Application of "Flipped Classroom" in the Teaching of "Morphology Composition"

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Abstract—**The implementation of the "Morphology Composition" has expanded the new field of plastic arts and opened up students' creativity and imagination in terms of visual language and modeling methods. It is of great significance for students to go beyond the constraints of inherent experience, seek multiple expressions of the modeling language, and cultivate the creative thinking of the visual art image. At the same time, some domestic colleges and universities have gradually tried the "Morphology Composition" teaching mode based on the flipped classroom, and this innovative teaching form may get more results with less effort. Based on this, this work first analyzed the development and advantages of flipped classrooms, then discussed problems in the teaching of "Morphology Composition", and finally proposed the application path of flipped classroom teaching mode in the teaching of "Morphology Composition".**

Keywords—Flipped classroom; Morphology Composition; Teaching reformation; Application

I. INTRODUCTION

The flipped classroom is a new type of teaching model that has received widespread attention in recent years. Flipped classroom teaching methods originated in the United States [1-2]. Initially, some students were unable to enter school for personal reasons. To catch up with the teaching process, and make students keep up with the pace of courses, teachers recorded some lecture videos and presented the key and difficult knowledge of a lesson to students, so that students can learn at home through the video, in this way, teachers can make up lessons for students who are absent and ensure the smooth teaching. This teaching mode has received extensive attention, and this video has also been welcomed by many students [4]. This work first analyzed the development and advantages of flipped classrooms, then discussed problems in the traditional teaching of "Morphology Composition", and finally tried to improve the teaching effect by combining the flipped classroom teaching mode into the "Morphology Composition" teaching.

II. DEVELOPMENT AND ADVANTAGES OF FLIPPED CLASSROOMS

Students can make good use of their study time, which means they can not only follow teachers in classes, but also use videos to study outside the class, so as to improve the efficiency and quality of learning. Subsequently, the Khan

Academy emerged and the flipped classroom teaching was further promoted. The Khan Academy, as a non-profit teaching website, has a variety of knowledge and videos, so that students can implement online learning, online assessment, and online practice, creating favorable conditions for the improvement of students' learning ability. The main reason for the rapid development of the flipped classroom teaching is that it has significant advantages and is welcomed by students [4]. The advantages of flipped classrooms are mainly reflected in three aspects. First, by using the flipped classroom teaching mode, teachers can record relevant content in advance, which can create favorable conditions for students to learn in advance. In addition, it can also save class time, enabling students to learn efficiently in the classroom, promoting mutual communication between teachers and students, and improving the development of students' personality. Second, in art design majors, using flipped classrooms to carry out teaching can achieve good teaching results, which can not only improve teaching efficiency and quality, but also create a good learning environment for students. By using this new teaching mode, teachers can provide recorded videos for students to study before class, promote students to preview, enable students to understand learning content, and master learning progress, so that teachers can prepare in advance, give students enough time to think, guide students to innovate, and enrich students' imagination. Third, using flipped classrooms for teaching can expand the curriculum and supplement learning materials, which are conducive to communicating and learning for students. In this way, teachers can give full play to the advantages of the flipped classroom teaching model and help improve the quality of teaching [5-6].

III. PROBLEMS IN THE "MORPHOLOGY COMPOSITION" TEACHING

A. Content settings lack pertinence

Traditional "Morphology Composition" teaching emphasizes abstract modeling training, and explores morphological elements and their organizational laws from a formal perspective simply. For example, plane composition focuses on the abstract point, line, and surface composition training as well as the basic concepts of formal beauty principles. It aims to train the modeling ability of three-dimensional solids and the expression of materials and textures; color composition mostly explores the perception and use of color from the perspective of abstraction at the psychological

level. The teaching content of such art-based composition courses is universal and lacks relevant contents of targeted architectural design. Students will inevitably feel that the pure point, line, and surface learning is abstract and lacks connection with the formal logic of architectural language in the learning process. Therefore, the techniques of plane composition and three-dimensional composition are separated from architectural form design, and the color composition and the creation process of architectural space lack corresponding practice and other problems.

