

# Exploration and Practice on Reform of Teachers, Textbooks and Teaching Method for Cloud Computing Major in Higher Vocational Colleges

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## Abstract

**In addition to deepening the integration of production and education, the development of cloud computing technology and application majors is also urgently needed to strengthen connotation construction such as the reform of teachers, textbooks and teaching method (3T reform). At present, professional construction not only faces external challenges such as rapid industrial development, application-based undergraduate squeeze, and decline in student quality, but also inherent problems such as low quality of teachers, outdated teaching materials, and inability to meet practical teaching needs. Improving the quality of teachers, textbook and teaching methods is an important entry point for improving the quality of talent training and building a high-level specialty. Build a structured teaching team to "empower" teachers and improve their quality and professionalism. According to the post design case, as a shared carrier, the courses are organically connected to realize project-based teaching and promote the classroom revolution. Develop loose-leaf and work manual textbooks, update the content and format of textbooks in time, and improve technical follow-up.**

## Keywords

**Reform of Teachers; Textbooks and Teaching Method; Through-going Project-based Teaching; Big Data of Teaching; Certification of 1+X; Loose-leaf Textbook.**

## 1. Introduction

The reform of teachers, textbooks and teaching method (3T Reform) is an important starting point for the implementation of the *National Vocational Education Reform Implementation Plan* and the promotion of high-quality development of vocational education [1-2]. The 3T Reform has become an important entry point for the current vocational colleges to improve the quality of running schools and the quality of talent training. The 20 Vocational Education Articles made special arrangements for strengthening the construction of the teaching staff and perfecting the dual education mechanism, which pointed out the development direction for deepening the 3T Reform. In the article of *Deepening the 3T Reform and Improving the Quality of Talent Training in Vocational Colleges*, Wang Chengrong and Long Yang proposed that the 3T Reform of vocational education should be empowered and improve teachers' professional quality and practical ability [3]. The Couses budding is as the leader, and it accelerates the reform and innovation of teaching materials, implements the *Three Classrooms* teaching model, promotes the reform of teaching methods, and establishes a teaching evaluation and feedback improvement mechanism that adapts to the 3T Reform. In the article of *Deepening Reform, Pioneering and Innovating to Cultivate Technical Skilled Talents for the New Era*, Wang Zhongming pointed out that only the national teaching standard system for vocational education needs to be continuously improved at the national level, and supervision and management need to be strengthened [4]. Improve the education and teaching quality assurance system, deepen the 3T Reform, teach students in accordance with their aptitude,

implement the fundamental task of Lide and foster people, fully mobilize the enthusiasm, initiative and creativity of students and teachers, and continuously improve the quality of technical skills training for economic and social development And industrial transformation and upgrading to provide talent support.

## 2. Research Background

With the advent of the era of new infrastructure construction, China cloud computing industry is developing rapidly, and is developing in the direction of intelligence, ecology, integration, coreization and internationalization. The ability of cloud computing industry is to support economic development continues to increase. As a sunrise industry, the shortage of cloud computing talents has become a bottleneck restricting the rapid development of China cloud computing industry. China cloud computing talents are in olive layout, that is, there is a lack of high-level cloud computing talents and a large number of cloud computing blue-collars who are engaged in basic work. Higher vocational colleges are the main base for cultivating cloud computing blue-collar talents. From this perspective, the cloud computing professional group of higher vocational colleges is facing a rare opportunity. But at the same time, cloud computing majors in higher vocational colleges are also facing many external challenges, and the graduates trained often cannot find a professional counterpart. The employment situation of students is not optimistic. There are external challenges such as the system, source of students, and industry, as well as internal problems such as teachers, teaching methods and teaching materials. The comprehensive influence of these factors makes the trained cloud computing students have problems such as insufficient professional technical ability, lack of independent problem solving ability, weak communication ability, and weak professional ethics and discipline, which seriously affects the employment of students.

With the rapid development of the cloud computing industry, the training of cloud computing professionals in Jiangsu Academy of Oceanography has made considerable progress, contributing to the local economic and social development. However, in the process of development, problems such as unclear talent training goals, low overall quality of teachers, obsolete teaching materials, and inability of teaching methods to meet the needs of professional teaching have been exposed in running schools.

