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Design of Smart Classroom Teaching Activities Based on Link Meta-thinking

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Abstract: The biggest problem of smart classroom teaching is that teachers do not have a deep understanding of smart classrooms and it is difficult to carry out high-level teaching. Based on the analysis of conventional teaching, this paper proposes a smart classroom teaching design method based on link meta-thinking, and analyzes in detail the design of six typical smart classroom teaching links such as independent learning, group discussion, problem solving, display exchange, consolidation exercises, and learning evaluation. method. It can provide reference for schools and teachers who develop smart classroom construction and teaching.

Keywords: Smart Classroom, Activity Design, Instructional Design, Link Element, Higher-Order Thinking

Smart classroom refers to the creation of a personalized, intelligent, and digital classroom learning environment by reforming teaching methods and methods and integrating technology into classroom teaching with the support of information technology, innovating teaching and learning methods, thereby effectively promoting the cultivation of students' core literacy New classroom [1]. The teaching goal of smart classroom is to develop students' higher-order thinking, which refers to the mental activities and cognitive abilities that occur at a higher level of cognition [2]. When solving the problem of how to implement teaching in smart classrooms, traditional solutions include theoretical training, technical training, teaching and research activities, subject research and expert guidance. Using conventional ideas to solve the problem of implementing smart classroom teaching, there are still many teachers who do not want to use or dare not use smart classroom equipment to carry out teaching. The core reason is that teachers do not know how to carry out teaching.

1.Smart classroom teaching design method based on link meta thinking

In the information-based teaching environment, traditional teaching generally adopts two division methods: lesson type and teaching mode. Take Chinese as an example, as shown in Table This research divides the teaching design into multiple relatively independent teaching links by dividing the teaching links horizontally and the lesson model vertically, as shown in Figure 1. The link element is a relatively independent teaching link in the process of teaching and learning; the link library is a collection of general link elements; the link element teaching design is the teaching design for a specific teaching link. In the specific operation process, the teacher first designs the overall teaching process, then subdivides the process into several teaching links, and finally designs each link in detail.

Table 1 Traditional teaching division

Course Type	Teaching Model
Concept course;Proposition course; Exercise course	Project based teaching model
Pinyin and literacy course; Composition course	Problem based teaching model
Phonetics course; Grammar course; Vocabulary course	Case based teaching model
New teaching course; Review course; Practice course	WebQuest teaching model
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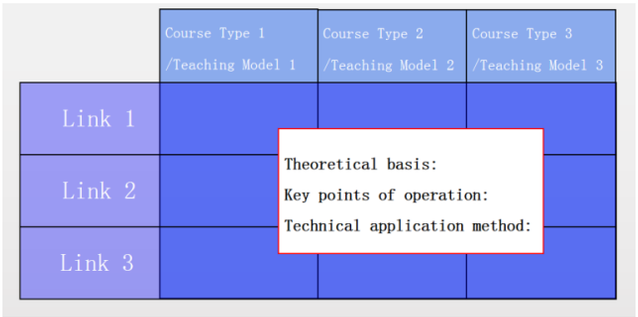

Figure 1 Design thinking of teaching link element

2. Design methods of smart classroom teaching activities

Based on the above-mentioned meta-teaching design ideas, the author summarizes the six teaching links commonly used in smart classroom teaching, respectively

2.1 Independent study

Autonomous learning is very important for enhancing students' understanding of knowledge and developing students' higher-order thinking ability. In the process of teachers let students carry out independent learning, there are four main points of operation:

Ⅰ.Teach students the learning methods and technical operation methods of independent learning. For students in the lower grades or in the early application stage, students have not yet mastered the methods of autonomous learning, and teachers need to lead the students to learn, help students master the learning methods and form learning habits. When students have a certain degree of self-learning ability, teachers need to continuously guide students to carry out independent learning. When mastering certain self-study methods and initially forming self-study habits, teachers should provide students with support for self-study task sheets, guide sheets, etc., to help students develop self-study.

Ⅱ. Provide students with self-learning task lists. The self-learning task list is a scaffold for students to carry out self-learning and a "map" for students to carry out self-learning. The self-study task list is generally composed of three parts: study guide, study task, confusion and suggestions. The study guide includes: the title of the subject, expressed as "version + grade + book + subject name + content name"; reaching the goal, reaching the goal is different from the teaching goal, generally refers to the description of the process of students completing each task of self-learning, aimed at allowing students Clarify the tasks of self-learning; suggest learning methods to provide students with suggestions on learning methods, and if you don't have to write them; the preview of the classroom learning form helps students understand the classroom teaching process, which can be represented by a flowchart. The learning task refers to a certain key content in a designated topic, guiding students to learn independently by watching the produced video resources, completing the following learning tasks, including the evaluation design of detecting the learning effect. Puzzles and suggestions are filled out by students after self-study, so that teachers can understand the problems and difficulties in the process of self-study.

Ⅲ. Help students master the method of taking study notes. Common learning note recording methods include mind mapping, question and answer method, Cornell note method, etc., among which the mind map is a method to visualize thinking; the question answer method is that students ask questions and answer by themselves; Cornell notes method The notes are divided into three parts: note content, prompt column and summary area, which can effectively help students record confusion and reflection in time, and promote in-depth thinking.

Ⅳ. Check the learning results of students, and grasp the information feedback from students in time. Teachers need to check the learning results of students in time, and adjust teaching according to the information feedback from students. The content of the general inspection includes four categories: ① Which of the students' learning objectives have been completed and which have not been completed? Is the practice correct? ② If the learning goal is not reached, how many manifestations are there? ③ What are the reasons why students did not reach their learning goals? ④ How is the learning situation of students with poor grades? Where is the difficulty?

