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Research on Teaching Practice of Secondary Vocational Education Based on Evidence-Based Instruction

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Abstract: As an emerging teaching model, evidence - based teaching originated in the field of medical education. Its core lies in guiding teaching practice by collecting, analyzing, and applying scientific evidence to ensure the scientificity and effectiveness of teaching decisions. This concept has gradually expanded to other educational section. Especially in secondary vocational education, the introduction of evidence - based teaching is regarded as an important way to solve current teaching problems and improve teaching quality. This paper aims to explore the origin and core concepts of evidence - based teaching, and deeply analyze its application and research in secondary vocational teaching practice, with a view to providing new ideas and strategies for the reform and development of secondary vocational education.

Keywords: evidence-based teaching, secondary vocational education, practical strategies

Introduction

In education, evidence-based teaching, as an emerging educational philosophy, is increasingly gaining the attention of educators. It emphasizes that teachers should guide their teaching practices based on scientific evidence and empirical research to enhance teaching effectiveness and quality. This study aims to explore the application of evidence-based teaching in secondary vocational education, analyze its practical implementation in teaching, and investigate its impact on improving the learning outcomes of secondary vocational students.

1. The necessity of introducing evidence-based teaching in secondary vocational education

Evidence-based teaching originated in the medical field at the end of the 20th century and was first proposed by British physician David Sackett. It emphasizes basing clinical decisions on scientific research evidence. This concept was later widely applied to the field of education. Its core lies in advocating that teachers systematically collect, evaluate, and apply the most relevant research evidence in the teaching process to optimize teaching strategies and enhance student learning outcomes. Firstly, evidence-based teaching enables teachers to better understand the learning needs and characteristics of students, thereby designing teaching plans that are more in line with the actual needs of students. Secondary vocational students often have diverse backgrounds and varying levels of ability. Evidence-based teaching can provide personalized teaching strategies to meet the needs of different students. Secondly, evidence-based teaching encourages teachers to improve their teaching methods based on the latest research findings and practical experiences. In this way, teachers can continuously update their teaching philosophies and adopt more scientific and effective teaching methods to enhance teaching effectiveness. Finally, evidence-based teaching helps to increase the transparency and credibility of secondary vocational education. By engaging in evidence-based teaching practices, educational outcomes can

be more easily assessed and verified, which in turn helps to strengthen societal trust and support for secondary vocational education[1].

2. Problems in secondary vocational education

2.1 The disconnect between theory and practice

In the field of secondary vocational education, a significant issue is often observed: the disconnect between theoretical teaching and practical operations. This disconnect leads to a concerning outcome: the theoretical knowledge that students learn in the classroom often fails to be effectively translated into the skills they need in real working environments.This phenomenon not only affects students' learning outcomes but also has a negative impact on the quality of vocational education and students' employment prospects. In the classroom, teachers may focus on imparting abstract concepts and theories while neglecting the importance of integrating these theories with real-world work scenarios. Under such a teaching model, students often end up memorizing knowledge points mechanically, yet lack the opportunities and abilities to apply this knowledge to concrete practices. The limitations of this educational approach become particularly evident when students enter the workplace, as they find themselves unable to meet the practical demands of their jobs, leading to confusion and frustration.

2.2 The singularity of teaching evaluation methods

In the current secondary vocational education system, teaching evaluation methods tend to be rather singular. This evaluation system often overly relies on written examination scores as the primary criterion for measuring students' academic achievements, which may lead to the neglect of other important abilities of students. Specifically, in addition to written examination scores, students' abilities in practical operation, innovative thinking, and teamwork are equally important. However, these abilities are often not given the attention and evaluation they deserve. Therefore, this singular evaluation method may not fully reflect students' true abilities and potential, and is not conducive to the development of students' comprehensive quality[2].

3. Strategies for integrating the concept of evidence-based teaching

3.1 Reform of curriculum design

Under the concept of evidence-based teaching, the reform of curriculum design emphasizes basing it on scientific research, practical data, and student feedback to enhance the relevance and effectiveness of teaching. This means that teachers need to shift from being traditional knowledge transmitters to integrators and analyzers of information. For example, teachers can refer to the latest industry standards and research findings to update the curriculum content, ensuring that students learn knowledge and skills that are in line with industry demands.