To implement the 1+X certificate-based cloud computing technology and application professional teaching reform, the 3R Reform is the prerequisite, and textbooks, teachers and teaching methods are the carriers to promote and implement the 1+X certificate [5]. Through the reform of the three educations, teachers are empowered, teachers' quality and professionalism are improved, the content and form of teaching materials are updated, the degree of technical follow-up is improved, the model of school-enterprise cooperation, work-study integration is innovated, and the classroom revolution is promoted. Through the improvement of the quality of teachers, textbooks, and teaching methods, the cloud computing technology and application will improve the quality of talent training, so as to realize the task of fostering morality and cultivating high-quality laborers and technical skills.

## 3. Implementation of 3T Reform

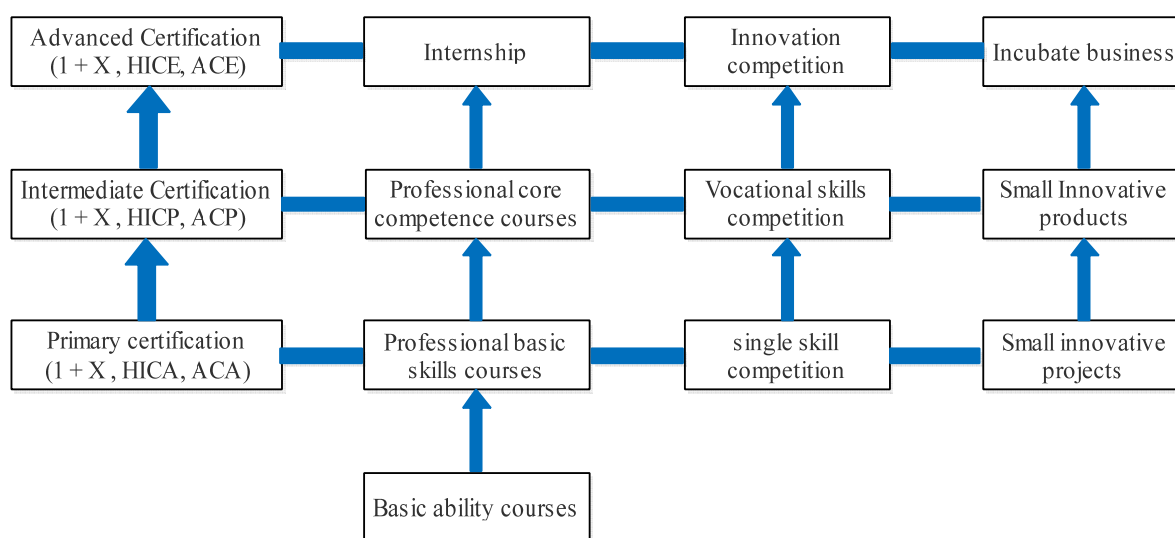
Establish cloud computing technology and application of professional production, education, science and education integration teaching innovation team building, with talent training as the main theme, and the integration of production, education, science and education as the starting point. Relying on the school-level big data collaborative innovation center, centering on the development of Jiangsu cloud computing technology and big data industry, promote the teaching team to carry out technology application research and complete the accumulation of technical skills, so as to achieve the improvement of the ratio of "double teacher" teachers and

the "double teacher" ability , To ensure that the teacher’s ability meets the 1+X certificate teaching.

Docking the cloud computing platform operation and maintenance and development of the pilot 1+X certificate system, selecting superior resources inside and outside the school to form a dual-teacher structure teaching team, cultivating professional skill level certificate training teachers, and enhancing teachers' teaching practice ability.

Focus on cultivating the spirit of cooperation among teachers, encourage the integration, crossover and integration of teachers of different professions, jointly overcome the difficulties of related scientific research and teaching reform, improve the knowledge structure, achieve common improvement, promote the division of labor and cooperation of teachers, and conduct modular teaching.

Construct a talent training model that integrates "classes, certificates, competitions and innovations" of cloud computing technology and application majors, and realizes integration of class certificates, class competitions, and curriculum creation.



**Figure 1.** Integration of Course, Certification, Competition and Creation

Give full play to the advantages of the skill competition to connect new technologies and new skills, actively transform the results of the competition into teaching resources, and develop project cases that connect courses. Provide learning channels for students to obtain vocational skills certificates through competition training and integration of competition and education; in the talent training program, students’ comprehensive ability training and evaluation are strengthened, comprehensive projects linked to vocational ability certificate standards are developed, and vocational skills certificate standards are integrated into the evaluation Indicators to increase the proportion of professional ethics, practical ability, and innovation ability. Integrate innovation, entrepreneurship, and creativity into the whole process of talent training, and strengthen the cross integration of three innovations and professional courses.

