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Research on the π-type Talent Training Model for Economic Majors in the Era of Big Data

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Abstract

The production and life of human society are entering the era of big data in all aspects. The talent training model needs to be reformed and innovated. π-type talents have become the inevitable choice for higher education to respond to social needs. Under the background of big data, the traditional talent training model has problems such as insufficient training of compound talents with multidisciplinary knowledge, multiple abilities, and multiple qualities. Talent training needs to establish the concept of π-type talent training, enhance the practice of π-type talent training, and build a π-type talent training system to promote the talent training model to adapt to the needs of social development.

Keywords

Big Data; Talent Training; π-type Talents.

1. Research Background

Since the expansion of higher education in China in 1999, my country's higher education has achieved the transformation from elite education to mass education. Since 2006, my country has surpassed Russia, India and the United States to become the world's largest education country with the largest number of college students (Pan Maoyuan and Zhou Qunying, 2009). The basic task of higher education is talent cultivation, which revolves around the two basic issues of "what kind of people to cultivate" and "how to cultivate people". The quality of talent cultivation is reflected in the dimensions of goals, types, levels and specifications (Liu Huanyang and Han Yanlun, 2012; Zhang Qingjun, 2020), and the focus is on the degree of fit between the talent cultivation model and social needs. Therefore, the choice of talent cultivation model should be adjusted in a timely, appropriate and appropriate manner with the development of the economy and society. At present, major changes have taken place in economic and social development, and the production and life of human society are entering the era of big data in all aspects. At the same time, in the routine jobs in the labor market, the pace of machines replacing manual labor is gradually accelerating. According to the "2020 World Robot Industry Report", there are 2.7 million robots working in the world. Amazon's home robot Astro, Tesla robot, etc. are not only facilitating human life, but also replacing more human jobs in the market. The 2023 McKinsey report "What the Future of Work Means for Employment, Skills, and Salaries" pointed out that by 2030, robots will replace 800 million people, and machine operators, fast food restaurant employees and logistics personnel, mortgage brokers, paralegals, accountants, clerks, etc. will be seriously affected. At the same time, at least 375 million people in the world are in urgent need of changing their jobs and learning new skills in the current era of automation. In the face of the big data era of scientific and technological revolution, technological progress and drastic changes in industrial structure, the talent training model needs to be reformed and innovated. Cultivating compound talents has become

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an inevitable choice for higher education to respond to social needs. The development of emerging industries such as big data, which are characterized by cross-border integration, has put forward higher requirements on the knowledge and ability of the labor force. There is a large increase in the demand for compound talents who have both industry professional capabilities and proficiency in data, and have interdisciplinary thinking and capabilities and multiple skills. However, the traditional professional education model lags seriously behind the needs of national and social development, and the original training model urgently needs to be updated and iterated (Zhu Heling and Hao Xiaojing, 2023). In 2018, General Secretary emphasized at the National Education Conference that we should focus on cultivating "innovative, compound, and application-oriented talents." Whether from the perspective of realization needs or policy needs, in the vast historical process of the big data revolution, the demand for talents should be multi-talented, multi-talented, and compound talents with high comprehensive quality. Correspondingly, the goal and direction of talent training should be in line with the "π-type talent" training model. Based on the above discussion, this paper focuses on the training of talents in economics majors and attempts to explore the training of π-type talents under the background of big data. The main research objectives are: First, clarify the problems existing in the training of talents in economic majors under the background of big data. On this basis, clarify the problems existing in the teaching process; second, explain the basic logic of the training of π-type talents in economic majors under the background of big data. Finally, construct a strategy for the training of π-type talents in economic majors under the background of big data.