B. Curriculum conjunction lacks coherence

Architectural design has strong comprehensiveness, specificity, and functionality, while traditional morphological training often does not involve design goals, content, conditions and means, which has strong abstraction, decomposition, and formal characteristics. If it lacks coherence with the course of architectural design, it is easy to neglect the origin of students' architecture. Students will face a variety of environmental factors and more design contradictions in the architectural design training after completing the basic design course, which will inevitably require the comprehensive balance between the function, technology and economy, but at this time, it is difficult to skillfully apply the previously learned composition techniques to specific designs [7]. What is more, the three major components (planar composition, three-dimensional composition, and color composition) of the series of courses lack continuous training between each other; therefore, architecture students can not realize the strict logic between the two-dimensional plane, elevation and three-dimensional modeling in the process of building shape generation.

C. Lack of methods and skills

Due to the influence of the "reductionism" thought, people have summarized it into some basic elements through analysis of the morphology, such as points, lines, faces, bodies, colors and textures, and arrange and combine these elements according to certain rules, so as to obtain morphological richness and diversity. The ideas and methods of composition reflect people's understanding of the inherent laws of morphological formation. The core theory is that things are regarded as static, closed, and the whole is equal to the sum of the parts. However, some contemporary avant-garde architectural forms are not the deformation or combination of simple elements, but present a life system similar to "growth" through computer simulation and parameterized settings, which has certain self-organization and self-adaptability, and can form organic, changeable and indivisible form according to the change of conditions. Unlike the morphological composition that emphasizes the subjective nature of morphological beauty, morphological generation is a digital modeling method, which more strengthens the internal logic and rules of morphology, and greatly expands the construction through some complex sciences, such as fractal, CA model, genetic algorithm, chaos theory, and emergence theory. The breadth and depth of building forms break through traditional modeling thinking and methods. Therefore, if teaching methods still rely only on the relevant thinking and skills for two different creative ideas and methodologies, it will restrict students' cognition and innovation ability of architectural form and even lead to misunderstanding [8].

D. Insufficient schedules

In the course of architecture, although the architectural modeling and morphology composition courses occupy an important position, and the principles and techniques of architectural modeling have been instilled in the students in a short period of time due to the short schedule of the course, many theories and methods are difficult to reach the level of in-depth development and integration. What is more, due to the rapid change of architectural forms, in the basic courses of architectural modeling and morphology composition, it is increasingly necessary to incorporate some theories and methods of "architectural generation", which requires not only a combination of many new teaching ideas, but also some new computer-aided design software, but it cannot be achieved in just two short courses. In addition, in terms of students, they have just understood the principles and methods; they immediately face the pressure of submitting coursework and fail to digest the knowledge learned in time. For some students who are interested in morphology composition, they lack in-depth understanding and mastery of architectural form creation in spare time, thus, in the future professional design courses, once they have some problems in architectural modeling or morphology composition, students are always faced with difficulties.

IV. THE APPLICATION PATH OF FLIPPED CLASSROOM MODE IN THE TEACHING OF "MORPHOLOGY COMPOSITION"

A. Designing teaching schedule flexibly and grasping the extent

In the process of flipped classroom teaching, teaching design has played an important role. It is extremely important to grasp teaching extent in the process of designing teaching schedule. Teachers should take advantage of flipped classroom teaching to arrange the time reasonably and carry out appropriate teaching design, so that students can have targeted learning, thus improving teaching efficiency and quality. Flexible teaching design and grasping teaching strength need to start from the following aspects. First, according to the characteristics of the curriculum, teachers should combine with the curriculum time, make appropriate arrangements, and make reasonable use of class time and after-class time to create favorable learning conditions for students. Instructional design and flexible arrangement of teaching content and time are conducive to obtaining ideal teaching results. Second, in the course teaching process, teachers need to pay attention to the content of video recording and do a good job in content design. Teachers should also focus on the design of key and difficult knowledge, and take advantage of the flipped classroom teaching model to ensure the appropriateness and rationality of the content in the video and play the role of the video. Flexible teaching design can create good learning conditions for students, so as to improve students' comprehensive ability [9]. For example, in the process of recording art design videos, teachers need to grasp the key points of design, explain in detail the design skills, design principles and design

