

# Research on Mixed Teaching Mode based on “Internet +”——Taking the Foundation of Mechanical Engineering Control as an Example

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**Abstract:** With the advent of the Internet + era, more and more teachers begin to innovate their own teaching methods and ideas, hoping to improve students' learning cognition and skills through the Internet platform. The mixed teaching mode mainly allows teachers to use the relationship between online and offline cooperation to guide students' learning and help students consolidate their knowledge, so as to effectively improve students' cognition and ability of basic knowledge related to mechanical engineering control. It can be seen that under the background of the development of the Internet + mixed teaching mode, how to use the internet teaching resources to teach the basic knowledge of mechanical engineering control will be a key content of this paper.

**Keywords:** Internet +; Mixed Teaching Mode; Mechanical Engineering Control

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## 1. Introduction

In recent years, mixed education and teaching methods have been gradually introduced into classroom teaching. The rapid development of the Internet + technology platform also provides a certain opportunity for the current education and teaching development. Especially for the teaching of the basic course of mechanical engineering control, it can not only improve students' knowledge cognition and skills, but also enrich the classroom teaching content and meet students' desire for knowledge. Therefore, in the context of the development of the Internet + mixed teaching mode, it is very valuable to enhance the effectiveness of the whole classroom teaching through the understanding of students' learning and cognitive needs, combined with the content knowledge of textbooks.

## 2. The significance of teaching with the help of “Internet +” mixed teaching mode

### 2.1 Improving students' thinking and cognitive ability

For the basic teaching of mechanical engineering control, many teachers do not pay much attention to the cultivation of students' thinking cognitive ability and consciousness when teaching classroom knowledge. Students often feel very abstract about the content of the course, resulting in poor learning efficiency. However, with the continuous development of education and teaching, more and more teachers began to introduce the Internet + mixed teaching mode, allowing students to collect relevant data through the Internet information technology platform, and extend the knowledge learned, so as to effectively improve students' thinking and cognitive ability, and make students' understanding and cognition of teaching content more clear. It can be seen that in the current education and teaching process, teaching through the Internet + mixed teaching mode can effectively promote the cognitive level of students' basic knowledge of mechanical engineering control.

### 2.2 Enriching classroom teaching content

In the past education and teaching, many teachers usually teach relevant knowledge according to the content of teaching

materials. The learning content of students in the whole classroom teaching is too single, which leads to the limitation of students' knowledge and the inability to effectively improve students' skill level. However, with the introduction of the Internet + mixed teaching mode, teachers can provide rich online teaching resources by using cloud classes, and carry out online tests, group discussions, personal exercises and other online activities, which is very effective in promoting the richness of teaching content. Therefore, in the process of teaching, teachers will pay more attention to guiding students to learn with the help of the Internet + platform, in order to help students improve their knowledge and skills and enrich teaching content resources.

## **2.3 Changing teachers' teaching concepts and methods**

Teaching concepts and methods are very important for improving students' thinking and cognitive awareness and ability. In the past education and teaching, many teachers did not pay much attention to the transformation of their own teaching concepts and teaching methods, resulting in the low ability of students' thinking and cognitive consciousness. The whole classroom teaching atmosphere is too boring and boring, and the students' learning interest ability is generally not high. With the introduction of the Internet + mixed teaching mode in recent years, teachers will find that teaching with the help of the Internet + platform has become a major trend in the development of education and teaching. Therefore, many teachers have begun to change their teaching concepts and methods, with the main purpose of improving the efficiency of the whole classroom teaching.

## **3. Practical strategies of mixed teaching based on “Internet +”**

### **3.1 Carrying out online teaching with the help of Internet + platform to improve students' cognition**

In the current education and teaching, many teachers still use offline teaching, but this way is very vulnerable to the influence of time and place factors, resulting in students' sense of classroom participation and cognitive ability of knowledge is generally not high; At the same time, students' learning problems can not be solved in time, which leads to the accumulation of more and more students' problems, the continuous decline of students' learning interest, and the efficiency and quality of classroom teaching are generally not high. Therefore, when teaching the basic knowledge of mechanical engineering control, combined with the reality of network teaching, we have figured out a set of “five step online teaching method”: formulating the “online course flow” table - making PPT - recording short teaching video - integrating online teaching content and process - feedback of teaching effect, which ensures the learning effect of students and is highly praised by students. For example, cloud class provides 84 resources, including videos, PPT courseware, etc., and students can learn anytime and anywhere. For knowledge points they don't understand, students can learn by watching teaching videos repeatedly, and carry out discussion, questioning and answering, online activities between teachers, students and students in the “light live broadcast / discussion” area, so as to effectively solve students' learning problems, effectively help students improve their interest in learning, and promote the steady improvement of the whole classroom teaching quality.