2. Problems with the Traditional Talent Training Model under the Background of Big Data

2.1. Insufficient Training of Compound Talents with Multidisciplinary Knowledge

First, there are few interdisciplinary colleges. The traditional university education model emphasizes the training of specialized talents. The various disciplines of the university are set up in various professional colleges to train specialized talents in their respective majors. According to statistics, there are more than 5,500 secondary colleges in undergraduate colleges in my country, of which 79% are based on first-level and second-level disciplines, and only 8.3% are interdisciplinary colleges. Second, the division and exclusion of disciplines. my country has promulgated and implemented four versions of the discipline and major catalog, and the division and exclusion of disciplines are quite obvious. Universities adopt the practice of subdividing disciplines and majors in the setting of professional courses, which makes college graduates lack comprehensive ability and quality, and their disciplinary knowledge structure is relatively single and the disciplines are relatively closed. Students generally lack interdisciplinary thinking ability and multidisciplinary knowledge transfer ability (Zhu Heling and Hao Xiaojing, 2023).

2.2. Insufficient Training of Compound Talents with Multiple Abilities

Emerging technologies such as big data, artificial intelligence, machine learning, and blockchain are reshaping the economic and financial industries. The changes in the industry have put forward new requirements for the employment ability of college students. From product production to marketing, talents need to have big data technology and capabilities. The traditional university education model emphasizes basic knowledge and theoretical education, but lacks experience in practical training and ability training. The teaching content is out of touch with practice and lacks pertinence and applicability. There are still major deficiencies in

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the cultivation of students' ability to solve complex problems, critical thinking, technical literacy, and leadership skills required in the future job market.

2.3. Insufficient Training of Compound Talents with Multiple Qualities

The rapid development of big data has put forward higher requirements for college students' work skills. The real problems that need to be solved are more complex and challenging, and more diverse comprehensive quality requirements are put forward for college students. The traditional university education model focuses on cultivating students' internal quality literacy such as morality, intelligence, and physical fitness. However, in addition to basic qualities such as ideological and moral character, physical and mental health, the correlation between the cultivation of digital literacy, information literacy, technical literacy, and network security literacy required in the big data era is relatively small. Therefore, the integration of internal quality literacy and external skill literacy has become a necessary and core literacy for students in the context of big data. In terms of teaching, the traditional teaching model is limited in terms of the degree of teachers' mastery of digital teaching tools. However, in the era of big data, teachers need to help students understand and master the latest technological development trends. In addition to conventional teaching information, they also need to master big data-related technologies and tools, so as to closely combine classroom teaching with the latest development trends in the industry and the required comprehensive quality requirements. Third, the teaching form is relatively simple. Traditional teaching activities are teacher-centered, and students are often passive recipients of knowledge. The teaching method emphasizes the imparting of knowledge systems according to the syllabus. There is a lack of interaction and communication between students and teachers, and it is difficult for students to form critical thinking and creative thinking.

3. The Basic Logic of the π-type Talent Training Model under the Background of Big Data

Any activity depends on a reasonable behavior pattern. The talent training model is a complete system, including training objectives, professional structure, curriculum system, teaching system, teaching management, etc. (Dong Zefang, 2012). The key to the talent training model is talent. Existing studies mainly divide talents into three types: T-type, H-type and π-type. T-type talents represent professional knowledge and skills in a single field, and can apply knowledge to other fields at the same time, emphasizing the breadth and depth of knowledge. H-type talents have deep abilities and knowledge in professional fields, and are good at connecting and integrating knowledge from different fields. Based on the above two talent concepts, the π-type talent model has received more and more attention. π-type talent is a talent concept originated from Singapore. It refers to talents with dual expertise and high adaptability across fields. It has the four core characteristics of "complexity, development, innovation, and competitiveness". It was proposed by Barbara Oakley in the book "Leapfrog Growth". As the global economy and society enter the era of big data, a large number of "π-type talents" have emerged in the world today. For example, the world-renowned business tycoon Elon Musk is a typical representative of "π-type talents". He not only holds a double bachelor's degree in economics and physics in college, but also has outstanding achievements in the corporate level and in the field of engineering. At present, the vigorous development of big data technology has promoted profound changes in production methods, lifestyles and governance methods, and has put forward higher requirements for the knowledge, skills and knowledge structure of workers from "one specialty and multiple abilities" to "multiple specialties and multiple abilities".

