

Research on the Teaching Supervision and Quality Evaluation Mechanism of Vocational Undergraduate Colleges

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Abstract

Teachers' teaching evaluation is the core means to diagnose the teaching effect and assess the teaching quality in colleges and universities, while teaching supervision, as an important part of teaching evaluation, plays an important role in promoting teaching quality improvement and teaching reform. With the rapid development of vocational undergraduate education, the construction of teaching supervision and quality evaluation mechanism has become an important guarantee to improve the quality of education and promote the high-quality development of vocational education. This paper discusses how to establish an effective teaching supervision and quality evaluation mechanism from the characteristics and development trend of vocational undergraduate education. The study adopts the method of literature analysis, combining relevant policies and practical experiences at home and abroad, and analyzes the current situation and challenges of vocational undergraduate education in talent cultivation, teaching management and quality assessment. Through the comparative study, suggestions are made to optimize the supervision mechanism, strengthen quality assessment and build a diversified evaluation system, aiming to provide vocational undergraduate colleges and universities with actionable quality management solutions. The results of the study show that a sound teaching supervision and quality assessment mechanism can effectively improve the quality of education and provide strong support for the future development of vocational education.

Keywords

Vocational undergraduate; teaching supervision; quality assessment; innovative mechanisms.

1. Introduction

In 2020, the Opinions on Deepening the Reform of the System and Mechanism of Educational Supervision in the New Era proposes to "optimize the management system, improve the operation mechanism, and strengthen the use of results as a breakthrough, and continuously improve the quality and level of educational supervision". Vocational undergraduate education has been piloted since 2019 until 2021, and the Opinions on Promoting the High-Quality Development of Modern Vocational Education explicitly proposed that by 2025, the enrollment scale of vocational undergraduate education should account for more than 10% of the enrollment scale of higher vocational education, and that 51 vocational undergraduate colleges and universities had already been put into operation by June 2024, assuming the important responsibility of cultivating high-level technical and skilled talents and promoting social and economic development. Therefore, the establishment and improvement of teaching supervision and quality evaluation mechanisms for vocational undergraduate education is not only a necessary means to improve the quality of education, but also a key factor in promoting the high-quality development of vocational education.

2. Characteristics of Vocational Undergraduate Education and The Theoretical Basis of Teaching Supervision

2.1. Core features and development trends of vocational undergraduate education

As an important part of the higher education system, the development of vocational undergraduate education carries the important mission of cultivating high-level technical and skilled talents and serving the upgrading of national industrial structure. Different from traditional general undergraduate education, vocational undergraduate education has three core characteristics. The first one is vocationality. Vocational undergraduate education is always oriented to social demand and takes serving specific industries as its core mission. In recent years, with the promotion of national strategies such as "Made in China 2025", vocational undergraduate education has shown remarkable docking ability in the fields of high-end equipment manufacturing, new energy and new materials(Cui and Yao, 2023). Scholars (Liu et al, 2022) have pointed out that the value of vocational undergraduate education lies in transforming theoretical knowledge into practical ability, thus shortening the adaptation time between graduates and job requirements. Studies in Europe and the United States have also shown that practical ability is the core competitiveness of vocational education graduates(Perić et al, 2020).

Secondly, vocational undergraduate education is highly practical. The education model emphasizes practice orientation and highlights skill cultivation, especially in improving students' practical ability. In recent years, vocational undergraduate education has strengthened the design of practical teaching through school-enterprise cooperation and industry-teaching integration. For example, Germany's "dual system" education model closely integrates vocational education with the job market by strengthening the participation of enterprises. Domestic colleges and universities have also borrowed this model to promote the realization of the goal of training high-level applied talents by building practice bases with local governments and enterprises(Kravchenko et al, 2023).