### **3.2 Building an Internet + experiment simulation operating system and platform to improve students' knowledge application skills**

For the teaching of basic knowledge of mechanical engineering control, it is very important to cultivate students' modeling thinking and consciousness. In the past classroom teaching process, it can be found that many teachers do not pay much attention to students' modeling of relevant knowledge, resulting in students' low knowledge application ability and poor modeling thinking ability. Therefore, in order to effectively improve this situation, teachers can build an Internet + experiment simulation operating system and platform to teach, with the main purpose of improving students' modeling thinking and practical skills. In this way, it can not only effectively change the teaching mode and teaching concept, but also

cultivate students' modeling thinking consciousness and improve the efficiency of classroom teaching.

For example, in the teaching of "mathematical model of control system" in the basic knowledge of mechanical engineering control, teachers can build a simulation operation platform with the help of Internet information technology + MATLAB, and encourage students to actively participate in it. In the process of simulation operation, students can quickly recall the relevant knowledge of the mathematical model of the control system, and use the transfer function to calculate and operate the relevant data, so as to establish the required model in the Internet + platform. This way can not only cultivate students' modeling thinking and operation skills, but also effectively improve students' self-confidence and interest in learning.

### **3.3 Guiding students to review and analyzing their knowledge by combining online and offline**

The combination of online and offline teaching mode is very important to promote students' thinking and cognitive ability. In the current education and teaching, many teachers prefer the traditional offline teaching, but this teaching method often deviates from the students' personalized learning needs, which makes the students' ability to understand and review and analyze knowledge generally low. Therefore, in order to improve these problems, teachers began to introduce the Internet + mixed teaching mode into classroom teaching, through the combination of online and offline methods to understand students' learning needs and the consolidation of knowledge, so as to adjust the teaching plan and improve the effectiveness of the whole classroom teaching.

For example, in the teaching of time domain analysis of control system in the basic knowledge of mechanical engineering control, teachers can explain relevant knowledge offline, mark the teaching key points such as second-order system response analysis and performance index of second-order system response in the course content, to encourage students to collect data in groups, and use cloud class to carry out "brainstorming, group task" and other activities for online display, so as to strengthen students' understanding of the teaching content. In this process, important knowledge points are further internalized through different forms of online activities such as "testing and homework", share notes online after class and ask to draw a brain map of knowledge, and enhance their knowledge review.

### **3.4 Formulating process teaching evaluation and strengthening students' mastery of knowledge**

For students, good education and teaching evaluation plays a certain role in promoting students' cognition of their own learning. Therefore, when teaching the basic knowledge of mechanical engineering control, teachers can encourage students to evaluate their own learning situation and improve their own deficiencies in time by formulating corresponding teaching evaluation. In order to reflect the process evaluation and fully realize the learning at ordinary times, the course of Fundamentals of Mechanical Engineering Control provides 42 non video resources (such as PPT courseware), 42 video resources, 89 tests, light live discussion, homework and other different forms of activities. At the end of the course, the whole process evaluation is derived, which is fair and impartial. This process teaching is unanimously recognized by students, and effectively strengthens students' mastery of relevant knowledge.

## **4. Conclusion**

In a word, in the current education and teaching, when teaching the basic knowledge of mechanical engineering control, teachers can collect and sort out the relevant content knowledge with the help of Internet + technology, and build the relevant knowledge model through the corresponding teaching platform. In this process, teachers also need to guide students to study and research the relevant knowledge by combining online and offline, and formulate corresponding teaching evaluation methods, so as to guide students to fully judge and evaluate their own learning situation, and improve their learning skills by consulting teachers.

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