

Talking about the Mixed Learning Based on the Vision of New Engineering

Nana Feng

College of Information Technology Engineering, Tianjin Vocational and Technical Normal University, Hexi 300222, China.

Abstract

The introduction of the new engineering section has created a craze for the development of education in 2016, which has pointed out the direction for the future development of education. The article expounds the mixed learning based on the vision of new engineering, using literature research method, comparative study and talent requirement today.

Keywords

New engineering; mixed learning; mixed teaching; talent training.

1. Preface

Under the support of new technologies such as the Internet, Internet of Things, big data, and artificial intelligence, the new engineering team is actively responding to a new round of technological revolution and industrial transformation, supporting a series of national strategies such as service innovation-driven development and China Manufacturing 2050. This new engineering bases on the new industries and new economies. Since the introduction of the new engineering concept in 2016, the Ministry of Education launched the "Fudan Consensus", "Tianda Action" and "Beijing Guide" and "New Engineering" in February 2017 in order to strengthen the construction of new engineering and respond to the national call. Documents such as the Notice of Research and Practice have pointed out the direction for the future development of engineering education and laid the foundation for the reform and innovation of education.

Due to the rapid development of new economy, new industry and new technology, the shortage of new generation information technology talents represented. These talents major in artificial intelligence, big data, intelligent manufacturing and computer and software engineering. In order to fill this talent gap, the new engineering research and practice carried out three research pilots, which are university groups, engineering superiority college groups and local colleges and universities. It is imperative to strengthen new engineering construction. In order to meet the future development direction of new engineering, new engineering construction puts forward new requirements for the cultivation of talents in colleges and universities, which asks school to cultivate the "new" requirements put forward by the new engineering disciplines, and cultivate scientific and technological engineering with strong innovation ability, fast adaptability and strong practical ability. Talents, reforming the teaching model according to social needs, and changing the teaching methods.

2. Model Construction

2.1. New Engineering Concept and Connotation

As a new engineering education, the new engineering science has no change in the nature of educating people. That is, the fundamental task of new engineering education is talent cultivation, but only in the face of the new environment, the concept of educating people has

changed [1]. The new engineering emphasizes the reform and innovation of educational concepts and teaching models in terms of personnel training to meet the needs of industrial development.

The connotation of the new engineering department is taking Lidede people as the guide, taking the response to change and shaping the future as the construction concept, and inheriting and innovating, intersecting and integrating, coordinating and sharing as the main way to cultivate future diversified and innovative outstanding engineering talents [2].

2.2 New engineering characteristics

Combining the new engineering concept and connotation and by the comparative analysis of "new engineering" and "old engineering", the author believes that the new engineering should have at least the following four characteristics:

1).Leadive

The new engineering department has a leading role in the development and professional construction of other disciplines, filling the gap between the composite talents, the new generation of information technology talents and the high-level talents, pointing out the direction for the future development of engineering education, and providing new engineering majors for university construction. The idea has laid the foundation for the development of the industrial industry.

2).Convergence

The new engineering department emphasizes the intersection and integration of various majors. The new engineering construction is not only a separate project for engineering education, but a development and reform of the entire education field. New engineering is often formed by the infiltration and expansion of multiple disciplines. New engineering education emphasizes the transformation of educational methods and the transformation of teaching thinking. It is a reform of traditional education and a kind of education for colleges and universities. challenge.

3).Innovative

The construction of new engineering is inseparable from the cultivation of innovative talents, and the cultivation of innovative talents requires innovative teaching models and educational concepts. The "new" of new engineering refers to innovation from technology, industry and mode, and is the concept and teaching of education. The reform and innovation of the model, the innovation is embodied in five aspects, namely the new model, the new system, the new quality, the new concept and the new structure. In the development and reform of engineering education, the innovative talent training mode is the main task of the new engineering.

4).Practical

Practicality is especially important to realize the transformation of new engineering construction from concept to action [3]. Through the interpretation of the new engineering concept and connotation, the author believes that the education under the new engineering background is in line with the OBE education concept. It is an education model based on learning output, with student development as the center and output as the orientation to cultivate practical ability. Strong talents are the goal. Traditional education emphasizes the theory and practice, and the education for learning is no longer suitable for the current rapidly changing environment. Today's education pays more attention to the output of knowledge rather than the input of knowledge, and requires the learner to internalize the knowledge-output process.

2.2. Requirements for Education and Teaching in New Engineering Construction

Zhang Daliang, director of the Department of Higher Education of the Ministry of Education, proposed six issues for the construction of new engineering. He believed that the construction of new engineering should adhere to the problem orientation and achieve six questions: ask the industry to build a professional, ask the technical development to change the content, and ask the school to push reforms. Ask students how to change their minds, ask internal and external resources to create conditions, and ask international standards for frontiers [4]. Combining the concept of new engineering education with the connotation of new engineering, the author believes that to strengthen the construction of new engineering and promote the development of education, we must start from the following aspects.

