

# Research on the Significance and Path Optimization of the Cultivation of Maker Education Based on Multiple Interactions

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**Keywords:** Higher vocational colleges; Personnel training; Maker education; Multiple interactions

**Abstract:** Higher vocational colleges in our country have seen an overall increase in the number of students. The efficiency of running schools and the level of personnel training have been greatly improved. They have gradually matured from specialty setting to enrollment scale, and have also been reformed and innovated in personnel training. As a higher vocational college, it should combine vocational education with the characteristics of higher vocational students, carry out Maker education, and highlight the characteristics of higher vocational education. Maker education is based on hands-on practice to cultivate learners' innovative consciousness, innovative thinking and innovative ability, and aims at promoting learners' all-round development. Maker education is a systematic project, which needs to be carried out in coordination with various aspects to train students' ability to solve problems, continuously improve students' critical thinking, and finally realize the teaching goal of improving students' all-round quality. Based on the perspective of multiple interactions, this paper discusses the significance and path optimization of Maker education's integration into higher vocational talents training.

## 1. Introduction

Higher vocational education has become the focus and hot spot of social attention, and is facing development opportunities and severe challenges. The overall amount of higher vocational colleges in China has increased, the efficiency of running schools and the level of personnel training have been greatly improved. From professional setting to enrollment scale, they have gradually matured, and they have also been reformed and innovated in talent training [1]. Judging from the quality of students and the current situation of higher vocational colleges, how to ensure the quality of talent training in higher vocational colleges is a very important issue. It is directly related to the recognition of the cultivation of talents in higher vocational colleges and the survival of the school itself. Development [2]. Maker education uses curriculum as a carrier to integrate the expertise of various disciplines to cultivate students' curiosity and creativity. At the same time, it provides students with space for development, creates a good environment and realizes resource sharing. Maker education combines learning motivation and learning scenarios. By letting students “do” to discover problems and then solve problems, that is, “do it yourself into reality”, students realize their value by “doing” [3]. Maker education needs to be completed by building a certain amount of Maker space. Maker space can be relied on to better complete Maker education.

Carrying out quality evaluation of talent cultivation is a process of judging the actual or potential value of teaching activities, which can promote the connotation construction and reform and development of higher vocational colleges. Maker education creates a practice site for students. Through the combination with the new era of high-tech innovative education mode, it can mobilize the enthusiasm of college students, cultivate their innovative and entrepreneurial awareness, and finally realize the goal of cultivating innovative talents for the society [4]. This model is of great practical significance to cultivate students' innovative thinking. Through the combination of project and strength learning, it combines hands-on practice with theoretical learning, boldly breaking through the shackles of traditional education in the past [5]. Maker education is based on the innovation of training learners' consciousness, thinking and ability through practice and aims at promoting learners' all-round development. Its basic concept coincides with the basic connotation of innovative talents, providing new ideas for the cultivation of innovative talents in higher vocational

colleges [6]. The practice of Maker education will create great value for individual students, educational reform and national talent strategy. Based on the perspective of multiple interactions, this paper discusses the significance and path optimization of Maker education's integration into higher vocational talents training.

## 2. Significance of Maker Education Integrating into Higher Vocational Talents Training

The exploration and research on the integration of creative education into talent training mode in higher vocational colleges is an inevitable choice for the integration of vocational education and innovation-driven strategic development. There are still some misunderstandings in the construction and implementation of the talent training quality evaluation system in higher vocational colleges. From the development concept of Maker education, it mainly relies on Internet information technology and completes communication on such a platform. Many higher vocational colleges use the advantages of Maker platform to integrate the advantages of innovative education with the advantages of experiential education. Most of the existing evaluation system of talent cultivation quality in higher vocational colleges evolved from the development of traditional general higher education, and the implementation process of evaluation still remains in the original ideology [7]. In traditional teaching, teachers teach according to teaching materials, students passively accept learning, students' problem consciousness is not strong, the problem level is not high, which virtually suppresses students' innovation. Higher vocational education emphasizes that students should use their hands to operate more, and at the same time, they should use their brains to think more and use theoretical knowledge to guide practice [8].

