

# Security Engineering Professional Education Reform Based on Cloud Information & Data in the Background of New Engineering

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## Abstract

At present, a new round of scientific and technological revolutions and industrial changes are accelerating in the world, and the competition for comprehensive national strength is becoming more intense, while engineering education is closely linked and supported by industrial development. The problems and shortcomings in the existing teaching mode have seriously hindered the construction of the safety engineering profession in the context of new engineering. Therefore, the existing teaching mode must be improved. Based on the problems existing in the reform of the undergraduate course of safety engineering under the background of new engineering, the teaching reform model of safety engineering based on cloud information & data is established. Including: 1) cloud information platform construction; 2) data model construction; 3) internet + based collaborative innovation improvement model construction. The new teaching model of cloud information and data is explored and researched accordingly, in order to provide new ideas for the safety engineering and related engineering majors to fully realize the use of cloud information and data.

## Keywords

New engineering; safety engineering; teaching reform; talent training.

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## 1. Introduction

It is one of the main tasks of the current college teachers' teaching reform to explore the interest and subjective initiative of stimulating college students' professional courses in the context of new engineering <sup>[1]</sup>. One of the main factors that cause the inefficiency of college students to study professional courses is that they cannot accurately grasp and effectively track the true learning situation of college students <sup>[2]</sup>, and they cannot take necessary dynamic regulatory measures to regulate the learning strategies of college students. Under the wave of Internet + <sup>[3]</sup>, the extensive construction of educational informatization has been popularized and promoted, and the way in which college students acquire knowledge has undergone a fundamental transformation. That is to say, from the three dimensions of time, space and content <sup>[4]</sup>, it provides high-quality online learning resources. The promotion of big data has formed a dynamic teaching relationship between teachers and students <sup>[5]</sup>, thus maximizing the excavation of college students. Learning potential also provides a fundamental guarantee for adaptive learning of college students in the context of big data <sup>[6]</sup>, which means that each student's learning content and methods are no longer the same, which makes college students a good choice. Learning mode <sup>[7-8]</sup>.

At present, the initiative of Chinese college students to learn is lacking, and the way of accepting knowledge is often passive <sup>[9]</sup>. Especially for the teaching of college teachers in engineering, how to combine the cultivation of knowledge and innovation ability to improve the overall quality of college students is the focus and difficulty of teaching reform under the background of new engineering <sup>[10]</sup>.

Under the background of new engineering, China's higher education reform has also entered a new era based on informationization, and with the rapid spread of computers and the rapid development of the Internet cloud information platform, as well as in the "Internet +" Under the wave, the cultivation of contemporary college students with traditional moral, intellectual, physical, professional skills, practical ability and innovative thinking is bound to become an important feature and inevitable result of higher education reform and development in the context of new engineering. The types of teaching resources selected by college teachers, the methods of teaching methods, and the means of college students' learning, the communication between teachers and students, and the interactive mode will all undergo tremendous changes.

With the gradual promotion and maturity of Internet + technology, the learning style of this platform has also begun to become popular in colleges and universities. On this basis, the organic integration of on-site teaching and virtual network teaching is formed, and constitutes a platform for online learning, communication between teachers and students. At present, the new teaching method has gradually become the mainstream of the information teaching mode. It combines the advantages of the traditional teaching mode with the advantages of the network platform teaching, in order to give the teacher the guidance, enlightenment and supervision of the college students as the main body, give full play to the initiative and creativity of the students, and mobilize their enthusiasm. This new model is no longer a teacher's initiative to impart knowledge, students can use the cloud platform as a carrier, choose a personalized learning style, and actively interact with teachers; on the other hand, teachers should consider the differentiation of college students Teaching students in accordance with their aptitude, with classroom teaching as the mainstay, supplemented by online learning before and after class. This new type of teaching mode will undoubtedly break the traditional classroom teaching mode, and it will definitely have a relatively large impact on the learning effect of college students.

However, how to effectively use the cloud information and data platform is one of the key issues facing the reform of security engineering under the background of new engineering. The fundamental way of reform and implementation has not yet matured for reference. Through reviewing a large amount of information, it is still a blank to use cloud information and dataization in the reform of security engineering under the new engineering background. Or the exploration phase.

