Current Research and Trend Development of "Post-Curriculum-Competition-Certificate" Model in Vocational Education

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Abstract. The study on "Post-Curriculum-Competition-Certificate" model in vocational education is surging nowadays. From the analysis of 1367 documents, the current research tends to surge in numbers, but deficit in contents like student-oriented learning, distribution of authors and institutions, and empirical research as well as in regions still exists. This paper suggests integrating the "Post-Curriculum-Competition-Certificate" model with the teaching design in class and social activities out of class to deepen the teaching reform and cultivate students.

1 Introduction

With the high-speed development of economy, the upgrading of industrial structure, there is a developing requirement for high-quality technical professionals and consummate craftsmen in all fields. Vocational education, the main type of cultivating technicians, shoulder the responsibilities of cultivating high-quality personnel and promoting vocational education to demonstrate its full potential. A set of guidelines on promoting the high-quality development of modern vocational education has been released by the Chinese central authorities to guide the government in establishing a modern vocational education system.

1.1 "Work-integrated Learning" Model

Work-integrated Learning (WIL), also known as work-based learning, workplace learning or internship learning, is renowned for providing a bridge between "theory" and "practice" that fosters "employable graduates" (Ville Bjorck, 2021). According to WIL, vocational education must adapt to the requirements of society to prepare students for the job market. Since work-integrated learning can develop disciplinary and professional knowledge, graduate capabilities such as critical thinking, problem-solving skills, communication and interpersonal skills, work readiness, self-esteem, and confidence (Smith C, Worsfold K., 2015; Tony Wall, Ann Hindley,

2019). However, work-integrated learning, especially in health care settings during certain circumstances, has been disrupted in many ways, such as education, workplaces, and personal lives (Sarah.J.Prior, Phobe Griffin, etc., 2020). Work-integrated learning has been challenged in the past years (Sarah.J.Prior, Phobe Griffin, etc., 2020).

1.2 "Post- Curriculum-Competition-Certificate" Model

The development of virtual projects has issued an appeal to the competition and certificate during the teaching procedure. Sophisticated and demanding technology calls for virtual practice in various jobs. Some cutting-edge research boost teaching reform due to its high costs and high risks.

Guidelines on promoting the high-quality development of modern vocational education proposed the "Post- Curriculum-Competition-Certificate" Model to build a modern vocation education system. "Post" originates from work-integrated learning. The post contains more than just work ethnicities, but also diverse kinds of jobs since the work sharing is specialized. "Curriculum" means the course design should adapt to the post, integrate the competition skills and certificate requirements in vocational education. "Competition" refers to the competitive test relating to the post. It is post-oriented, but it tends to bridge up the teaching with the posts to some extent. "Certificate" prepares students for careers. Not like competition, certificate claims the lowest requirement for a post.

2 The Current Research of "Post-Curriculum-Competition-Certificate" Model

2.1 Data Source

The China National Knowledge Infrastructure is the leading scientific citation search and analytical information platform that has been widely accepted by academic studies in China for many years. It is a tool of research for various scientific tasks across diverse knowledge domains and a dataset for large-scale data studies.

This paper investigates the core selection of CNKI by using "Post-Curriculum-Competition-Certificate" as retrieval objects. In order to find out the documents related to the topic from all fields, fuzzy retrieval has been used. There are 1367 documents in total, of which 1335 are related to the topic, including the "Post-curriculum-certificate-competition" mode, teaching design of a course and the teaching mode under the "1+X" certificate system. And there are 32 documents related to the loose-leaf textbook and the building of the internship base.

2.2 Data Collection

This research studies the documents in "Post-Curriculum-Competition-Certificate" mode published from "2010-09-10" to "2023-11-14". "Post-Curriculum-Competition-Certificate" is the key word for the search. The 1367 documents from CNKI are exported with full records and cited references.

Number of Documents

Among the 1367 documents, 24.81% focus on the integration of post, curriculum, competition, and certificate. 16.16% focus on the cultivation of students based on the "Post-Curriculum-Competition-Certificate-Innovation" mode. The topics also focus on the cultivation mode of talents, vocational school, teaching reform, comprehensive cultivation, curriculum and "1+X" certificate system covers various subjects like vocational education, computer application technology, accounting, trading, medicine, pre-education, traveling and internet, etc.

Cooperation Among Authors in Different Regions

Disciplinary teaching, course research, and applied research rank the first three in research. The research papers are written by different authors from different areas of China. Jiangsu, Guangxi and Guangdong are the provinces investigated broadly in "Post-Curriculum-Competition-Certificate" mode since they have more documents ranging from integration, course resources, cultivation mode and teaching standard, etc.