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3.1. The Significance of Cultivating π-type Talents

The core of π-type talents lies in mastering two deep knowledge areas, requiring a second skill outside of the profession, and consolidating and improving these two abilities through general knowledge and abilities in other fields, so that individuals can provide alternative choices when facing changes in employment situations, thereby enhancing employment flexibility and elasticity. In traditional society, the level of productivity is low, and the speed of change in social production and life is relatively slow. For individuals, they often do not need to master too many social skills and can achieve food and clothing and life ideals with a craft. However, in the current context of big data, the level of productivity development is unprecedentedly high, and production and life are changing with each passing day. It is difficult to achieve lifelong employment with just one skill. This requires people to enhance the diversity and flexibility of their personal skills in a changing world. For example, in the 1980s, during the tide of state-owned enterprise reform, a large number of cadres and state-owned enterprise personnel went into business to change the direction of their life development, from stable jobs to the fiercely competitive market, and also achieved different life trajectories through skill conversion.

3.2. Characteristics of π-type Talent Training

The typical characteristics of π-type talents are compound talents with one specialty and multiple skills, multiple specialties and multiple skills, and high comprehensive quality. The main directions of training are development, innovation and action. First, development requires talents to have the ability of self-development, to be able to continuously adjust their own knowledge system according to the process of social development, to improve themselves, develop themselves, and perfect themselves, so as to be able to cope with the current development difficulties and the development problems that may be faced in the future. Second, innovation requires talents to have a multiple and complex knowledge structure, ability structure and quality structure, always maintain curiosity and exploration spirit for new things, actively seek new things and change, and dare to create and innovate. The third is the ability to act. Talents are required to be able to integrate knowledge and action, apply professional knowledge in practice, achieve a good combination of theoretical knowledge and social development practice, have strong self-control, dare to break through, and do what they want to do but dare not do or think they cannot do.

3.3. The Way to Cultivate π-type Talents

The key to cultivating π-type talents is to enable talents to have a second skill. At the same time, the second skill has two dimensions. One is the work dimension. The work dimension is one of the starting points for cultivating π-type talents. In an individual's career, whether for career development or due to unemployment, the second skill can help individuals achieve cross-border or career upgrades. The world is changing rapidly, and career obsolescence may occur in a few years. A skill may become meaningless. In this modern new economy, if individuals do not have two skills to prepare for the future, they may face the risk of unemployment and career difficulties. For example, when the banking industry is in turmoil, if a bank executive faces the risk of being fired for failing to meet the established sales target, at this time if he has a second skill, he will have an extra way out. The other is the interest dimension. For example, a programmer can use his professional skills to find employment in computer vision or graphic design, or he can use his professional skills to find a side job in the currently popular self-media industry.

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4. Strategies for Cultivating π-type Talents in Economics under the Background of Big Data

As one of the traditional liberal arts majors, the development of economics requires continuous integration with new science and technology, and constantly cultivates new talents with more complex knowledge and stronger practical ability. Economics emphasizes foresight, innovation and cross-integration. Its construction must adapt to the new development of science and technology and the new needs of social economy, match with new technologies such as the Internet, big data, and artificial intelligence, and also penetrate and integrate with new engineering. In today's world where big data applications are constantly developing and in the process of continuous integration and development of new technologies and humanities, colleges and universities should actively innovate in talent cultivation and constantly cultivate new talents with more complex knowledge, more integrated disciplines, and stronger practical ability, so that students majoring in economics can grow into highly adaptable talents with both professional knowledge in economics and skills in the big data industry, as well as cross-domain vision. The cultivation of π-type talents in economics under the background of big data requires "two specialties". First, it is to consolidate and improve the core knowledge of economics, and second, it is to establish big data thinking and expand big data professional knowledge. The ultimate goal is to enable talents cultivated in economics to have full competitiveness in the era of big data.

