



Analysis of the Enhancement Strategies for Smart Teaching Competency of Vocational Education Normal Students in Local Universities

Hongmeng Shao*, Tao Luo, Jiaye Mo

Guangxi Science and Technology Normal University, Laibin, Guangxi, 546199, China

*2039583336@qq.com

Abstract. Vocational Education Normal Students are high-level specialized talents trained by local universities for secondary vocational schools. Currently, there is a deficiency in the Smart Teaching Competency of Vocational Education Normal Students in local universities. This is specifically reflected in a lack of pre-class smart teaching design capability, insufficient in-class smart teaching operational capability, and inadequate post-class smart teaching evaluation capability. Local universities should guide Vocational Education Normal Students to independently strengthen their awareness of smart teaching, enrich their knowledge of smart teaching, and enhance their smart teaching skills. Teachers should be encouraged to establish a correct view of smart teaching and to learn advanced teaching technologies. Education administrators should be encouraged to systematically develop a top-level design for the training of Smart Teaching Competency in Vocational Education Normal Students.

Keywords: Smart Teaching Competency; problems; strategies.

1 Introduction

The educational environment we find in our current world does not look like it did some years ago. The learning process has become dynamic and continuous, mainly driven by the great evolution of technology, implying an inevitable change in education [1]. Smart educational process is a boon for both teachers and students [2]. An education system purely oriented towards imparting knowledge no longer meets the demands of talent cultivation. The philosophy of smart education, which focuses on transforming knowledge into wisdom, is gradually taking the lead. On January 13, 2022, the State Council issued the Plan for Development of the Digital Economy During the “14th Five-Year” Period, explicitly advocating the in-depth promotion of smart education [3]. The development of smart education poses new requirements for talent cultivation in local universities. Enhancing the Smart Teaching Competency of Vocational Education Normal Students in local universities is a significant challenge in current talent cultivation. This article elaborates on the essence and significance of Smart Teaching Competency. Drawing from our work experience in local universities

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and surveys related to the Smart Teaching Competency of Vocational Education Normal University Students, we analyze the challenges and underlying causes of their Smart Teaching Competency in local universities, and propose strategies for enhancement.

2 Problems with Smart Teaching Competency among Vocational Education Normal Students in Local Universities

It was discovered that there is a general deficiency in their Smart Teaching Competency. This deficiency is mainly manifested in the following three aspects:

2.1 Insufficient Pre-Class Smart Teaching Design Abilities

Smart teaching design abilities encompass the determination of teaching objectives, analysis of student profiles, selection of teaching content, identification of teaching methods, and optimization of the teaching process. Many of these students have not undergone systematic training in teaching design knowledge. A minority believes that smart teaching design requires systematic study, while the majority feels it is not necessary. Particularly, those with a primary focus on engineering majors do not give enough emphasis to the preliminary design of smart teaching. Many of these students are uncertain about the basis for determining teaching objectives and the procedures for analyzing their own profiles.

2.2 Insufficient In-Class Smart Teaching Operational Abilities

The in-class smart teaching operational abilities include the capability to use teaching platforms, proficiency in computer-assisted teaching, creation of teaching scenarios, and the skills of data mining and analysis in teaching. A substantial number of these students are unfamiliar with the type of teaching platforms required for classrooms and how to operate them. The vast majority overlook data generated by the teaching platform, not recognizing the importance of this data in guiding teacher instruction and in diagnosing student learning. Different specialized courses have varying requirements for creating teaching scenarios. For instance, some engineering courses could greatly benefit from the use of virtual reality technology^[4] to enhance the motivation and engagement of students. Yet, the majority of Vocational Education Normal Students are not familiar with virtual reality technology, much less its application.

2.3 Insufficiency in Post-class Smart Teaching Evaluation Abilities

Post-class smart teaching evaluation abilities encompass the capacity to utilize teaching platforms for assessing student learning outcomes, the skill to analyze and apply data from student learning outcomes. Many Vocational Education Normal Students believe that evaluation solely pertains to assessing students, specifically determining if they have mastered the content. Most Vocational Education Normal Students are

aware of the need to distribute test questions through teaching platforms. However, they do not place enough emphasis on analyzing test results and lack the skills to infer student progress based on these results. They also lack the capability to use platform data to diagnose students' learning issues.

3 Analysis of the Causes of Smart Teaching Ability Issues Among Vocational Education Normal Students in Local Universities

Addressing the aforementioned challenges, this study analyzes the following three aspects:

3.1 Lack of Initiative among Vocational Education Normal University Students

Through in-depth interviews with some Vocational Education Normal University Students, we found that their awareness of smart teaching is faint. They lack confidence in smart teaching and are reluctant to delve into unfamiliar territories of smart teaching. Even if some of them have ideas about smart teaching, their skills in collecting and analyzing data generated during the teaching process are inadequate, and their awareness of confidentiality related to such student data is not strong. We identified a deficiency in their knowledge of smart teaching, which serves as the theoretical foundation of smart teaching. We observed that their smart teaching skills are insufficient.