Years	Gansu	Qinghai	Xizang	Xinjiang	Neimenggu	Ningxia	Beijing	Shanghai	Tianjin	Chongqing
2021	2			3	1		3		1	2
2022	17	2		4	4	2	15	2	28	10
2023	25	1	2	7	7	5	13	3	25	22

Table 1. Documents of different provinces in the past three years

Years	Heilongjiang	Anhui	Fujian	Jiangxi	Shandong	Hubei	Shanxi	Sichuan	Guizhou	Yunnan
2021	2	2	6	2	5	2	1	3		1
2022	10	17	14	8	8	37	6	7	6	2
2023	12	16	19	11	33	29	9	19	17	14

The authors and institutions scattered all over the country. In the east of China, Jiangsu, Guangdong and Zhejiang provinces pay attention to the "Post-Curriculum-Competition-Certificate" mode most according to their requirements for skilled talents. In the middle and west of China Guangxi, Hunan, Henan, Shaanxi, Gansu province and Chongqing focus on the cultivation of skilled talents to upgrade their economies. Tianjian, Shandong, and Hubei follow the step. The institutions of the authors show that different people pay the same attention to this topic. And the vocational schools or colleges are the main institutions for the research. Some

normal universities that pay special attention on the course design or investigate vocational development contribute some documents.

Most of the authors in vocational colleges and institutions have a similar understanding of the "Post-Curriculum-Competition-Certificate-innovation" mode. The investigation of highly skilled talent cultivation with the integration of "Post-Curriculum-Competition-Certificate-Innovation" mode written by Zeng Tianshan was cited most frequently in 2023.

But Figure 1 shows there is no connection or close connection between the authors. This means the authors are doing their research without cooperation.

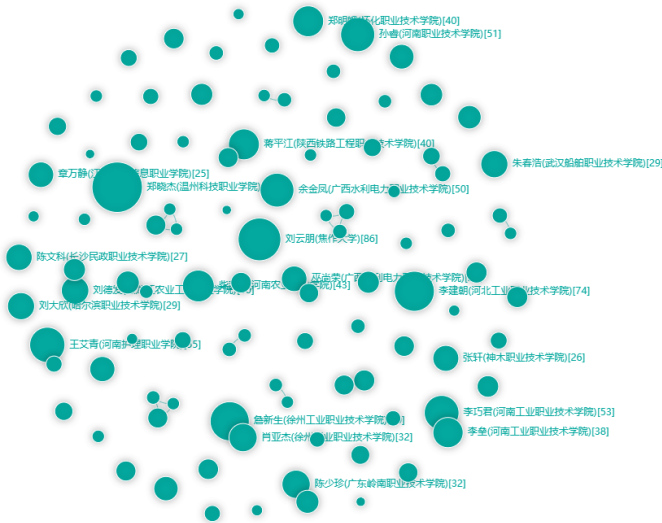| Years	Jiangsu	Hunan	Guangxi	Guangdong	Zhejiang	Hebei	Henan	Shaanxi	Liaoning	Jilin	Hainan
2021	8	8	11	7	4		4	2	1	2	1
2022	55	41	35	31	20	5	11	21	1	3	2
2023	80	50	63	59	34	13	43	42	14	12	10

Figure 1 Distribution of authors and institutions

Researches on "Post- Curriculum-Competition-Certificate"

Researchers show more interest in their jobs, they chose vocational education as the

main aspect of doing research. And in the vocational education, the path and purpose are the two things attract their attention. Researchers investigate on the path of teaching reform to upgrade their teaching. They focus on the mode to cultivate students in the class as well as out of class. They bring in a certificate system to train the students for the jobs and build up specialty groups to enhance the development of the academy in the process of "teacher-teaching method-teaching material" reform. The teaching contents, courses, and teaching strategies are the key points in the reform. Only by improving the teaching methods or contents can education make a big difference in shaping a person.

Table 2. Top key words with frequencies

Count	Keywords	Count	Keywords
57	Vocational education	8	Construction of course system
41	Teaching reform	8	Teaching strategy
33	Cultivation mode	8	Cultivation purpose of talents
20	Certificate system	8	Implementation path
18	Specialty group	7	Technical skills
15	Teacher-teaching method-teaching material	6	Ability for post
12	Training	6	Cultivation of talents
10	Teaching content	6	Path
10	Professional core course		

2.3 Data Analysis and explanation

Visualization and Excel are used to analyze the data. From the data, there is a surge in research numbers. Student-oriented learning, the distribution of authors and institutions and the research contents are the deficits of research.

The Surge of Researches

The investigation in "Post-Curriculum-Competition-Certificate" mode starts in 2010, but the documents were published in the following ten years in all. But with the promulgation of guidelines in 2021, the number of documents published in that year was 74, and the number surged to 466 in 2022. In the past 11 months, there have been 727 related published documents. That's more than half of the documents in total.
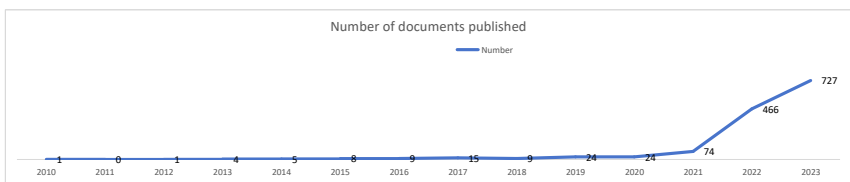

Figure 2. Documents published in the recent 13 years

According to the rising number of documents and the requirement to enhance education power, the related documents may keep surging in the next year. The investigation may focus on intensive development as well as the teaching mode and strategy.