Third, vocational undergraduate education is innovative. With the rise of emerging industries such as artificial intelligence and 5G technology, the content and form of vocational undergraduate education are undergoing profound changes, gradually transforming into an innovative one. Finland's universities of applied sciences have provided successful experience in this regard, adapting to the needs of emerging technologies through a dynamic curriculum adjustment mechanism so that students can better face the challenges of future industries(Töytäri et al, 2016). Domestic vocational undergraduate colleges and universities are exploring similar paths to provide students with more forward-looking educational content by integrating emerging technology courses and innovation and entrepreneurship platforms(Guan et al, 2024).

2.2. Teaching Models and Competency Development in Vocational Undergraduate Education

Vocational undergraduate education not only focuses on the accumulation of students' theoretical knowledge, but also strengthens the interface with the industry in the design of the curriculum. In recent years, many colleges and universities have enhanced students' ability to innovate and solve real-world problems in practice by setting up a curriculum system centered on "project orientation" and "industry needs". With the rapid development of big data, artificial intelligence and other technologies, the teaching methods of vocational undergraduate education have become more diversified, and innovative modes such as online and offline hybrid teaching and flipped classroom are gradually penetrating into the teaching process.

These changes not only enhance the flexibility of education, but also promote the overall improvement of teaching quality(Han, 2020).

In the exploration of teaching modes, Project-Based Learning (PBL) has been widely used in vocational undergraduate education for strengthening students' comprehensive quality and innovation ability. Huang Futao's research found that courses designed based on real enterprise projects can better exercise students' problem-solving abilities while enhancing their professionalism(Huang, 2024). Zhengzhou University Business School has achieved good teaching results by introducing ERP sand table simulation teaching, which enables students to master modern supply chain management skills in actual operation(Yang, 2010). In addition, the implementation of blended teaching mode has also achieved better results in vocational undergraduate education, which combines the advantages of traditional classroom teaching and online learning to enhance the personalization and flexibility of teaching. The study shows that blended teaching not only improves students' learning efficiency, but also significantly reduces teaching costs(Yuan, 2024).

Vocational undergraduate education also pays special attention to the cultivation of students' innovative and entrepreneurial abilities. In recent years, the introduction of innovation and entrepreneurship courses and the docking with enterprise incubation platforms have effectively stimulated students' entrepreneurial potential. Studies have shown that the combination of innovation competitions and entrepreneurial practice activities can help students apply what they have learned in the classroom to practical problems, thus enhancing their innovative thinking and entrepreneurial practice ability(Feng, 2024). Take Singapore Polytechnic as an example, through the setting of "entrepreneurship laboratory", it provides students with all-round support from theory to practice, forming a "education-practice-entrepreneurship" closed-loop mechanism. Closed-loop mechanism(Chew et al, 2013).

2.3. Theoretical basis and quality assurance of teaching supervision

Teaching supervision in vocational undergraduate education has a distinct quality orientation, and its theoretical basis mainly includes quality assurance theory, outcome-oriented education (OBE) theory and teaching feedback and improvement theory. Quality assurance theory emphasizes the continuous improvement of teaching quality through systematic management and standardized control. In vocational undergraduate education, teaching supervisors need to pay special attention to the compatibility of course content with industry needs and the standardization of the teaching process, so as to improve the overall level of education quality(Wang and Wang, 2012).

Outcome-Based Education (OBE) theory advocates the design and implementation of teaching and learning objectives by focusing on student learning outcomes. This theory has been widely used in the quality assurance of teaching in vocational undergraduate institutions to help schools clarify their educational objectives and ensure that students can achieve the established learning outcomes at the end of the program. Research has shown that OBE theory can effectively enhance students' competitiveness in employment and career adaptability(Zhou et al, 2021). The University of Tasmania, Australia, has realized the precise alignment between course objectives and employment needs through the formulation of clear learning outcome indicators, which has significantly enhanced the vocational competence of graduates(Leung et al, 2022).