In the smart classroom teaching environment, the technologies that support students' autonomous learning include:

using various learning platforms to support students' autonomous learning; using various learning resources (including micro-classes) to support students' autonomous learning; using online questionnaires, online test papers, and online examination systems Check student learning results; use learning platform to record and analyze learning data.

2.2 Group discussion

Group discussion is a common teaching link in the teaching process of teachers. In the discussion, students deepen their understanding of knowledge, share ideas and learn from each other, and promote the development of higher-order thinking. When the teacher asks students to carry out group discussion activities, the main point of operation is the design of the discussion content. Generally speaking, the discussion topics that are conducive to the development of students' higher-order thinking are generally all kinds of problems, including the following: open problems, elevated problems; problems close to student life; problems that students can fully understand; difficulties in self-study Problems, such as exercises.

In the smart classroom teaching environment, the technical applications that support student group discussions include: using group chats (learning platform groups, social software groups), topic discussions, live broadcasts, audio and video recording, photographing and other methods to record the process of student discussions; using thinking guidance Pictures, audio and video, photos, discussion records, etc. present the results of the group discussion.

2.3 Problem solving (Task exploration)

Task-based problem solving is also a common teaching link for frontline teachers. When the teacher asks students to carry out problem solving activities, the key point of operation is problem design. In the process of problem design, we need to pay attention to the following points: First, the problem should be real, and it should be a real problem close to the students' lives; second, the problem should be related to the learning content, can arouse students' interest in learning, and be able to cover the learning content; Questions are open to a certain degree, with a certain degree of difficulty, and there are no fixed answers; the fourth is to have a wealth of problem resources to support students, allowing students to fully demonstrate and communicate.

In the smart classroom teaching environment, the technical application that supports student problem solving is generally to use various technologies to support the entire problem solving process: use audio and video, presentations, virtual reality to create problem situations; use mind maps, theme resources, etc. to help students fully Guess and establish hypotheses; use cognitive tools and virtual simulation experiments to help students design problem-solving solutions and explore practical problem-solving processes; use technology to support problem-solving data analysis, collaborate and communicate, and draw conclusions; use technology to support students in multiple evaluations and reflections , Share and interact.

2.4 Exhibition and communication

According to Maslow's hierarchy of needs theory, everyone has social needs, respect needs, and self-realization needs. For students, display and communication can meet these three needs. The main purpose of exhibition and communication is to allow students to share their acquired knowledge with each other, promote mutual learning and self-reflection, so as to develop students' higher-order thinking ability. In the process of teachers letting students carry out exhibition and exchange activities, the main point of operation is to ensure that every participating student can have the same opportunity for exhibition and communication, and every participating student can fully express.

In the smart classroom teaching environment, the technical applications that support students' display and communication include: using online learning and communication platforms and social software to form a learning space for topic discussions; using mobile phones, tablets, computers, cameras and other equipment to record expression videos in the learning space Share in the learning space; use mobile phones, mobile phones, tablets, computers, cameras to take pictures, make electronic albums, presentations, etc., and share them in the learning space; make mind maps and share them in the learning space; dub film and television works to form The works are shared in the learning space; the learning platform and live broadcast software are used to open the live broadcast for exchange and sharing. For example, in a Chinese writing class, you can use the Chinese learning platform to discuss writing topics. This kind of online display and communication not only gives every student a fair share of opportunities, but also allows parents to

participate in the student's learning. Heart.

2.5 Consolidation exercises

Consolidation exercises are an indispensable part of teachers in designing teaching. Consolidation exercises can be divided into repetitive exercises, special exercises and layered exercises according to the purpose of the exercise. In traditional teaching, the longest practice method used by teachers is paper-based exercises. In the environment of smart classroom, students have more ways to practice. When the teacher organizes students to carry out consolidation exercises, the main point of operation is the design of exercise questions. When designing exercise questions, teachers can refer to the questions on different supplementary materials to ensure that various questions assess the learning goals of different dimensions, and at the same time, they can more accurately understand the students' learning situation.

In the smart classroom teaching environment, you can choose different technical application methods according to the purpose of the exercise, such as special exercises using listening, speaking, vocabulary memory, and oral arithmetic software, using learning platforms for variant exercises, and subject platforms for writing and reading exercises. Use various learning platforms for layered exercises, and use the classroom activity function of the interactive whiteboard software for classroom consolidation exercises.

2.6 Learning evaluation

Learning evaluation can be divided into two types: generative evaluation and summative evaluation. Traditional teaching often focuses on summative evaluation but lacks generative evaluation. The environment of smart classroom provides technical means for generative evaluation. In the process of organizing students to carry out learning evaluation, the main point of operation is the design of learning evaluation standards. In the process of designing learning evaluation standards, teachers need to pay attention to the following three points: one is to adopt a unified and quantified evaluation standard; the other is that the evaluation standard should not be too complicated and should meet the students' cognitive level; the third is that the description of the evaluation standard adopts students' ease of use Understand the language.

In the smart classroom teaching environment, the technical applications that support learning evaluation include: students can use the network platform for mutual evaluation of topic discussions; teachers can use interactive whiteboard software for quantitative evaluation; teachers can use mobile listening and evaluation applications to conduct teaching Evaluation: Teachers can use the education cloud application service for personalized evaluation supported by big data.

3.Summary

Based on the analysis of the connotation and characteristics of the smart classroom, this article clearly defines the high-order thinking as the teaching goal of the smart classroom, and the teaching design method of the smart classroom based on the link meta-thinking. It also analyzes in detail independent learning, group discussion, problem solving, and display exchange , Consolidation exercises, learning evaluation and other six design methods of smart classroom teaching links.

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