Multi-method Supervision Online Learning Process System Design
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Abstract. This paper designs a multi-method to supervise the online learning process. Through the combination of four monitoring methods, the system effectively monitors the whole process of online learning and feeds back to learners in the form of scores. The four monitoring methods are: monitoring and recording the effective learning time of the learner, supervising the integrity of the learner's learning content, scoring the learner's knowledge in the chat room, and testing the learner's final learning effect and quality. Application of this system can be implemented to monitor the whole process of online learning, online learning for learners play the role of supervision and oversight to ensure the quality of online education, and promote the healthy development of online education.

Introduction
Online learning is a mode of learning in a network environment, with no specific restrictions on the time and place of learning. For learners, they can make personalized arrangements according to their actual conditions, with the advantages of free learning time, fragmented learning and abundant teaching resources. However, the online learning model also has drawbacks that cannot be ignored. The premise of online learning is that learners should have the initiative of autonomous learning and be able to learn consciously without supervision, which requires learners to have strong self-discipline. However, for learners with poor autonomous learning ability, it is difficult to guarantee the learning quality in the online learning mode without effective means of supervision. How to effectively supervise the online learning process and improve the learning quality of online learners is a problem that the online learning model must solve. In this context, this paper proposes 4 methods to monitor learners' online learning process.

Develop Supervision Methods
The main research content of this thesis is aimed at the online learning process. Through the combination of four different monitoring methods, the learner's whole learning cycle is effectively monitored and finally a feedback of the learner's learning effect is given. The four monitoring methods are formulated as follows:

Learning Time Monitoring
The time difference from the learner's opening of the video to the time the video is closed is recorded as the actual time during which the learner learns. The learner's learning progress is calculated by the real time of the learner's learning and the total duration of the learning content. Calculation formula: learning progress = real learning time / total video duration.

Learning Content Monitoring
Divide the learning content into different sections according to the knowledge points. Record the content that the learner has learned and not learned, and implement an irregular reminder system, so that the learner can clearly understand his or her learning situation at any time.

Learning Effect Monitoring
Monitoring learning effects is implemented in four steps:
Monitoring of the learning process. Through the occasional pop-up question box during the teaching video playback process, the measure of the learner's learning authenticity, input degree and receiving knowledge is realized. At the same time, according to the correct rate of the learner's answer to the bullet box question, the learning evaluation is given.

Monitoring of feedback on learning outcomes. Each time a learner completes a video content, the learner must submit an online study note of the learning video to summarize his understanding of the knowledge point, which helps the learner to consolidate and digest the knowledge.

Monitoring of application capabilities. Monitoring the actual application ability of knowledge by arranging operations.

Monitoring of the quality of learning. To test the effect of learning through chapter quizzes way.

**Online Interactive Monitoring**

Through the chat room function to achieve the exchange of questions between teachers and students, according to the participation of learners, give a learning evaluation.

**System Design**

**Overall Frame Design**

The system is mainly divided into three parts from the structure: The learner is the front desk for the system, mainly responsible for the display of online learning resources; The teacher end and the administrator end are equivalent to the background, the teacher is responsible for uploading various teaching resources, and the administrator is mainly responsible for the registration of the learner user and the teacher user. The overall frame diagram of the system shown in Fig. 1.

![Figure 1. The Overall Frame Diagram of the System.](image)

The learner online learning process can be divided into several different phases:

The first stage: learners conduct online learning on video of extracurricular expanded knowledge uploaded by teachers;

The second stage: after completing the online learning at each stage, learners should give the teachers substantial feedback; on the one hand, they should deepen the knowledge and finally transform them into their own things; on the other hand, through feedback to teachers, teachers can make targeted teaching plans and teach students in accordance with their aptitude;

The third stage: unitary online evaluation of learners in chapters, reflecting the learner's learning effect in a quantitative form;

The fourth stage: a certain score is given by the number of active speeches and the number of questions and answers in the chat room, and is included in the personal electronic file.
System Main Function Module Design

**Video Monitoring Module.** The implementation of this module runs through the online learning process of time monitoring and learning effect monitoring in two parts: popup questions and online learning notes. The teacher side needs to make teaching video and upload it; When viewing video, learners on the learner side need to answer pop-up questions that appear at irregular intervals. When video plays, the system automatically displays learners' online learning status through pop-up. Finally, under each video, there is a button for learning notes. Learners must make an in-depth summary of what they have learned and submit their own online notes, so that teachers can rate learners' learning effects and record them in their personal files. The sequence diagram of dialog monitor is shown in Fig. 2.

![Diagram](image)

**Online Test Module.** The implementation of this module consists of two parts. First of all, the teacher needs to make a test question bank and select the test group according to the chapter content. Secondly, the learner enters the online test interface, and can select the chapter to be tested to perform the corresponding test. After the test is finished, the system automatically gives the corresponding score. And credited to the learner's learning file. The sequence diagram of online test shown in Fig. 3.

**Chat Room Module.** The implementation of this module can provide an online communication platform for learners and teachers. It can not only realize multi-person discussion, but also realize one-to-one private chat. Finally, the statistics of personal speech records can be converted into corresponding scores and recorded in personal learning files, which will serve as a quantitative standard for the monitoring of learners' interaction and communication. The sequence diagram of the chatroom shown in Fig. 4.

**Personal Learning Profile Module.** The personal learning archive module mainly monitors and scores learners' online learning situation for visual presentation. The scoring algorithm integrates the online learning time, the answer situation of the pop-up box in the video broadcast, online learning notes, homework completion, chapter test and interactive communication, and obtains the final score of learners through weighted sum.

Figure 2. The Sequence Diagram of Dialog Monitor.

Figure 3. The Sequence Diagram of Online Test.

Figure 4. The Sequence Diagram of Chat Room.
Summary
In the modern network teaching environment, online teachers’ pay more attention to how to impart knowledge to online learners through rich network resources. They pay more attention to the content organization and design of courses, but ignore the monitoring of learners' learning effects. As a result, some learners with weak consciousness and self-control are unable to make effective use of online learning resources due to unsupervised learning, thus failing to give full play to the advantages of online education. Through the research of this paper, setting up appropriate monitoring mechanism in the online learning process can achieve more comprehensive and effective monitoring of the online learning process, ensure the quality of online learning, and promote the promotion of online education mode.
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