3.2 University Teachers Have Not Played a Model Role in Smart Teaching

Through observation of the classroom behavior of teachers in a particular university, it is evident that, although the lessons are conducted in a smart classroom, the teachers' behavior closely resembles or is identical to that in a traditional multimedia classroom, rendering the smart classroom virtually redundant. In smart classrooms, it is appropriate to adopt personalized, contextualized, and blended teaching models. Some courses, especially in science and engineering, are particularly well-suited for contextualized teaching^[5]. Teachers should utilize virtual reality technology to create learning contexts, guiding students to deeply understand relevant principles and recognize the role of these principles in problem-solving. However, due to the teachers' own limited ability to use virtual reality technology, they cannot establish the required teaching contexts.

3.3 University Education Administrators Lack a Systematic Top-Level Design for the Cultivation of Smart Teaching Competency in Vocational Education Normal University Students

Through research into the professional talent training programs for Vocational Education Normal Students in universities, courses related to teacher education and modern educational technology have been established. However, no courses specifically related to smart teaching skills were observed. The design of the teaching system is a pre-class skill. The implementation of smart teaching requires a course on smart teaching system design to serve as its theoretical foundation. It should be added to the talent training curriculum. In-class smart teaching skills include the operation and management of teaching platforms, as well as the extraction and analysis of teaching data. Moreover, consideration should be given to adding corresponding courses to the curriculum on how virtual reality technology can be applied to teaching.

4 Strategies to Improve Smart Teaching Competency of Vocational Education Normal Students in Local Universities

4.1 Vocational Education Normal Students Should Independently Strengthen Smart Teaching Awareness, Enrich Smart Teaching Knowledge, and Enhance Smart Teaching Skills

In the era of smart education, every Vocational Education Normal Students should actively adapt to the new requirements of smart education for current teaching practices. They should renew their understanding of teaching. It is important to strengthen the study of theoretical knowledge related to smart teaching. Smart teaching skills should be trained through various means. In the pre-class phase, emphasis should be placed on smart teaching design, encompassing the determination of teaching objectives, selection of teaching content, choice of teaching methods, and optimization of the teaching process. Based on the philosophy of smart teaching, identify the entry points for integrating ideological education into the curriculum, thereby optimizing classroom teaching outcomes. During class, while the focus should be maintained on lecturing, introduction, demonstration, linguistic abilities, questioning, and blackboard design skills^[6], it is equally vital to prioritize the operation of teaching platforms, the creation of teaching scenarios, and the analysis of teaching data. Particular attention should be given to learning virtual reality technology, and it should be appropriately integrated into engineering curriculum instruction. Post-class, the emphasis should be on smart teaching evaluation skills, ensuring objective and fair evaluations for both the teachers and students.

4.2 University Teachers Should Establish Correct Views on Smart Teaching and Learn Advanced Teaching Techniques

University teachers need to establish the right perspective on smart teaching. Cai (2019) ^[7] compared traditional teaching and smart teaching from three dimensions:

teaching concepts, teaching organization, and teaching technology. University teachers should actively adopt a blended teaching model in their teaching, which plays a positive role in achieving rich learning content and flexible learning paths^[8]. University teachers must intensify their learning of advanced teaching techniques and integrate modern educational technologies^[9] into their teaching. Especially in the context of engineering courses, they should utilize virtual reality technology to simulate and create teaching scenarios. University teachers should proactively adapt to the environment of the smart classroom, making full use of the hardware and software resources available within the smart classroom. University teachers should adopt a dialectical view towards the pedagogical and professional aspects of Vocational Education Normal University Students. It is not appropriate to solely focus on the professional aspect while neglecting the pedagogical, nor is it fitting to emphasize the pedagogical at the expense of the professional. University teachers serve as role models for Vocational Education Normal Students and should, therefore, play a leading and exemplary role.

4.3 University Educational Administrators Should Ensure Systematic Top-Level Design in Cultivating the Smart Teaching Competency of Vocational Education Normal University Students

A systematic top-level design includes the formulation of talent cultivation objectives, the construction of the curriculum system, and the planning for employment orientation. It is widely recognized that the curriculum is the focal point of talent cultivation. Therefore, enhancing the Smart Teaching Competency of Vocational Education Normal Students primarily hinges on curriculum system construction. This involves the addition of courses related to smart teaching skills, including courses on smart teaching system design, application of smart teaching tools, and smart teaching data mining and analysis^[10], among a series of other courses closely related to smart teaching. Through these courses, Vocational Education Normal Students can consciously design smart teaching before the class, effectively conduct smart teaching in-class, and make full use of data generated during classes to infer students' learning progress and guide their post-class studies. There is a need to increase academic lectures related to smart teaching. Through expert and scholar lectures, these students can embark on the study and research of smart teaching knowledge. Universities should conduct lectures on the use of smart teaching tools, constantly integrating the latest educational software into teaching. Gao and Peng (2023)^[11] believe that smart teaching tools can be classified based on different teaching stages into five categories: teaching design tools, resource processing tools, in-class teaching tools, teaching management tools, and teaching evaluation tools. Universities should ensure that each Normal students masters 1-2 tools from different categories.