Teaching feedback and improvement theory, on the other hand, emphasizes the continuous improvement of teaching. Yurkofsky suggest that timely teaching feedback can help teachers identify deficiencies and optimize teaching design(Yurkofsky et al, 2020). In vocational undergraduate education, teaching supervisors are able to identify problems in teaching and make adjustments in time through real-time collection of student feedback and teaching assessment data. In recent years, vocational undergraduate colleges and universities have

realized real-time diagnosis and closed-loop improvement of teaching problems by constructing teaching quality monitoring systems, which provides a strong guarantee for improving the quality of education.

In summary, the characteristics of vocational undergraduate education and the theoretical basis of teaching supervision fully reflect the dual attributes of "practice-oriented" and "quality assurance". First of all, domestic and international studies generally recognize the important role of vocational undergraduate education in cultivating high-level applied talents, especially in the application of school-enterprise cooperation model and project-oriented teaching method, which provide strong theoretical and practical support for vocational undergraduate education. In addition, the application of OBE theory in curriculum design also helps to enhance students' vocational competence, making the teaching results better match the needs of the job market.

However, despite the remarkable progress made in vocational undergraduate education in terms of teaching mode and quality assurance, certain shortcomings still exist. Current research focuses more on the policy level and less on the micro research on the actual teaching process. Empirical studies on students' learning effectiveness and teachers' teaching behavior are not yet sufficient. In addition, although OBE theory has been widely used, how to balance the cultivation of theoretical knowledge and practical skills, and how to effectively assess students' learning outcomes are still urgent issues in current research.

Future research can pay more attention to how teaching supervisors can achieve personalized and real-time management with the help of big data, artificial intelligence and other advanced technologies, and explore the innovation of teaching feedback and improvement mechanisms. With the continuous progress of educational technology, vocational undergraduate education will face new challenges and opportunities. Therefore, continuously improving the teaching supervision system and promoting the continuous improvement of teaching quality have become the key direction of current and future research. Meanwhile, how to deeply integrate vocational undergraduate education with the needs of regional economic development in order to cultivate more high-quality skilled talents that meet the needs of the industry is also a topic worthy of further discussion.

3. Theoretical Framework and Implementation Path of Teaching Supervision System Construction in Vocational Undergraduate Education

3.1. Theoretical framework of teaching supervision system and teacher evaluation mechanism

The construction of teaching supervision system in vocational undergraduate education is one of the most important means to ensure the quality of teaching, especially in the modern higher education environment, the role of teaching supervision is more and more prominent. Teaching supervision system is an important part of the quality management of school education, through the institutionalized supervision mechanism, to ensure that the quality of education can be continuously improved. In recent years, academic research on the teaching supervision system has gradually deepened, forming a multi-level theoretical framework that can provide reference and support for teaching supervision in vocational undergraduate education.

In the construction of the teaching supervision system of vocational undergraduate education, it is necessary to first establish an evaluation mechanism with teachers as the main body. Teachers are the core of teaching, and the quality of teaching is directly related to the teaching results. Therefore, the teaching supervision of vocational undergraduate education should be centered on in-depth evaluation of teachers' teaching ability, teaching content, teaching

methods and other aspects. Through regular classroom observation, teaching assessment and teachers' self-reflection, a complete set of evaluation system is formed to provide specific guidance for teachers' teaching improvement. Communication and cooperation among teachers is also the key to improving teaching quality. Through the establishment of subject groups, teamwork and other forms of cooperation, mutual learning and support among teachers are enhanced to further promote the improvement of teaching quality.

Second, the teaching supervision system should emphasize students' feedback and opinions. In vocational undergraduate education, students' learning feedback directly affects the direction of teaching improvement. Since vocational undergraduate education focuses on students' practical ability and vocational literacy, students' feedback on the practical applicability of teaching content, the practicality of course design, and teachers' teaching methods is particularly important. Therefore, the establishment of an effective student feedback mechanism is the key to ensuring the continuous improvement of teaching quality. In the process of student feedback, attention should be paid to diversified evaluation means, such as questionnaires, student symposiums, classroom discussions, etc., to ensure the comprehensiveness and representativeness of feedback. Students' learning outcomes are also an important reflection of teaching effectiveness. Teaching supervisors should gain an in-depth understanding of students' performance in the course through the assessment of students' practical projects, graduation designs, internship reports, etc., and adjust the teaching contents and methods according to the assessment results, with a view to realizing better teaching results.

