Development and construction path of digital learning resources in double-high colleges and universities

Jian Dong[1], Cheng Dong[2], Jianru Xie[*3]

[1]Guangdong Food and Drug Vocational College, Guangzhou, 510520, China
[2]TBEA Hengyang Transformer Co., Ltd., Hengyang, 421007, China
[3]Guangdong Polytechnic of Water Resources and Electric Engineering, Guangzhou, 510925, China

miracle_gz@126.com[1], dongc_hy@126.com[2], xiejr_gz@163.com[*3]

Abstract. The development of modern higher vocational education needs to update and upgrade teaching resources. Although Guangdong higher vocational colleges have made great progress in the construction of digital teaching resources, it is still necessary to see the existing problems and deficiencies. This paper analyzes the current situation of the development and construction of digital teaching resources in higher vocational colleges, selects typical cases of the development and construction of digital teaching resources, discusses how to build the quality evaluation index of digital teaching resources, deeply analyzes how teaching resources are integrated into online learning platform, practical teaching situation and innovative teaching mode, and quantitatively evaluates the positive impact on teaching effect. This paper expects to provide strong theoretical support and practical guidance for the development and construction of digital teaching resources in higher vocational colleges.

Keywords: Digital learning resources; Quality assessment; Teaching effectiveness

1 Introduction

From the perspective of domestic research status, with the promotion of education informatization policy and the implementation of "double high plan", the development and construction of digital teaching resources in higher vocational colleges has gradually become a research hotspot. In terms of theoretical research, domestic scholars have discussed the definition, classification, development process and evaluation criteria of digital teaching resources from multiple perspectives. Foreign research on the development and construction of digital teaching resources in higher vocational colleges is also quite in-depth. In terms of theoretical research, foreign scholars pay more attention to how to effectively use digital teaching resources to improve learning effects from the perspective of learners. In general, remarkable achievements have been made in the development and construction of digital teaching resources in higher vocational colleges at home and abroad. However, with the continuous progress of technology and

M. F. A. Ghani et al. (eds.), *Proceedings of the 2024 4th International Conference on Education, Language and Art (ICELA 2024)*, Advances in Social Science, Education and Humanities Research 907,
https://doi.org/10.2991/978-2-38476-364-1_60

the innovation of educational concepts, it is still necessary to further explore how to integrate and utilize digital teaching resources more effectively in the future to meet the needs of higher vocational education reform and development. Especially under the background of "double high school Plan", Guangdong higher vocational colleges should combine their own characteristics and needs, actively learn from advanced experience at home and abroad, and promote the continuous innovation and development of digital teaching resources development and construction.[1]

2 Typical cases of digital teaching resources development and construction

Taking a vocational and technical college in Guangdong as an example, the school has made remarkable achievements in the development and construction of digital teaching resources in recent years. By introducing advanced online teaching platforms and integrating high-quality teaching resources inside and outside the school, the college has built a digital teaching environment integrating curriculum management, online learning and interactive communication. This initiative has greatly enriched the means of teaching and improved the interest and participation of students in learning.

In the specific implementation process, the college first carried out a detailed demand analysis, according to the characteristics of different majors and courses, customized personalized digital teaching resources development plan. For example, in the major of computer science and technology, the college has developed a series of simulation experiments and practical training projects by using virtual reality technology, so that students can carry out practical operations in the virtual environment, effectively improving students' practical ability and technology application level.

The school also attaches great importance to the continuous update and optimization of digital teaching resources. By regularly collecting feedback from teachers and students, the content and design of teaching resources are adjusted and improved in a timely manner to ensure that they are always in sync with teaching needs. The college also actively carries out cooperation with enterprises, introduces the latest technology and cases in the industry, and makes digital teaching resources closer to the actual career needs. [2]

In terms of effect evaluation, by comparing the teaching data before and after the introduction of digital teaching resources, the college found that the academic performance and satisfaction of students had been significantly improved. Especially in some practical courses, the application of digital teaching resources has greatly improved students' practical ability and problem-solving ability.

3 The construction of digital teaching resource quality evaluation index

When constructing the digital teaching resource quality evaluation index system, it is necessary to consider multiple dimensions to ensure the overall and effectiveness of the

index system. This is not only about the quality of the content of the teaching resources, but also the technology implementation, the use of the experience and the education benefit.

