

Exploring the Reform of “Teachers, Teaching Materials, and Teaching Methods” Based on the “1+X” Certificate

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Abstract: In order to promote the reform of vocational education, the state has issued the *National Vocational Education Reform Implementation Plan*, in which the reform of “Teachers, Teaching Materials, and Teaching Methods” as well as the “1 + X” certificate have been the most prominent topics for discussion. Facing new opportunities for vocational education development, popularizing the blend of “1 + x” courses and certificates, strengthening the integration of production and education, as well as enhancing professional soft skills are urgent issues to be solved. This article combines the “1 + X” certificate of civil engineering professional construction drawings and analyzes the necessity of promoting the “1 + X” professional skill level as well as the combination of certificate and curriculum construction in deepening the reform of “Teachers, Teaching Materials, and Teaching Methods.” Several suggestions have been put forward for the reform of “Teachers, Teaching Materials, and Teaching Methods,” which would be helpful for the practical exploration in the reform of “three teaching methods.”

Keywords: “1+ X” certificate; Reform of “Teachers, Teaching Materials, and Teaching Methods”; Fusion of class and certificate

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1. Introduction

It is mandatory for vocational education to take into consideration of the needs of related industries and enterprises. The degree from vocational education is linked to the level of competency and skill of a profession. In the context of the development of vocational education in the reform of “Teachers, Teaching Materials, and Teaching Methods” as well as the “1 + X” certificate system, the organic combination of one diploma certificate and several vocational or technical grade certificates has been actively explored. In this process, it is important to strengthen the reform of its curriculum, push forward the reform of “Teachers, Teaching Materials, and Teaching Methods,” as well as deepen the integration of production and education between schools and enterprises, so as to improve students’ ability in vocational adaptation, train up technical talents needed by the society, and to promote industrial transformation and upgrading. Construction engineering drawing recognition is one of the core skills in civil engineering, and it is also an important stepping stone for students to launch into the profession. Based on the reform of “Teachers, Teaching Materials, and Teaching Methods” of civil engineering major in vocational colleges in combination with the “1 + X” construction engineering drawing recognition, this article actively explores and proposes reasonable suggestions for realizing the teaching task of “1 + X” in the future.

2. Problems of “Teachers, Teaching Materials, and Teaching Methods” in vocational education

2.1. Teachers

Teachers are the first problem in the “1 + X” vocational skills level certificate. In the process of promoting “1 + X” along with the reform of “Teachers, Teaching Materials, and Teaching Methods,” one of the problems existing in higher vocational colleges is the single source of professional teachers. Most teachers begin working in campus directly after graduation; they lack working experience in the production line, and they do not have the ability to develop task and carry out situational teaching. Second, some teachers do not have a systematic learning experience in addition to the lack of knowledge in architectural engineering drawing recognition. These full-time teachers do not only have poor skill level but also inadequate knowledge reserve ^[1]. Third, the composition of the teaching team is unreasonable; the team comprises of young and middle-aged senior teachers with scarce experience in the industry ^[2].

2.2. Teaching materials

Over the years, vocational colleges have been training students to obtain academic certificates with high professional teaching standards and skills. Vocational skill certificates are based on the requirements of various professional posts, corresponding to the standard system of enterprises in the industry. In order to ensure the progress of “1” (one academic certificate) and “X” (several vocational skill certificates) are in the same direction, it is necessary to consider the connection between the two during schooling period in addition to re-optimizing and integrating related learning contents. Therefore, in view of the current “1 + X” certificate implementation request, the teaching materials of the traditional curriculum are not able to adapt to the textual research training request. In addition, some teaching materials are slow to update while new technology and knowledge cannot be reflected in those teaching materials; thus, students do not benefit from those teaching materials.

2.3. Teaching methods

Teaching methods are the core of the whole teaching and the direction for professional course reform. The reform of teachers and teaching materials requires the reform of teaching mode and teaching method. The problems of teaching methods are manifested in the following aspects: first, the teaching mode is single, whereby teaching is mainly explaining and due to insufficient practice conditions, there are less practical trainings but more theoretical lectures, thus seemingly unattractive to students; second, in view of the lack of research and investigation on the learning situation of the new generation of students, there is no targeted teaching according to students’ aptitude, thus affecting the improvement of their skills; in addition, the creation of learning situations is relatively few, the resources of information-based learning platforms are scarce, the support from the industry and enterprises is lacking, the production innovation teaching link is insufficient, and it is difficult to raise technical skilled and talented people that enterprises urgently need.

3. Taking the “1 + X” certificate as an opportunity to explore the reform of “Teachers, Teaching Materials, and Teaching Methods”

3.1. Building a first-class teaching team

First, full-time and part-time teachers can be recruited from among those holding the front-line technical posts in construction enterprises. The selection and recruitment of practical teachers from among the national and provincial skill contest winners should also be encouraged, so as to achieve a reasonable ratio between theoretical teachers and practical teachers. Second, the “1 + X” construction engineering drawing recognition certificate can be used as an opportunity to strengthen teachers’ comprehensive professional

skills and improve their professional qualities. Schools can also set up a learning exchange platform, provide docking channels, widely carry out teaching exchanges between teachers and schools, encourage professional teachers to actively participate in teaching and scientific research projects, explore new teaching models, as well as build a library which is rich in information-based teaching resources. In regard to professional teachers, they can make full use of their spare time to explore the front lines of construction projects, participate in the implementation process of specific construction projects as well as in the technological innovation and the technical services of construction enterprises. This in turn would comprehensively improve their innovation and practical skills. Through the organization of “1 + X” certificate of the corresponding three-level (national-level, provincial-level, and college-level) professional skills competition, teachers should be encouraged to actively participate in professional skills competitions, industry skills competitions, and other activities in order to train teachers to develop outstanding skills and teaching ability. From “wanting to do something to the ability to do it, and finally, achieving it” should be the goal in encouraging outstanding professional teachers to move to the fore, thus creating a high-level double-quality team of teachers ^[3].