At the same time, teachers can collect and analyze students' learning data, such as quiz scores and homework completion status. They can even introduce more advanced learning analytics tools to gain a more precise understanding of students' progress and comprehension levels. For example, in the teaching of internal medicine clinical courses, a flipped classroom model can be adopted. Teachers provide online instructional videos for students to study independently before class, and the classroom time is then focused on case discussions and practical operations. In this way, students can not only master theoretical knowledge but also deepen their understanding of disease diagnosis and treatment through hands-on practice.In addition, "project-based learning" can be integrated into curriculum design. Students can conduct in-depth research around specific medical projects or cases, participating in the entire process from problem identification, data collection, and plan design to implementation and evaluation. This approach aims to cultivate students' teamwork and practical problem-solving skills. This evidence-based curriculum design model can not only enhance students' interest and engagement in learning but also make the teaching content more aligned with industry realities.

3.2 Innovation in teaching methods

Under the guidance of the evidence-based teaching philosophy, innovation in teaching methods is crucial, especially in the cultivation of critical thinking. Critical thinking refers to the ability of students to independently analyze and

evaluate information and make rational decisions. It is an essential component of 21st-century core competencies. In practice, teachers can design teaching activities focused on problem-solving and case analysis, encouraging students to examine issues from multiple perspectives and challenge established viewpoints. For example, in business courses, teachers can introduce real-world business cases and have students analyze the reasons for success or failure, thereby cultivating their logical reasoning and innovative thinking. Additionally, classroom discussions are an effective tool. By posing open-ended questions, teachers can stimulate students' thinking and train them to critically evaluate various arguments and evidence. At the same time, teachers themselves need to model the process of critical thinking. By demonstrating how to assess sources of information and identify potential biases, they can guide students in developing the habit of thinking critically. For example, in the teaching of "Fundamentals of Plant Science" in secondary vocational education, teachers can analyze a research paper on genetically modified crops, guiding students to identify the author's viewpoints, arguments, and potential biases. This helps students develop the ability to critically accept new knowledge. This teaching approach not only promotes students' understanding of professional knowledge but also enhances their ability to think independently and solve problems.

3.3 Transformation of teaching evaluation

The transformation of teaching evaluation is a crucial aspect for the implementation of evidence-based teaching in secondary vocational education. Traditional teaching evaluation often relies too heavily on single exam scores, neglecting the assessment of students' diverse abilities. Therefore, teachers need to advocate for a continuous and comprehensive evaluation method to more accurately reflect students' learning progress and ability development. Diversified evaluation emphasizes assessing students from different perspectives, including their critical thinking, problem-solving abilities, teamwork skills, and innovative thinking. For example, project assessments, peer evaluations, and self-assessments can be introduced to allow students to demonstrate their knowledge and skills in practical operations. Additionally, by leveraging information technology, such as learning management systems, data from students' daily learning processes can be collected to gain a more comprehensive understanding of their learning status. Continuous evaluation focuses on students' long-term development rather than one-time scores. Teachers should regularly conduct formative assessments, providing timely feedback on students' learning progress to help them adjust their learning strategies during the process.

For example, after introducing evidence-based teaching, secondary vocational teachers changed the course evaluation to a multi-dimensional method that includes class participation, group projects, and online discussions. The results showed that students' satisfaction with the fairness of the evaluation and the teaching process significantly increased, and their learning outcomes also improved markedly. Therefore, the transformation of teaching evaluation is not only a challenge to the traditional model but also a pursuit of improving the quality of education, aiming to cultivate secondary vocational graduates who are better adapted to the needs of society[3].

4. Conclusion

In summary, the research on the teaching practice of secondary vocational education based on evidence-based teaching is not only a renewal of the traditional teaching model but also a comprehensive improvement of the quality of secondary vocational education. In the future, we hope that more educators will actively engage in the practice of evidence-based teaching, continuously explore and innovate, and contribute to the development of secondary vocational education. At the same time, we also hope that secondary vocational education, with the help of the concept of evidence-based teaching, will cultivate more high-quality skilled talents with innovative spirit and practical abilities, and make greater contributions to the development of the social economy.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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