## **2. Problems in the teaching of safety engineering**

According to the teaching practice, the problems in the teaching of safety engineering are summarized as follows: (1) the teaching plan is not perfect. Inadequate development of teaching plans affects the quality of teaching to a certain extent. For the time being, many colleges and universities have scientifically formulated new training plans in order to avoid too many courses for college students to study, such as improper courses, which can be alleviated by students. The problem of being busy with class and not thinking about and digesting what you have learned is to ensure that students have sufficient time to consolidate their professional concepts. (2) The teaching time is relatively concentrated and fixed. Students go to the same classroom every week. If the first day of the morning, the students usually have poor mental state, which leads to a decline in the motivation of learning, and the quality of teaching is also affected, which hinders the students' innovative thinking. The classroom atmosphere can't be mobilized. Even if teachers set up some interactive communication topics, they still can't achieve good results. (3) Teaching methods are not rich. Traditional teaching methods such as "cramming" have obviously not kept up with the requirements of the times. Teachers still use the method of teaching students to memorize, which is often referred to as passive learning, which will greatly affect students' subjective initiative, and students are not completely Mastering the ability to analyze and solve problems independently and independently, students who develop them lack autonomy and creativity. (4) The content of the textbook failed to keep pace with the times. The content of the textbook often lags behind the development of the discipline. A lot of important content can't be or is difficult to reflect in the textbook in time and the teacher's lecture content is

based on the textbook. The content of the textbook fails to keep pace with the times, which will directly lead the students to learn some of the backwardness. The professional knowledge is obviously inconsistent with the goal of education and teaching in the context of new engineering. (5) The teaching orientation is not clear. The length of the existing textbooks or the texts is often hundreds of pages, and the proportion of theories and methods is large, but at other levels, the specific steps and methods are few and far between. When the teacher is in class, he only follows the theory of the teaching materials to teach, and does not consider the organization to start teaching from the perspective of professional technology. Most colleges and universities are not very clear about the teaching orientation of the curriculum. Coupled with the impact of the revision of the training plan, the hours of teaching are generally reduced. After the students complete a course, they cannot master the theory, but also some practical work. There is no way to start, so the teaching objectives of the course cannot be achieved. (6) The teaching mode is too single. At present, the teaching of the curriculum is still based on the traditional teaching mode. To completely change the single teaching mode, it still has a long way to go. The promotion of teaching modes such as multi-dimensional is slow. Due to the pressure of scientific research, some teachers have not played the subjective initiative of students, which has caused students to be uninterested in class, playing mobile phones, sleeping, etc.

In summary, the problems and shortcomings of the existing teaching model hinder the construction of safety engineering under the background of new engineering in colleges and universities. Therefore, it is necessary to improve the existing teaching mode, according to the national teaching quality and teaching reform of the national colleges and universities. Corresponding norms and requirements, we must take the data construction as an opportunity to learn from the rapid development of new teaching methods and modes such as micro-curriculum and MOOC, combined with the Internet-based cloud information platform to build a data-based network teaching resource sharing platform. The purpose is to promote the fundamental transformation of teachers' teaching concepts, and thus lead the reform of teaching content and teaching methods, and also realize the construction and sharing of information and data resources platforms under the new engineering background, and strive to improve the quality of college students' training. Effectively solve the problems existing in the teaching of relevant courses in colleges and universities, and provide reference for the reform of college curriculum teaching. It can also be used as a platform to construct a life-long learning social system, and realize the successful transformation of college security engineering under the new engineering background. The ultimate goal is Helps colleges and universities to meet the "Made in China 2025" "And innovation drives a large number of engineering and technical talents for strategic development needs."

### **3. Construction of Cloud Information & Data Transformation Teaching Model**

#### **(1) Cloud information platform construction**

Under the rapid development of network technology, the traditional teaching mode shows obvious deficiencies. On the basis of pointing out the problems existing in the current security engineering teaching mode, it expounds the impact of the "cloud platform" on the teaching mode, including:

① Teaching mode changed from closed to open. In the traditional mode, teaching resources exist in the physical space, and are limited to places such as classrooms and libraries. The service population is also fixed. With Internet + and cloud platforms, teaching resources cover every corner of the world. Everyone can enjoy quality teaching resources. They can often participate in an E-mail and are basically free.