Student-oriented learning

The cultivation mode ranks only third according to the frequencies of key words. Vocation education is a big concept with a lot of aspects, including curriculum, teaching reform, training base, certificates and qualifications. Whatever we talk about in vocational education, students should be the first priority. Student-oriented learning is a learning-focused and student-focused method that can be used in our teaching reform to cultivate students and prepare them for the future.

Students are the main characters in learning. It is crucial to adapt the teaching design to the students' requirements and realities. Student-oriented learning means to design the course based on students' requirements and level, to carry out the activity based on students' interests and characteristics, to evaluate the course or performance based on students' cognition and the law of development, and to bridge in the students to the reality and jobs. The curriculum should not only get integration involved, but encompass the cultivation of it.

Distribution of authors and institutions

The authors mainly come from vocational colleges and institutions. They tend to focus on the contents they are good at, like teaching design, teaching reform, and the cultivation of students while paying less attention to the implementation, evaluation and follow-up surveys. The focus on teaching-related topics makes further research more difficult.

Authors from different colleges or institutions investigate different topics in vocational education. However, Figure 1 seldom shows links among the researchers or institutions. Vocational education, valued the same as higher education, should cover the cultivation of students as well as serve the local economy. In order to better cultivate highly skilled people for the development of our country and serve the local people and economy, the authors from vocational colleges and institutions should strive for the building of the vocational education system through widespread and deep cooperation.

Research contents

By far, the researches concentrate on literary review of vocational education development, course design, cultivation purpose of talents, etc. How the teaching design is being implemented in vocational colleges or in what way teaching design have an effect in vocational colleges is still not mentioned in the researches. Questionnaires about the content should be designed to collect data for the reaction to implementation. The learning efficiency should be tested according to the data analysis. And the follow-up survey to make sure whether the "Post-Curriculum-Competition-Certificate" mode suits vocational education and to

what extent promotes students' growth.

Only through empirical learning can the research be admitted by the public and the advice taken by the officials. The "bottom-up" mode presents the rules and requirements of academicians in vocational education. And the data in empirical learning empowers the academicians as well as the papers.

3 The Utilization of "Post-Curriculum-Competition-Certificate" Model

Though the "Post-Curriculum-Competition-Certificate" model has been designed and used in the teaching procedure, it also needs to cover teaching reform, teaching strategy, certificate systems, etc. Students-oriented learning urges activity, ethnicity and training in and out of class.

3.1 The integration of "Post-Curriculum-Competition-Certificate" Model with teaching design

The post-oriented teaching design focuses on the cultivation of skills or qualities of being an employee, which is not qualified in modern society. Before making the teaching design, investigations on the requirements and needs of the company should go first so that the objectives are more practical. Curriculum reform should take the post needs as well as knowledge and skills into consideration: build a system and divide the skills into different courses and different levels, organize activities for skill accumulation and evaluate the mastery of knowledge. Competition is settled to develop students' psychological qualities and examine their skill proficiency levels. A certificate is the lowest requirement for the students but an invitation to the company. The certificate system can be separated and melted into the course learning to help students know the certificate and prepare them for the certificate.

3.2 The integration of "Post-Curriculum-Competition-Certificate" Model with cultivation

Foster virtue through education is the core of modern education. In September 2018, General Secretary Xi noted at the National Education Conference that moral education should be incorporated in ideological and ethical courses, knowledge acquisition, and social practices; it should run through basic education, technical and vocational education, and higher education (Wang Fang 2022). In order to help students stick to their jobs, ethnics and moral education should bring in appropriately in the curriculum design. Extracurricular activities should be used in the course design to enrich students' lives, enhance the "Post-Curriculum-Competition-Certificate" model and empower students values. Practice training should be used to further develop skills.

4 Conclusion

This study illuminates how authors from China conducted research on different aspects of the "Post-Curriculum-Competition-Certificate" mode in 2010. It also shows the

main interesting points chosen by the researchers in vocational education. With the intensive development of vocation education, researchers tend to focus on empirical and intercourse learning that will deepen the significance of vocational education, improve the efficiency of teaching, and strengthen the cultivation of students.

The given data in this document derives from CNKI and covers the last thirteen years' researches. The data shows us the trend in "Post-Curriculum-Competition-Certificate" mode as well as the deficit of research. Authors may focus on various contents and empirical research for evaluation in the future.

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