The teaching supervision system should also be closely integrated with the overall teaching objectives and educational philosophy of the school. For vocational undergraduate colleges and universities, the educational goal of the school is not only to impart professional knowledge, but more importantly to cultivate applied talents with high-level professionalism and innovation ability. In this process, the supervisory system should pay close attention to the dynamic development of the disciplines and specialties to ensure that the teaching content is in line with the needs of the industry and the trend of social development. In order to achieve this goal, schools must give full consideration to social needs, industrial changes and trends in vocational development when formulating teaching plans and curricula, so as to achieve a high degree of alignment between curriculum content and vocational development needs.

3.2. Implementation Path and Informatization Management of Teaching Supervision

In the specific implementation path of teaching supervision, schools need to safeguard the quality of teaching through the establishment of a sound supervision mechanism, a perfect organizational structure and an effective feedback system. First of all, the supervision mechanism should include regular classroom inspections and comprehensive assessments, in which teachers' teaching behaviors, teaching effects, and the practicality and innovativeness of course contents should be included in the scope of assessment. At the same time, teaching supervision should also focus on the interaction with the external environment, through the introduction of industry experts, enterprise mentors and other external forces to supervise and evaluate the teaching process, so as to ensure that the quality of teaching is always maintained at the leading level of the industry. The participation of external experts can provide new perspectives and ideas for teaching reforms, help schools to find out the deficiencies in teaching, and put forward practical suggestions for improvement.

The path of teaching supervision should also include strengthening data analysis and informatization management. In today's rapid development of information technology and big data technology, schools can collect and analyze students' learning data, teaching feedback data and teaching evaluation data through the information technology platform to establish a

scientific teaching quality evaluation system. Through data analysis, schools can grasp the teaching situation in real time, discover problems in the teaching process, and take timely measures to improve.

The teaching supervision system of vocational undergraduate education should focus on the closed-loop process of "diagnosis-improvement-feedback". Diagnosis is mainly through a variety of assessment tools and means, timely detection of teaching problems and deficiencies; improvement is based on the diagnosis results, adjust and optimize the teaching methods, teaching content and teaching arrangements; feedback is to improve the teaching effect and student feedback into the supervision system again for evaluation and revision. Through the continuous iteration and optimization of this feedback mechanism, the quality of teaching can be continuously improved and the teaching level of teachers can be gradually enhanced.

In the construction of teaching supervision system, schools also need to pay attention to the construction of teaching supervision team. Teaching supervision is not only the responsibility of the administrative department, but also should rely on professional supervision team to implement. In vocational undergraduate colleges and universities, the teaching supervision team should be composed of teachers who have both teaching experience and a certain subject-specific professional background. In order to improve the professionalism and relevance of supervision, schools can organize regular supervisory training to enhance the supervisors' assessment ability and teaching management level. In addition, schools can also enhance the comprehensive ability of supervisors through interdisciplinary cooperation and exchanges, so that they can better cope with the tasks of teaching supervision in different disciplines and different professional backgrounds.

4. Implementation and Evaluation of the Teaching Supervision System in Vocational Undergraduate Education

4.1. Implementation Strategies for the Teaching Supervision System

The successful implementation of the teaching supervision system cannot be separated from a series of implementation strategies. These strategies include not only the adjustment of the organizational structure and the design of the implementation plan, but also the need to flexibly adjust the details of the implementation process according to the actual situation, in order to ensure that the measures are effectively implemented.

The implementation of the teaching supervision system requires clear responsibilities and division of labor to ensure that someone is responsible for each link. The school should establish a special teaching supervision committee, responsible for the supervision and evaluation of teaching quality throughout the school. A detailed implementation plan should also be formulated to clarify the workflow, time nodes and assessment standards of teaching supervision. Through these measures, the smooth development of the teaching supervision system can be ensured.