For the education system, Maker education, as a new method and a new approach, its organization and implementation will promote great changes in education in our country and realize truly innovative education. As shown in Fig. 1, the architecture of Maker education personnel informatization construction is shown.

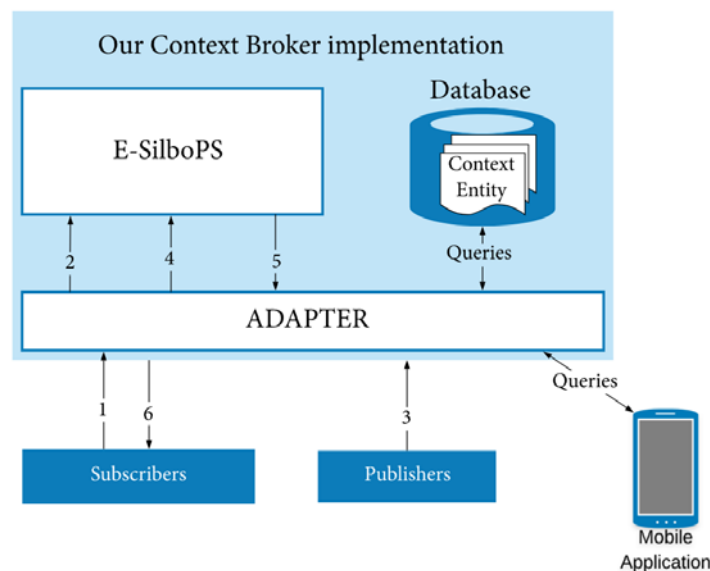


Fig. 1 Maker education talent information construction system structure

For curriculum reform, Maker Education plays a pioneer role in basic education reform. For individual development, Maker education liberates students' nature and turns theory into practice. Maker education will change the original mode of thinking, boldly break through the shackles of traditional mode of thinking, and provide space for students' independent innovation. Maker education drives basic curriculum reform. Maker education curriculum reform leads Maker culture and Maker economic development, and helps to build a complete curriculum system. The purpose of personnel training quality evaluation is to carry out scientific and standardized construction of the school personnel training process and promote the improvement of personnel training quality [9]. Maker education emphasizes that students should learn in creation, think more while doing

things, let teachers talk less about theories, let students experience more hands-on, and let students truly transform what they learn into their own abilities. Maker education will promote the transformation and development of China's single talent training model to a diversified direction and help train a large number of scientific and technological innovative talents.

### 3. The Way of Maker Education Integrating into Higher Vocational Talents Training

#### 3.1 Building a Good Maker Atmosphere

Maker education in higher vocational colleges cannot be separated from the construction of Maker culture. A good Maker culture cannot be separated from the encouragement and advocacy of government policies. It is also influenced by the attitude of higher vocational colleges towards Maker education. Innovative talents in higher vocational colleges refer to applied technical and technical talents with innovative elements based on higher vocational education and on the basis of creative consciousness, creative thinking, creative ability and creative quality. Higher vocational colleges, as practical technical talents with high level and high quality, are highly compatible with Maker education. As a Maker education focusing on open thinking, it guides students to look at problems from a new perspective and find ways to solve them. Compared with the traditional education mode in the past, it pays more attention to directionality and pioneering [10]. Maker education for students is also a great challenge to professional teachers. Maker education often needs to integrate knowledge of multiple courses and requires teachers to have certain project experience.

When carrying out Maker education in higher vocational colleges, they should also adopt the innovative and entrepreneurial concept of Maker education to train students. In the learning echelon, the teacher assigns the senior students extra-curricular professional project tasks while the senior students assign the junior students less difficult tasks. In this process, improve students' self-study ability and train students' ability to find and solve problems. Many university teachers have narrow ideas and insufficient understanding of the new curriculum in their knowledge of the curriculum field. There is a lack of understanding of the current situation and trend of the curriculum reform of talent cultivation. For example, Table 1 shows the survey of teachers' information integration management curriculum areas.

