with more analysis is the number of factors. If we found more researches related, we would choose more indicators to measure the higher education system. This will make the evaluation more objective and accurate.

6. Conclusion

In this paper we apply the factor analysis model, which measures higher education from three aspects: talent cultivation, scientific and technological innovation and social contribution.

After obtaining the ranking, we propose the corresponding policies from different angles to change the higher education system in under-performed countries. In order to test the effectiveness of the policy, Grey Relation Analysis is adopted. Results show that a few policies can effectively improve the higher education system.

Though we admit that it is quite difficult for a nation to change their current situation, the local government can improve the higher education system by promoting gender equality and income

equity. Besides, departments concerned can also control the staff compensation and put more expenditure into researches.

We do believe that in the future, with the joint efforts of all stakeholders, higher education system will be much healthier than today.

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