4.1. Establish the Concept of π-type Talent Cultivation

At present, the rapid development of the economy and society is constantly increasing the demand for big data professionals, and the development of big data relies on the real economy industry. However, if we do not have a full understanding of the development of the industry, we will not be able to explain the professional problems hidden behind the data. Therefore, practitioners with a big data background and full integration with the industry have become high-end talents urgently needed for social development. Colleges and universities should plan relevant majors for big data development as soon as possible based on the development trend of big data, encourage the establishment of interdisciplinary collaborative research centers among the secondary colleges of the school, promote the cross-development of economics and big data science, and build a multidisciplinary cross-integration π-type knowledge system.

4.2. Enhance the Practice of π-type Talent Training

In the context of big data, university disciplines and majors should establish closer ties with enterprises to ensure that disciplines and majors are more in line with the development practice of the big data industry. Colleges and universities should strengthen research on the development trend of the big data industry, dynamically grasp the employment needs of employers, and adjust the training program in a timely manner based on the development trend of the industry and the employment needs of employers (Chi Mingmei, 2024). First, we need to cultivate students' ability to master big data algorithms and solve engineering problems. They should be proficient in using various big data software, understand various big data software and hardware platforms, and be able to solve common economic engineering problems through basic processes such as data collection, model construction, and problem analysis. Second, we need to cultivate students' ability to use data for decision-making and management. Guide students to pay attention to various social and economic phenomena, find important practical and theoretical problems in social and economic phenomena, further qualitatively and quantitatively analyze the problems behind social and economic phenomena through observation and thinking of social and economic phenomena, and conduct rigorous and scientific analysis by collecting and establishing a data analysis database. On the basis of relevant analysis, students can use the obtained data analysis results to make reasonable

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suggestions to relevant departments, and even use what they have learned to prepare for entrepreneurship and employment.

4.3. Build a π-type Talent Training System

In the context of big data, we should take the construction of new engineering, new medicine, new agriculture, and new liberal arts as the core to lead the concept of excellent talent training, and establish a π-type talent training system in multiple levels and in all aspects from the aspects of training mechanism, curriculum system setting, teaching model setting, and teaching resource construction. First, build a collaborative training mechanism. Strengthen the cooperative relationship between universities, governments and enterprises, combine the actual needs of the big data industry, promote interdisciplinary and cross-field collaborative innovation, build a collaborative training model that integrates classroom and job, learning and internship, industry-university-research, and adopts case teaching, scenario teaching, project teaching, on-site teaching and other methods (Li Lingxia, 2023), so that students can improve their ability to solve practical problems and creative thinking while mastering professional knowledge. Second, build a "cross-integration" curriculum system. On the basis of the original core courses, add statistics, mathematics, computer and other disciplines closely related to big data. On the one hand, cut outdated core course content and introduce new knowledge content in the interdisciplinary field of economics and big data. On the other hand, increase basic and general courses in the interdisciplinary field of economics and big data. Third, build a diversified teaching model. In addition to classroom lectures, guide students to participate in various national and discipline-level innovation and entrepreneurship competitions, and improve their ability to apply theoretical knowledge through competitions. Fourth, build an "online and offline" teaching resource integration model. Sideline business.

5. Conclusion

Under the background of big data, talent training needs to undergo profound changes around the changes in the social and economic environment. The traditional talent training model emphasizes the professionalism of talent development, while π-type talents emphasize the cultivation of compound talents with one specialty and multiple skills, multiple specialties and multiple skills, and high comprehensive quality. This paper focuses on the issue of cultivating π-type talents in economics majors, explains the basic logic of cultivating π-type talents in economics majors under the background of big data, and the strategy of cultivating π-type talents in economics majors under the background of big data. The study believes that the cultivation of π-type talents in economics majors requires the construction of a systematic training program from the three aspects of concept, practice and system, so as to cultivate new talents with more compound knowledge and stronger practical ability.

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