Research and Exploration of "Creator" Education Model Based on Applied Courses

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Abstract. Under the background of education transformation and development, how to make full use of teaching hardware and software, teachers and various preferential policies for colleges and universities, with the application of curriculum construction as the starting point, combining curriculum with Maker education To realize the maker teaching of the application-oriented curriculum, and to create a maker-based education based on the application-oriented curriculum is a maker education model suitable for university research and development. The author pays attention to the ability of innovation, reconstructs the curriculum system; trains the makers of teachers, mixes the teachers' team; builds the maker space, fosters the maker culture; strengthens the policy guarantee, and elaborates the four aspects of the resources. The course's Maker education model is researched and discussed.

Introduction

At present, all kinds of maker spaces in the society provide a “constructivist” creator education model based on digital technology for makers. This model is mainly applicable to the open Maker learning environment, and the makers mainly share through network technology. Learning and innovation in ways such as communication between platforms. Under the background of the transformation and development of education, how to make full use of the resources of teaching software and hardware, teachers and various preferential policies for colleges and universities, with the application of curriculum construction as the starting point, combining curriculum and Maker education to achieve The maker teaching of applied courses and the creation of application-based courses are the maker education that the author thinks is suitable for university research and development. In order to truly take root in college education, in addition to the excellent practice environment and maker culture atmosphere of the maker center or maker space, the “applied curriculum” is the only way for the development of maker education. Xi'an Peihua College has been exploring the creator education for many years. With the completion of the Xi'an Peihua College's Maker Center, the comprehensive development of Maker Education in the school is already in full swing and ready to go. The maker education model based on the application-based curriculum will lead our school to a new level in innovation and entrepreneurship education.

Focus on Innovation Ability and Reconstruct Curriculum System

More than one course is required to carry out Maker education. It is a combination of courses based on different fields. The primary course focuses on basic skills training, such as electronic technology, programming, and basic application of computer software. Etc. Intermediate courses focus on more complex skills training, such as advanced programming, mathematical modeling, circuit design and equipment assembly; advanced courses focus on comprehensive innovation, training students' teamwork ability, and personal strengths. Create innovative products and solutions.

However, the traditional curriculum system is based on the disciplinary structure of knowledge storage. It is not designed according to the model of personal skills training or even the cultivation of innovative talents. In the systematic implementation of maker education in colleges and
universities, the structure of the traditional curriculum system should be constructed first. To create an architecture based on the application of knowledge and innovation capabilities.

For the curriculum unit, the systematic structure design based on the work process is an effective way to improve students’ practical ability. According to the systematic thinking of the work process proposed by Professor Jiang Dayuan, more than three learning situations are designed according to a certain carrier, different learning situations. Repeating different work steps, the work content is gradually complicated, and the innovation ability requirements are continuously improved. For example, in the design of learning situations, the last learning situation can be designed as a typical innovation capability improvement project.

Cultivate the Maker Teacher and Mix the Faculty Team

Teachers are the main body of educational activities. For colleges and universities, the creation of Maker education for many students is inseparable from the leadership of teachers. Therefore, make full use of the existing faculty in universities and provide appropriate training for existing teachers. Enhancing and building a faculty-oriented faculty is a key task for colleges to carry out Maker education.

Since the cultivation of the makers requires multi-disciplinary ability requirements, and the ability of a teacher is not all-inclusive, it is one of the main principles for building a faculty team for colleges and universities to build an interdisciplinary and teacher team that focuses on different competency units. More importantly, the practical skills of college teachers may not be the latest, and they may not meet the requirements of the makers. Therefore, industry experts with senior professional backgrounds should be widely involved in the team of teachers in colleges and universities. Come and carry out various special trainings for existing teachers, carry out the teaching and research activities of the makers, stimulate the enthusiasm and potential of the teachers, master the strategies and skills of the makers, and fully devote themselves to the practice of maker education.

Building a Maker Space and Cultivating the Maker Culture

Maker Space is one of the main places for colleges to carry out Maker's teaching activities, and it is also the main place for maker communication, practical operation and product research and development. Therefore, building a campus maker space is a major problem facing colleges and universities in the creation of maker education. The construction of the creator space in colleges and universities should be based on the actual needs, the innovation process of the students and the integration of practical learning, open to the students of all majors in the university, and keep in touch with the Maker Space in the society, interconnection, resource sharing, complementary advantages. Xi'an Peihua College Founder Center is one of the approved Shaanxi Yunchuang Space Incubation Bases in 2016. Based on the prototype of the Fablab (Fabrication Laboratory) project, it is an open-ended maker education, college students' innovative engineering training, and technology. Innovative experiment, technology entrepreneurship training, university students' innovation and entrepreneurship training program project incubation, digital manufacturing and flexible production, and other comprehensive creative space. Xi'an Peihua College's creator center has become an excellent infrastructure environment for our school's Maker Education.

The origin of maker culture is hacker culture. "Openness, sharing, decentralization and worship of technology" is the core of maker culture. For historical reasons, China does not have the soil of hacker culture, and lacks the ideological foundation of this ideology. Therefore, it is difficult to cultivate a true sense of the maker culture in colleges and universities. But with the increasing scale of Maker Education, creators will gradually realize the connotation of Maker culture, and universities need to strengthen their emphasis on the concept of “openness”, because only open, open source software, open source hardware The foundation exists to have the soil cultivated by the maker.
Strengthen Policy Support and Coordinate Resources

In 2015, the General Office of the State Council issued the “Guiding Opinions on Developing the Space for Promoting Public Innovation and Entrepreneurship”, and promoted the innovation and entrepreneurship work to the national level. Subsequently, the makers' organizations such as the maker space in various provinces and cities also sprung up everywhere. Maker education requires cross-border cooperation between government departments, academia, industry and Maker organizations to form synergies. For the creators to be cultivated, only the deep-rooted maker culture penetrates into the blood of every maker to cultivate a large number of truly meaningful makers.

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