Smart classrooms use technological advantages to stimulate the core values of teaching resources and environment, expand the field and boundaries of teaching, and make the environment more conducive to teaching and learning^[12]. Training on the functionalities and usage of the smart classroom should be held, ensuring that every

Vocational Education Normal Students is familiar with and can utilize the smart classroom.

5 Conclusion

Smart Teaching Competency are an essential applied skill that Vocational Education Normal Students at local universities must possess. Local universities must start from the top-level design in their cultivation of Vocational Education Normal University Students, ensuring that they not only acquire professional knowledge and foster professional qualities during their time at the university but also learn educational knowledge, hone their teaching skills, and develop Smart Teaching Competency.

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References

1. Alberto Real-Fernandez, Faraón Llorens-Largo, Rafael Molina-Carmona.(2019).Smart Learning Model Based on Competences and Activities. [https:// www. igi-global. com/ chapter/smart-learning-model-based-on-competences-and-activities/227447](https://www.igi-global.com/chapter/smart-learning-model-based-on-competences-and-activities/227447).
2. Palanisamy, P.; Saravanakumar, A. R. (2021). Development of a Module on Smart Classroom Teaching Competency for Primary Teacher Trainees. [https://web.s.ebscohost.com/abstract? direct= true&profile =ehost&scope =site&authtype =crawler&jrnl =130965 91&AN=161811701&h=qTfL09F2hcLafz6mkU8%2fzvh34ExReM9fsp5AIUPb6IsfS78d5 1bepfgEogPXngR4km1NZ9qmen%2f0MLiEm6wD1A%3d%3d&cr=c&resultNs=Admin WebAuth&resultLocal=ErrCrlNotAuth&crlhashurl=login.aspx%3fdirect%3dtrue%26profi le%3dehost%26scope%3dsite%26authtype%3dcrawler%26jrnl%3d13096591%26AN%3d 161811701](https://web.s.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=13096591&AN=161811701&h=qTfL09F2hcLafz6mkU8%2fzvh34ExReM9fsp5AIUPb6IsfS78d51bepfgEogPXngR4km1NZ9qmen%2f0MLiEm6wD1A%3d%3d&cr=c&resultNs=AdminWebAuth&resultLocal=ErrCrlNotAuth&crlhashurl=login.aspx%3fdirect%3dtrue%26profile%3dehost%26scope%3dsite%26authtype%3dcrawler%26jrnl%3d13096591%26AN%3d161811701).
3. State Council. Plan for Development of the Digital Economy During the "14th Five-Year" Period [EB/OL]. (Published on 2022-01-13) [Accessed on 2021-11-11]. [https:// www. ix0797.cn/xx?article_id=109394&pagenum=all](https://www.ix0797.cn/xx?article_id=109394&pagenum=all)
4. Wang GH, Song J.Y., Tian LH, etc. (2023) Can virtual reality technology help reduce learners' cognitive load—— Meta analysis based on 23 experimental and quasi experimental studies [J] Open Education Research, 2023, 29 (04): 110-120. DOI: 10.13966/j.cnki.kfjyj.2023.04.011
5. Chen C.F. (2022) Contextualized teaching strategies guided by core competencies [J] Primary and Secondary School Management, 2022, (11): 39-41.
6. Xu XQ, Zhao W., Jiang Q., etc. (2022) Process Mining Empowers Education Data Analysis: Application Analysis of Three Mining Algorithms [J] Journal of Distance Education, 2022, 40 (03): 45-55. DOI: 10.15881/j.cnki.cn33-1304/g4.2022.03.003.

7. Cai B.L. Smart Teaching in the Era of Educational Informatization 2.0: Philosophy, Characteristics, and Models [J]. Journal of the Chinese Society of Education, 2019(11): 56-61. <https://kns.cnki.net/dm8/manage/export.html?language=CHS&uniplatform=NZKPT>.
8. Xie YY, Tian Y., Sun X.Y., etc (2023) Research on online and offline hybrid teaching mode in the context of "Internet plus education" [J] Research on Printing and Digital Media Technology, 2023, (04): 139-145 DOI: 10.19370/j.cnki.cn10-1886/ts.2023.04.020.
9. Li W.N. (2021) Research on Teaching Reform in Universities under the Background of Information Technology: A Review of "Modern Educational Technology" [J] China Testing, 2021, 47 (06): 163.
10. Peng BF, Zheng Y. (2019) Microteaching and Teaching Skills Training [M]. Nanjing University Press, Nanjing, 2019.
11. Gao J., Peng S.D. A Comparative Study on Smart Teaching Tools in the Context of Educational Artificial Intelligence [J]. Journal of Shanghai Educational Research, 2023(03): 61-67. DOI: 10.16194/j.cnki.31-1059/g4.2023.03.015.
12. Liu X., Liu G.P., Liao J. (2023) Research on the Construction of a Smart Classroom Structural Model from the Perspective of the "Function Structure" Relationship [J] China Distance Education, 2023, 43 (02): 45-53 DOI: 10.13541/j.cnki.chinade.2023.02.007.

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