② Teaching institutions go from single to plural. Traditional education is mainly based on schools. With the help of "Internet +" and cloud platforms, the re-allocation and integration of educational resources presents a diversified trend. For example, some foreign language platform can obtain the

corresponding certificate by providing online courses and meeting certain requirements. Universities should face this shock and should reject it and actively adapt to it.

③The learning model changed from passive to autonomous. Under the traditional mode, college students arrange lectures in a fixed classroom according to the curriculum. In the Internet + environment, learning becomes a matter of time. As long as they can connect to the Internet, they can learn without having to stick to the classroom and books. The challenges brought by this model reform: On the one hand: educators need to change their mindsets to effectively capture and meet the individualized and diverse learning needs of students. On the other hand, focus on some of the negative effects that result. Online learning is easy to read and read, lazy to think positively, and the boring basic knowledge of college students will also be lax. In addition, how useful information in massive information is judged, especially the lack of judgment of college students, which requires the supervision of teachers.

## (2) Data model construction

① Advanced education concept is the basis; ②establish the teacher's main position in the reform of data teaching; ③insist on using big data mining as a tool in the process of implementation; ④ technology is the support to realize the reform of big data teaching. Through the establishment of the teaching model of data-based teaching reform, we will give full play to the leading role of professional teachers in colleges and universities, and strive to pay attention to the feedback from college students on the reform approach and continue to improve.

## (3) Construction of collaborative innovation based on Internet+

①Internet + collaborative innovation improvement model。Based on the above analysis, in the context of new engineering, the reform of safety engineering teaching should treat the teaching reform problem with a developmental perspective, change the thinking, change the thinking and habits, forge ahead, and resolutely break the shackles of the traditional teaching model, with multiple goals, Multi-level and multi-angle thinking about the problem of teaching reform, trying to get rid of the students do not review before class, do not listen to the lectures or even play mobile phones, sleep bad habits, maximize the students' enthusiasm and potential for learning, and give play to students' creativity. In the collaborative innovation teaching method: the construction of the teaching model is the core, the Internet + platform such as the micro-course is the carrier, the flipping classroom is the means of realization, the effect evaluation and the continuous improvement are the tools.

② "Virtual Second Classroom" collaborative innovation construction。Carry out a variety of teaching quality resource setting models, and try to build a virtual second classroom. At present, under the background of streamlining professionalism, all colleges and universities across the country have gradually developed and explored training programs that are compatible with professional characteristics and development. While the number of independent courses is increasing, it is bound to reduce the amount of class hours of professional courses. The narrowing of the knowledge of students leads to imperfect professional knowledge systems. By setting up multi-disciplinary teaching resources, we try to build a collaborative and innovative "virtual second classroom" to ease the contradiction between the two. The so-called collaborative innovation "virtual second classroom" refers to the establishment of extracurricular online classrooms based on the traditional "teachers, students listening" teaching mode, using Internet + technology as a carrier to increase students' learning time and improve Students can learn the interest of professional knowledge. On the one hand, teachers can use the current hot "Mu Class" platform to collect relevant course materials for students to choose to study. On the other hand, they can also record teaching videos in the form of "micro-courses". In the spare time, students check for missing tips and make up for the knowledge in the classroom that is of interest or self-interest. In the end, the synergy between teachers and students in the learning process is highly unified.

## 4. Conclusion

Based on the problems existing in the teaching reform of China's safety engineering major, a teaching reform model of safety engineering based on cloud information & data is constructed under the background of new engineering.

### (1) Construction of cloud information platform

With the help of the cloud platform, the development of teaching mode towards digitalization, networking and intelligence is one of the future trends, which can realize the multidisciplinary intersection and integration of security engineering.

### (2) Data information aspects

Under the great environment of Internet + rapid development, the traditional forms of safety engineering teaching show obvious deficiencies. On the basis of the problems faced in the process of data reform of the new engineering background safety engineering, the teaching reform of safety engineering is expounded. The way of data realization, build a new model of data-based teaching reform.

### (3) Improvement model based on collaborative innovation of Internet+

In view of the shortcomings of the current traditional teaching mode of safety engineering, based on the analysis and discussion of the current situation of Chinese college teaching under the background of new engineering and its existing problems, an improved model of collaborative innovation based on Internet+ is constructed.

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