Schools should provide the necessary resources for teaching supervisors. This includes not only financial input, but also relevant technical support and staff training. In order to realize effective teaching supervision, schools need to acquire technical facilities such as teaching evaluation systems and information management platforms, and to provide professional training for supervisory staff in order to enhance their operational level and assessment capabilities.

4.2. Key aspects in the implementation of teaching supervision

In the implementation process of teaching supervision, there are some key links, and the smooth running of these links directly determines the effectiveness of teaching supervision. Therefore, it is necessary to strengthen the attention and optimization in these links.

Teacher evaluation is an important part of teaching supervision. Teachers' teaching level has a direct impact on students' learning outcomes, so there is a need to assess teachers' teaching in all aspects through diversified evaluation methods. These evaluation methods include student evaluation, peer review, classroom observation and so on.

The review of curriculum design and teaching content is also an important part of teaching supervision. Curriculum design should be closely related to the characteristics of the discipline, the needs of the industry and the development of students to ensure that the course content is practical, professional and forward-looking. Teaching supervisors should regularly review the curriculum design to ensure that its quality is up-to-date and in line with the latest industry standards.

The assessment of students' learning effectiveness is also a part of teaching supervision that cannot be ignored. Through regular analysis of students' performance, feedback on assignments, and evaluation of internships, we can keep abreast of students' learning progress and actual performance.

4.3. Teaching Supervision Evaluation and Feedback Mechanisms

The assessment and feedback mechanism of teaching supervision is central to ensuring its effectiveness and continuous improvement. An efficient assessment mechanism can help schools identify problems in teaching and learning in a timely manner and provide specific guidance for teaching and learning improvement.

The multi-dimensional nature of assessment is an important feature of the teaching supervision and assessment mechanism. The assessment is not only limited to the teaching quality of teachers, but should also include course content, teaching resources, student feedback and other aspects. Through multi-dimensional assessment, it can fully grasp the teaching situation and ensure that supervision covers every teaching link.

Assessment should be cyclical and continuous. A single assessment cannot fully reflect the changes in the quality of teaching and learning, therefore, schools should carry out regular assessment of teaching and learning. Regular assessment can help schools identify problems in teaching and learning in a timely manner and make targeted adjustments to the problems. At the same time, the assessment results should be open and transparent, so that all teachers and students can understand the content and results of the assessment, thus promoting the common improvement of teaching quality.

In addition to regular assessment, an ongoing feedback mechanism is an integral part of instructional supervision. Feedback from teaching supervision is not just a one-off event, but a process of dynamic adjustment. Schools should provide timely feedback to teachers and students based on the assessment results to help them identify deficiencies in teaching and learning and make suggestions for improvement. In addition, teachers can also feed back the problems they encounter in teaching to the supervisory committee through the feedback mechanism so that systematic improvements can be made.

4.4. Application of Information Technology in Teaching Supervision

The rapid development of information technology provides new possibilities for teaching supervision, and the application of informatization has become an important means to improve the efficiency and quality of teaching supervision. In the modern educational environment, informatization can not only improve the efficiency of assessment, but also provide more scientific data support for teaching supervision.

Information technology can help schools establish a comprehensive teaching management platform. Through the platform, schools can collect all kinds of data on classroom teaching in real time, including student performance, teacher evaluation, course evaluation and so on.

These data can help schools understand the effectiveness of teaching in a timely manner, identify potential problems, and make effective teaching adjustments.

The application of information technology can also optimize the data analysis in the assessment process. Traditional teaching assessment mostly relies on manual statistics and analysis, which is less efficient and prone to errors. Informatization technology can dig deeper into the data in the teaching process through big data analysis, help schools find potential problems in teaching, and provide more accurate data support for teaching decisions.