Table 1 Survey of teacher information fusion management curriculum

	Curriculum view	Course resources	Course implementation	Course evaluation	Course reform
The average score	8	9	8	7	6
Correct rate(%)	63.1	58.7	61.7	50.9	60.1

The quality-oriented education constantly advocated in China is also the teaching aim of Maker education, and students are in the central position in this education mode. In the process of operation, students often encounter problems of one kind or another. Students who do not want to think more seek teachers to solve problems, but more students want to solve problems through their own efforts and try to find the best way to help them solve problems. The teacher-student relationship in Maker education is a guiding relationship. Students can find their own characteristics and points of interest and find their own learning methods in this mode. Based on Maker space's openness, it can create new online and offline communication modes, show Maker products and achievements to the public, obtain feedback from users in time, and make corresponding improvements. Colleges and universities should improve the construction of campus informatization, ensure that information covers every corner of the campus, and build an intelligent learning environment with the help of information platform. Can use digital campus, intelligent campus or intelligent campus, with the aid of virtual laboratory, learning space, realize online and offline independent learning, break the limitation of learning time and space, provide Maker

education atmosphere for Maker to innovate practice, exchange and share.

### **3.2 Optimizing and Reforming Maker Course System**

Maker course is the foundation of Maker education and the development trend of Higher Vocational Education in the future. On the basis of the current curriculum system of talent cultivation in Higher Vocational colleges, the Maker curriculum system should be integrated with the contemporary information technology, emphasizing the improvement of students' practical operation ability. For students and entrepreneurs, offline operations will increase their confidence, while giving appropriate incentives to turn their ideas into reality. Vocational and technical college students have no pressure to enter higher education. The pressing pressure is employment or entrepreneurship. Therefore, they are more motivated to participate in Maker Space and Maker Education activities. In making education for students, teachers should prepare students' questions in advance. They can provide some reference materials or link information of online resources for students. At this stage, the Maker model implemented in our country is still in the primary stage. From the actual operation point of view, teachers have failed to handle the role relationship between teachers and students, so it is still difficult to require teachers under Maker education model to be student-oriented. Higher vocational colleges should train Maker teachers according to the development needs of Maker education and train Maker-type teachers who combine full-time and part-time jobs.

The essence of Maker education is to cultivate innovative needs, be keen on creativity, design and manufacturing, and enhance students' practical ability, inquiry ability and creativity. Guiding teaching method can help students find self-confidence and form independent thinking mode, which is helpful for students to develop their personal qualities in an all-round way and cultivate their originality. In order to train the team to promote Maker education in higher vocational colleges, it is necessary to have advanced training concepts, promote students' learning based on creation, and emphasize that learners should integrate into the creation situation and put into the creation process. Innovation consciousness refers to a strong desire to create, a keen awareness of problems, and the motivation to be good at capturing the real problems that need to be solved in the process of social development and individual life. As Maker education is a new thing with many creative activities and strong comprehensiveness, creating a team of Maker teachers is the key to Maker education. While combining with professional characteristics, colleges and universities should construct a reasonable Maker course, adhere to the student-centered principle, and stimulate students' creative thinking and creativity through discussions between teachers and students according to the problems existing in students' actual operation.

### **4. Conclusion**

The application of Maker Education in higher vocational talents training plays an important role in training innovative and comprehensive talents. In China, Maker Education is still in the exploratory stage, there is no fixed model and no mature evaluation criteria. Through making education for students, this paper puts forward the strategy of optimizing the training program of talents and reconstructing the curriculum system. If we carry out continuous Maker education practice among the students in Higher Vocational colleges, it will play an important role in the development of students' professional knowledge, practical ability, innovation ability and innovation spirit. The cultivation of innovative talents can not be separated from the innovative guidance of Maker teachers. The lack of Maker teachers is the bottleneck of the current development of Maker education. The Maker teacher is not only a Maker who trains students to practice innovation, but also a Maker project. Higher vocational colleges should combine their own school-running characteristics, offer unique Maker education courses, employ experts from the industry to write teaching materials, and carry out basic courses, practical courses, elective courses and comprehensive innovative project courses around Maker education. When optimizing the personnel training scheme, Maker education courses can be specially set up or the contents of Maker education can be integrated into the existing curriculum system to ensure the smooth

implementation of Maker education.

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