3.2. Developing new teaching materials while integrating courses and certificates

In order to ensure that the academic training and professional ability level of students are improving at the same time, the integrated course and certificate textbook based on the “1 + X” certificate system should not only meet the professional teaching standards, but also the requirements of various skill-related certificates ^[4]. Based on the research about the “1 + X” certificate of architectural engineering drawing recognition specialty, many courses are involved, such as architectural drawing recognition, architectural drawing, architectural structure, architectural CAD, and architectural equipment. The architectural engineering drawing recognition grade can be divided into low-level, mid-level, and high-level; different grades have different requirements. In the face of innumerable knowledge points and skill points in the curriculum, different teaching materials should be selected and sorted according to different levels. It is also necessary to take into consideration of the learning characteristics of each student, focus on the core quality of professional disciplines, integrate new technologies, new processes, and new specifications of the current construction industry, as well as incorporate building codes, standards, and atlas. It is necessary to change and upgrade the original teaching materials. In addition to that, school-enterprise cooperation units and experts in the construction industry can be invited to discuss the preparation of teaching materials, build project-based courses and diversified resources that are in line with the current industrial development trend and technological update, as well as actively develop and sort out loose leaf teaching materials ^[5].

3.3. Innovating teaching method

In the process of implementing the “1 + X” certificate system, the goal of training students is consistent with the demand of certain technical posts in enterprises, and classroom teaching is also changing from “teaching-based” to “learning-based”. The focus should be on developing professional skills required by the “X” certificate, returning the class to the students, stimulating learning interest, promoting independent learning, and improving students’ ability in terms of independent thinking, independent learning, and innovation ^[6]. An online intelligent learning platform should be established for the civil engineering specialty, a new “learning-based” classroom with real-time interaction between teachers and students should be created, and the deep participation of enterprises through online and offline hybrid teaching mode should be promoted. In addition, difficult problems which need to be studied and discussed should be set for students. These problems are to provide technical support in establishing a learning environment. Only through independent analysis and thinking as well as solving actual cases or real problems in engineering

construction, students' professional post skills can be effectively promoted, and the skills required for the corresponding "X" certificate can be learned ^[7]. The role of teachers in the reform of teaching methods is not weak but has been strengthened. In the face of learning the difficulties encountered by students, teachers should help and guide the students in the right direction of thinking and analysis in order to develop their skills in analysis, judgment, and finally solution-finding ^[8].

4. Conclusion

"1+ X" certificate system is a new project in the field of vocational education reform. There are still many tasks to be explored in the evaluation system of vocational education. Taking the "1+ X" as an opportunity in the reform of "Teachers, Teaching Materials, and Teaching Methods," this article discusses how to make full use of the implementation of the "1+ X" certificate system to realize the integration of schools and enterprises, improve teachers' professional skills, compile new teaching materials for the integration of classes and certificates, as well as promote the reform of teaching methods by taking the "X" certificate for civil engineering as an example in hope to provide some reference for the exploration and practice of subsequent professional construction.

Disclosure statement

The authors declare that there is no conflict of interest.

References

- [1] Long H, Zhang L, 2020, Research on the Professional Development Path of Teachers in Higher Vocational Colleges under "1+X" Certificate System. *Invention & Innovation*, (4): 132-133.
- [2] Fang JH, Fan J, 2021, Exploration on the Path of "1+X" Certificate to Promote the Reform of Three Religions. *Education Forum*, (10): 89-92.
- [3] Liu F, 2020, Construction Path and Strategy of Double-qualified Teachers in Higher Vocational Colleges under the Background of "Three Education" Reform. *Journal of Ezhou University*, (4): 84-85.
- [4] Xu Y, 2019, Research on the Development of Teaching Materials based on "1+X Certificate". *Vocational Education Research*, (7): 32-40.
- [5] Tan XY, Zhang HY, 2020, Exploration on the Reform of the Three Religions Based on the Map Recognition Textual Research of "1+X" Architectural Engineering. *Jiangsu Science & Technology Information*, (36): 55-57.
- [6] Zeng ZX, 2020, Research and Thinking on the Reform of the Three Religions in the New Era. *Education Forum*, (32): 355-356.
- [7] Liu WJ, 2019, Research on Curriculum Reform of Vocational Education under 1+X Certificate System. *Vocational & Technical Education Forum*, (7): 47-53.
- [8] Zhang YY, 2020, Concept, Shape and Path of Vocational Education Classroom Reform under 1+X Certificate System. *Education and Vocation*, (4): 27-33.