considerations, display relevant content for students, guide students to learn independently, and ensure the smooth development of teaching activities.

B. Paying attention to the construction and support of cloud platforms and network technologies

In the art and design major, using the flipped classroom teaching mode to carry out teaching requires the reasonable use of network technology and cloud platforms, so as to promote students to learn positively, and lay a good foundation for the improvement of students' comprehensive ability. First, teachers record the course content and put it in the cloud platform to share resources, so as to maximize the use of resources, create a favorable learning environment for students, and create a good learning atmosphere. Second, students can use the cloud platform regularly communicate professionally with lecturers, and make reasonable use of class time to enhance the interaction between teachers and students, so that students can express their ideas through communication, and narrow the distance with teachers. At the same time, teachers can use the online platform to correct assignments and make key recordings of some difficult and important issues, plus, teachers can ask students to watch videos repeatedly. In addition, with the support of network technology, teachers can make reasonable use of network resources, optimize the quality of classroom teaching, improve the fun of teaching, and obtain the ideal teaching effect. For example, the reasonable use of network technology in the teaching of art design can create favorable conditions for students, so as to improve students' enthusiasm for learning.

C. Using teaching time effectively to ensure the rationality of time arrangement

The most important thing to use the flipped classroom teaching mode is to use the teaching time reasonably and ensure the rationality of the time arrangement. Effectively grasping the teaching time can improve the teaching quality and ensure the application effect of the flipped classroom teaching mode. First, it is necessary to reasonably use the time after classed. For college students, the study time in class is relatively less and the free time is more, which is different from that in high school. Therefore, it is particularly important to make reasonable use of the study time after class. The flipped classroom teaching mode allows students to effectively use off-class time for autonomous learning. Second, using flipped classroom teaching mode requires reasonable use of class time. Teachers and students communicate face to face in the classroom, and put problems that are difficult for students to understand offline into class for discussion, and focus on explaining difficult knowledge, so as to promote students to study purposefully and efficiently.

D. Offering students high-quality resources and adopting a variety of assessment methods

First, using the flipped classroom teaching mode, teachers can make reasonable use of network technology to optimize resources and enable students to complete extracurricular learning. With the support of rich resources, teachers can provide students with useful teaching content and students can efficiently learn related content. At the same time, teachers can choose high-quality resources and online teaching videos for students, record excellent videos themselves, and produce high-quality courseware, creating a favorable environment for students' learning. Second, teachers should pay attention to the diversity of assessment methods. During the assessment process, teachers should pay attention to assessing the design and application abilities of students, and use various methods to evaluate, ensuring the smooth implementation of teaching activities.

V. Summary

The flipped classroom teaching model is no longer teacher-centered, but emphasizes student-centered. Since it is based on students' autonomous learning before class, teachers cannot communicate with students in the classroom if students do not complete the tasks assigned before the class. Therefore, letting students actively learn before class is the key to implementing the flipped classroom, and how to stimulate students' potential learning desire is an important issue that needs to be solved. For the teaching of "Morphology Composition", its implementation path can be started from the following aspects: first, teachers should design teaching schedule flexibly and grasp the strength; second, teachers should focus on the construction and support of cloud platform and network technology; third, teachers should use teaching time effectively and ensure the rationality of the time arrangement; fourth, teachers should offer students high-quality resources and adopt a variety of assessment methods.

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