Supported by competency-based, use new textbook development paradigms. Through the analysis of work tasks and professional abilities, a systematic list of vocational abilities can be formed, and learning units can be constructed with various vocational abilities as the core to realize the loose-leaving of teaching materials, and implement the vocational abilities in the operation process to realize manualization. The teaching material base is based on a solid theoretical and practical foundation as an exemplary teaching material. Instead of reorganizing knowledge, it is dedicated to knowledge development and demonstrates a new paradigm for the development of vocational teaching materials.

Introduce new technologies, new standards, and new processes in the industry in a timely manner, connect with professional standards, formulate a 1+X certificate system curriculum system for the corresponding professions in the industry, and select the best to meet the professional teaching requirements and vocational skill level standards, with rich learning The resources of the teaching materials, through the linking of documents and certificates, realize the integration of course certificates.

Taking the development and application of teaching materials as an opportunity, deepen school-enterprise cooperation and integration of production and education. Explore and create an online open course that integrates 1+X certificates and is suitable for modular teaching. Strengthen the combination of online and offline teaching based on problems, projects, phenomena, and cases.

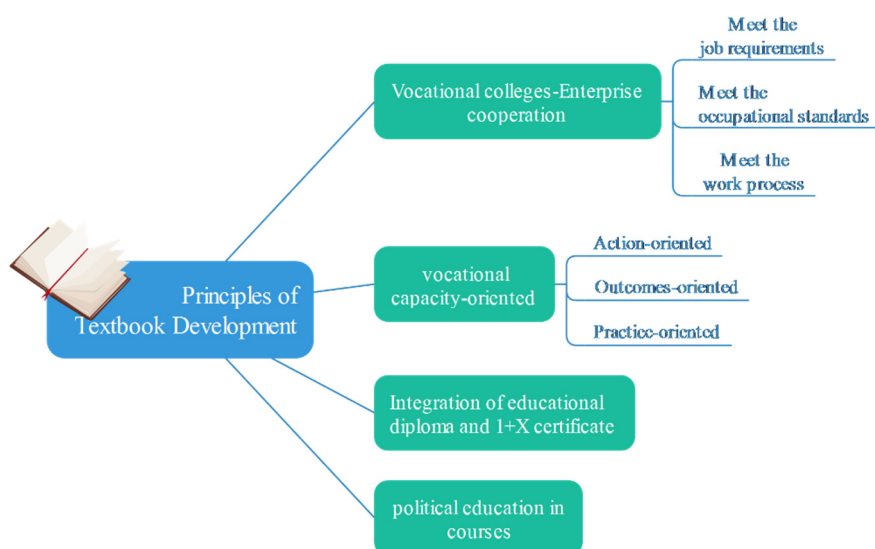


Figure 2. The new type of loose-leaf and work manual textbook

#### 4. Conclusion

The reform of teachers, textbooks and teaching method is an important entry point for higher vocational colleges to improve the quality of running schools and the quality of talent training, and an important starting point for promoting the construction of high-level majors. As a supporting major in the college's big data technology and application dedicated group, the School of Information has seized the opportunity of vocational education reform and innovation to deepen the 3T Reforms. Optimize the structure to stimulate new momentum for the development of the teaching team and provide support for professional development. The project runs through talent training, online and offline mixed teaching, to improve the quality of talent training. The development of loose-leaf and new work manual teaching materials can promote teaching reform and improve teaching quality as an important tool. The rapid development of the software industry and the internal and external challenges faced by vocational education make the 3T Reforms always on the way. Only by continuously deepening the 3T Reforms can it be possible to build a high-level professional.

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## References

- [1] State Council of the people's Republic of China. Implementation plan of national vocational education reform [Z]. GF [2019] No. 4, 2019-01-24.
- [2] Ministry of education, Ministry of finance. Opinions on the implementation of the construction plan of high level vocational schools and specialties with Chinese characteristics [Z]. JZC [2019] No. 5, 2019-04-01.
- [3] Wang Chengrong, Long Yang. Deepening the reform of "three education" and improving the quality of talents cultivating in vocational colleges[J]. China Vocational and Technical Education, 2019 (17): 26-29.
- [4] Wang Zhongming. Deepening the "three education" reform and improve the quality of technical and skilled personnel training [J]. China Vocational and Technical Education, 2019 (7): 108-110.
- [5] Sun Shanxue. Some understanding of 1 + X certificate system [J]. China Vocational and Technical Education, 2019 (7): 72-76.