First of all, the construction of new engineering should focus on the development needs of the industrial sector with the new economy as the background. According to the demand of talents in the new economy and new industries, we will cultivate science and engineering engineering talents with strong practical ability, strong innovation ability and strong cross-border capabilities to fill the next generation information technology industry represented by big data, artificial intelligence, cloud computing and other disciplines. Talent gap.

Second, the construction of new engineering should focus on student development. The teaching under the new engineering construction is still the student-centered, teacher-led dual-master teaching, but the focus is not on the teacher's "teaching", but in the student's "learning", the students enter from the lower-level learning (repetition memory). Go to high-level learning (understand thinking) to achieve the process of internalization—absorption to output—innovation, focusing on the needs of students' future development.

Finally, the construction of new engineering should rely on technology. With the rise of "Internet +", new technologies emerge in an endless stream. "Internet + education" has become an inevitable trend in the field of education. The development of new technologies based on the Internet has promoted the progress and transformation of learners' learning methods. The environment of "Internet + Education" satisfies the individualized needs of learners' development and provides more choice and convenience for learners' learning.

3. Mixed Learning Based on the Concept of New Engineering

3.1. Current Status of Mixed Learning Research

In recent years, hybrid teaching has become a hot topic of research and practice. Take CNKI as an example. Since 2005, there have been 2,293 papers on "mixed teaching", of which 1,919 are mixed teaching modes, and reached a peak in 2018 (1,618) [5]. Most articles propose a hybrid teaching model based on the practical application of a course or discipline, but there are few real attention to hybrid instructional design [5]. The broadest definition of blended learning is the combination of traditional learning and e-learning, but how it should be appropriate in the "appropriate" time by applying "appropriate" learning techniques to the "appropriate" learning style. "Learners pass the "appropriate" ability to achieve optimal learning results. There are few articles to elaborate on this. In the teaching process, mixed learning still only stays in the mix of online and offline.

Really mixed learning is not simply a combination of online learning and traditional classrooms. Instead, teachers combine the advantages of online learning and face-to-face learning to meet the learning needs of students, and ultimately realize the individualized learning needs of learners. Learning enables teachers and students to better interact and pay more attention to the individual needs of student development.

3.2. Hybrid Learning Under the New Engineering Concept

The hybrid learning under the new engineering education is no longer a mixture of simple learning methods, but a mixture of teaching methods supported by different teaching resources, teaching environment, teaching forms and teaching theories according to the needs of learners. Throughout the teaching process, the student-centered, teacher-led teaching model is still being promoted. In response to the individualized learning needs of the students, the teacher should thoroughly understand the learning needs and characteristics of the learners through the preliminary survey, and then conduct corresponding learning. The creation of the environment, the choice of learning content, the choice of learning media and the design of the learning process, etc., the individualization is the inherent requirement of cultivating the ability of innovation and entrepreneurship, cross-border integration, and also the learning and thinking habits of engineering education objects in the new era. Response [7]. The hybrid learning teaching model is based on the new concept of talent training, and the innovation of traditional classroom teaching mode and online teaching mode. In view of the current situation of mixed learning and the requirements of new engineering concepts for talent training, the author believes that the mixed learning model mainly includes a mixture of teaching resources, teaching forms, teaching environment and teaching methods.

Mixing teaching resources

Resources and platform construction can effectively promote the integration of online and offline learning [8]. The teaching resources include online learning resources and textbook materials. The learners can search for relevant information on the subject before and after learning related knowledge, and can also conduct in-depth learning on relevant learning platforms, for example, typical foreign countries. The online learning platform includes EDX and Coursera, and there are Chinese universities MOOC and Netease cloud classrooms.

Mixed teaching forms

The teaching form is not limited to the teacher's explanation, the student accepts the learning, but according to the individual needs of the learner, combined with online resources and offline resources, appropriate teaching design, using modern teaching methods to make students Interactive learning online and offline to stimulate students' interest in learning and creative thinking, so the learning form is free and flexible for learners.

Teaching environment mix

The teaching environment is not limited to the classroom, but it is composed of a network environment and a physical environment. The network environment allows learners to be free from time and space constraints. As long as there is an online learner, they can learn anytime and anywhere. Teachers and students can interact offline and online, enhancing interaction between teachers and students.

Teaching method mix

The mixed learning fully benefits from the network and combine online learning with traditional classrooms. There are real-time and non-real-time, synchronous and asynchronous teacher lectures, as well as discussion and learning, collaborative learning, group learning based on the concept of "cooperation", and self-learning around the network [9].

4. Summary

In summary, hybrid learning based on the perspective of new engineering is no longer a simple mix of online and offline forms, but it bases on the future development needs of learners and the needs of industry to achieve the learning effect expected by the learners, so as to cultivate scientific and technological engineering talents with strong innovation ability and strong

practical ability, so as to achieve the purpose of integration of production, teaching and research.

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