Information technology can also promote the interaction between teachers and students. Through the online platform, teachers can obtain students' feedback information at any time, understand students' learning status in a timely manner, and make corresponding teaching adjustments. At the same time, students can also evaluate the course through the platform, put forward their own opinions and suggestions, and further promote the improvement of teaching quality.

4.5. Continuous improvement and optimization of the teaching supervision system

The continuous improvement and optimization of the teaching supervision system is the key to ensuring its long-term operation. Teaching supervision should not remain at the initial stage of assessment and feedback, but should enter into a cycle of continuous improvement to continuously enhance its implementation and teaching quality.

Continuous improvement requires schools to continuously adjust and improve the existing supervision system. With the changes in the educational environment and the diversification of teaching needs, schools should continuously adjust the assessment criteria and workflow of teaching supervision according to the actual situation. Such adjustments should be dynamic to accommodate changing social needs and technological developments.

Schools should regularly evaluate the effectiveness of teaching supervision and make improvements based on the evaluation results. If certain aspects are found to be imperfect or problematic during the assessment process, schools should take effective measures to optimize them. This feedback mechanism can not only improve the quality of teaching, but also enhance the transparency and credibility of the teaching supervision system.

Schools should enhance the competence and quality of teaching supervisors through continuous training and learning. The professionalism of supervisory staff has a direct bearing on the quality of instructional supervision, therefore, regular training and learning are very important. By upgrading the competence of supervisory staff, we can ensure that the work of instructional supervision operates at a higher level and provides better services to teachers and students.

5. Conclusion

This paper discusses in depth the implementation and evaluation of the teaching supervision system in vocational undergraduate education, and proposes a teaching supervision framework suitable for vocational undergraduate education by combining the existing literature and practical experience. Through the analysis of the implementation process of teaching supervision system, the basic content and implementation strategy of teaching supervision are clarified. The setup of the organizational structure, the development of the implementation plan, and the guarantee of resources are discussed in detail, pointing out the key factors for the successful implementation of the teaching supervision system.

In the key aspects of the implementation of teaching supervision, through the establishment of a diversified evaluation system and a perfect feedback mechanism, it can provide strong support for the continuous improvement of the quality of teaching in schools. Through the

application of information technology, the digital management platform and data analysis technology have greatly improved the efficiency and scientificity of teaching supervision. Especially in the evaluation process, the accuracy of the data and the comprehensiveness of the analysis provide a more accurate basis for the school's teaching decisions.

In the section on continuous improvement and optimization of the teaching supervision system, the dynamic adjustment of the supervision system and professional training of personnel are emphasized, and it is considered that continuous optimization and adaptation to changes are the keys to the long-term operation of the teaching supervision system.

Future research can be expanded and deepened in the following areas. First, with the changes in the educational environment and social needs, the research on teaching supervision system needs to keep pace with the times and constantly adapt to the introduction of new technologies and the updating of educational concepts. With the development of artificial intelligence, big data, cloud computing and other technologies, the future teaching supervision system may be more intelligent, refined and personalized. How to utilize advanced information technology to enhance the real-time and scientific nature of teaching supervision has become an important direction for future research. Secondly, the evaluation of the implementation effect of the teaching supervision system should also attract more attention. It can be centered on the long-term effectiveness of the teaching supervision system, focusing on how to ensure the long-term effectiveness and stability of teaching supervision through a continuous tracking and evaluation mechanism. In this process, how to combine teaching supervision with the overall development strategy of the school to form a benign feedback loop is also a topic worthy of in-depth exploration. In addition, more attention should be paid to the subject position of teachers and students in the teaching supervision system. Although this paper proposes a multi-dimensional assessment mechanism, the research on the participation and experience of teachers and students in this system is more limited. Interviews and questionnaires can be used to gain a deeper understanding of the actual needs and feelings of teachers and students, and to explore how to better promote the active participation and feedback of teachers and students, so as to further enhance the effectiveness and quality of teaching supervision.

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