The quality of content is concerned with the accuracy, authority and timeliness of the teaching resources. Accuracy requires that the resource content be correct and correct, and can reflect the knowledge and practice skills of the subject correctly; Authority is embodied in the reliability and professionalism of resource sources, if not by industry experts or education institutions; Timeliness means that the resources can be updated with The Times and updated to accommodate the needs of the development of the subject. In terms of technical implementation, the availability, interactivity and compatibility of resources are studied. Availability requires that resources be accessed in different devices and in the network environment; Interactivity emphasizes that resources should support users to interact with content, such as providing operation exercises, simulation experiments, and other functions. Compatibility refers to the ability of resources to be compatible with multiple operating systems and browsers to ensure that users are unimpeded. User experience is another important dimension of evaluating the quality of digital teaching resources. We evaluate its quality by analyzing the user's satisfaction, ease of use, and attractiveness of resources. Satisfaction reflects the user's evaluation of the overall effect of resources; Ease of use focuses on the simplicity of resource operations and the clarity of navigation; The attraction is whether the design of the resources is beautiful, the content is fascinating, and whether it can arouse the students' interest in learning. The education benefit is the core part of the evaluation index system. We measure the value of education by examining the level of support of the teaching goals, the improvement of the students' learning ability and the promotion of the efficiency of teachers' teaching. These indicators are quantified by comparing the teaching data and student performance changes before and after the use of resources. [3]

4 Development and construction of digital teaching resources

The application of digital teaching resources in online learning platform is mainly reflected in course management, learning service and other aspects. With the development of network technology and the rise of online education, these resources provide more flexible and efficient teaching modes for higher vocational colleges. The online learning platform greatly enriches the teaching content and form by integrating various digital teaching resources, such as electronic courseware, online video and interactive software. Teachers can call these resources at any time according to the needs of the course to carry out personalized teaching design. For example, when describing complex mechanical structures, 3D model display and animation demonstration can help students understand the working principle of machinery more intuitively and improve the teaching effect.

The most intuitive embodiment of the application of digital teaching resources in practical training teaching system is the introduction of virtual experiments. Through

highly simulated software technology, students can simulate various experimental operations on the computer, which not only reduces the cost of the experiment, but also greatly improves the safety of the experiment. For example, in chemistry experiments, some experimental manipulations that are high-risk or difficult to carry out in a regular laboratory environment can be done by virtual experiments. Students can observe the process of chemical reactions in a virtual environment, collect and analyze experimental data, and thus deepen their understanding of chemical principles. [4]

In the field of higher vocational education, innovative education mode is an important force to promote teaching reform. As the product of education informatization in the new era, digital teaching resources are increasingly widely used in innovative education model. This paper analyzes the application of digital teaching resources in innovative education mode, and puts forward corresponding countermeasures. Especially in the aspects of project-driven teaching and interdisciplinary teaching, digital teaching resources play a pivotal role. Project-driven teaching is a teaching mode that takes the project as the core, the students as the main body and the teachers as the guidance. In this mode, digital teaching resources can provide rich project cases and practice environment. For example, through virtual simulation technology, students can simulate the actual operation scenarios of enterprises and conduct actual combat drills such as marketing and financial analysis. This project-based learning based on digital resources can not only stimulate students' interest in learning, but also effectively improve their practical ability and problem-solving ability. Interdisciplinary teaching is a teaching method that breaks the boundaries of disciplines and promotes the development of students' comprehensive quality. Digital teaching resources play a role of bridge and link in interdisciplinary teaching. Through the integration of resources on the Internet platform, knowledge in different disciplines can be organically integrated, providing students with a broader vision and diversified learning experience. For example, in the interdisciplinary course of art and technology, students can use digital design software to create art works, and at the same time understand the scientific and technological principles behind the art, so as to achieve a perfect combination of art and technology.

5 Evaluation of teaching effect

According to the data of education research in recent years, students' learning motivation has been generally improved after the introduction of digital teaching resources. According to the survey, more than 80% of students believe that digital teaching resources make learning more interesting and efficient. After using digital teaching resources, teachers also reported that students' participation in class was significantly improved, and the time for independent learning after class was also increased. [5]

6 Conclusion

With the progress of technology, cloud computing, large Numbers, artificial intelligence and other advanced technology teaching areas are increasingly widely used. In

the reform of education reform in higher vocational colleges, the development of digital teaching resources and the innovation of the model of the cooperation of the teaching and the cooperation of the university and the cooperation of the school enterprises are also the subject of in-depth research. For example, it is possible to explore how digital teaching resources can better serve the practice teaching, improve the students' practical ability and professional accomplishment. It is also possible to study how to promote the in-depth cooperation between schools and enterprises through digital teaching resources, and to develop high-quality technical talents that meet the demand of the market.

Acknowledgment

Guangdong Food and Drug Vocational College "Double High School Plan" Project (SG03-02.6). Natural Science Project of Guangdong Food and Drug Vocational College (2022ZR11), (2023ZR17).

References

1. Zhao Huichen, Li Lin. Research on quality evaluation of Digital Learning Resources in the Intelligent Era: Based on the perspective of user Experience [J]. Modern Educational Technology.2022,32 (01)
2. Zhu, G. & Qiao, W. et al. Research on digital learning resources construction of community education for the elderly from the perspective of communication science [J]. Adult Education. 2021,41 (04)
3. PENG F X. Digital Generation of learning Society: dynamic structure, practice scale and supporting conditions [J]. China Vocational and Technical Education. 2024 (18)
4. DENG Fei. Dilemmas and Countermeasures of higher vocational students' Digital learning Ability Training [J]. Vocational and Technical Education, 2023,44 (20): 113-118.
5. YU P. Research on computing method and application of digital learning resources application effect [J]. China Audio-visual Education. 2020 (02)