

Research on the reconstruction of classroom teaching mode in undergraduate colleges and universities with the integration of "Flipped Classroom and PAD class"

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Abstract: In the new era, it is urgent to promote the reform of undergraduate classroom teaching mode. The traditional undergraduate college classroom is "teacher-centered", which emphasizes lecturing and students are in a passive accepting position. The separation of teaching and learning and the weakening of teaching function seriously restrict the improvement of talent cultivation quality. Based on the respective characteristics of the two popular modes of " Flipped Classroom" and "PAD class", the fusion basis of the two modes is analyzed: highlighting the guiding ideology of "two-subject" classroom reform, taking students as the teaching center, emphasizing personalized learning and independent learning, etc. The classroom teaching mode of " Flipped Classroom" and "PAD class" in undergraduate colleges and universities integrates the advantages of modern information technology and face-to-face teaching, promotes students' independent learning, strengthens the full interaction between teachers and students, students and students, and combines innovative assessment methods, so as to achieve the improvement of classroom efficiency and classroom teaching effect.

1. Introduction

The "golden course" strategy [1] proposed by the ministry of education in 2018 highlights the country's high attention to undergraduate classroom teaching. The classroom teaching mode began after the industrial revolution and adapted to the demand of large-scale machine production for talent training, with the characteristics of standardization and flowing water. Schools are like factories, classrooms are like workshops, teachers are like workers, and students are products. The traditional undergraduate classroom teaching mode is teacher-centered, book-centered and classroom-centered, which emphasizes teacher-led teaching and students' passive acceptance of knowledge. Therefore, many undergraduate teaching activities are separated from teaching and learning, there is less communication between teachers and students, and the teaching function is seriously weakened, which seriously affects the quality of talent cultivation in the long run.

Therefore, it is not only necessary but also urgent to promote the reform of undergraduate classroom teaching mode and improve the quality of personnel training. This paper focuses on two popular classroom teaching reform modes: "Flipped Classroom" and "PAD class". Through comparative analysis, the paper theoretically explores and reconstructs the "Flipped Classroom" and "PAD class" teaching mode in undergraduate universities, which integrates the advantages of the two modes.

2. Flipped classroom teaching model

Flipped Classroom (Flipped Classroom), originally from a mountainous area school -- the Colorado rocky mountain forest park high school, in 2007 two teachers at the school for absence from school students make up a missed lesson, using the recording screen software will lecture powerpoint presentations and audio teacher real-time explanation, upload network, by the students watch the video and on at home, then finish the homework in class. Soon, the two teachers made a more pioneering attempt -- gradually based on students watching video at home and listening to explanations. In class, teachers mainly provided problem guidance or offered help to students who

had difficulties in the experiment [2]. This method reverses or reverses the traditional way of "students listen to the teacher in class and do homework after class". Later, this teaching method was welcomed by everyone and began to be popularized all over the world.

The biggest characteristic of "Flipped classroom" is that it makes full use of the advantages of intelligent mobile technology and modern information technology such as the Internet, and makes the boring knowledge points into diverse and lively teaching video. Khan academy, which aims to use online videos for free teaching, has integrated traditional video recording with interactive elements to meet the needs of learners. With the rise of MOOCS, the participation and interaction of learners in "Flipped classroom" have been further improved. It can be said that "Flipped classroom" makes full use of the advantages of the Internet in information dissemination and good interactivity [3].

One of the problems in classroom teaching in traditional undergraduate universities is that teachers are the main body and students' "learning" is ignored. Students with relatively poor knowledge foundation can hardly exert their learning enthusiasm. However, "Flipped classroom" can help break the shackles of traditional classroom teaching, because in this mode, watching video is entirely up to students to master the progress and difficulty, and ask questions from the perspective of students themselves, which can stimulate students' learning autonomy. Meanwhile, "Flipped classroom" can also stimulate teachers' enthusiasm, constantly learn new teaching concepts, record video technology and so on. In the discussion of "Flipped classroom", the teacher's explanation is also the explanation of different traditional classes, which is based on students' learning and absorption. It is a further explanation, serving the students' explanation and allowing students to deepen their understanding of knowledge through communication and collision. Of course, this is also a challenge for teachers.

3. The teaching mode of "PAD class"

Compared with the foreign product "Flipped classroom", "PAD Class" teaching mode is completely a local product, which is a new exploration of Chinese education in the personalized era proposed by professor zhang xuexin of fudan university in 2013. It is seven years later than Flipped classroom, and its influence in China is not as great as Flipped classroom. Up to now, CNKI has searched 971 articles on its topic, and published 97 articles annually. "PAD class" seems simple, actually very test teachers ability, it is not the change of one or two links, but the whole education teaching concept and principle of real communion teaching reform, it is a combination of classroom teaching and discussed the advantages of the classroom, assigned half of the class time for teachers to teach, allocate the other half time for students to discuss, and lectures and discussion time stagger, students can spend time autonomous learning after class, internalization and absorb knowledge [4]. The process of teaching and independent learning can be alternately arranged according to the actual situation of students and teachers.

The reform of classroom teaching mode carried out by many colleges and universities nowadays, such as case teaching, discussion teaching, autonomous classroom and task-driven teaching, are all variations of cooperative learning. Its core feature is to improve the enthusiasm and initiative of learning participation through discussion among students. Although the discussion teaching, which emphasizes the interaction between teachers and students, greatly improves the teaching effect, the quality of students' discussion cannot be guaranteed due to the sacrifice of systematic knowledge learning.

The mode of "PAD class" combines teaching and discussion, emphasizing that teaching comes before learning. Teachers are only responsible for talking about the framework and key points, without covering details or asking questions of students. Moreover, the content of teaching may span different chapters. Teachers arrange a certain amount of time (usually a week) for students to learn independently and internalize their learning. In the discussion section, various forms such as group discussion, teacher spot check, free speech and teacher summary will be set up to deepen the understanding of the learning content. Therefore, in essence, the "PAD class" teaching mode divides the teaching process into three independent processes: lecturing -- internalization and

absorption -- discussion. A big innovation is the addition of an internal absorption process between lecture and discussion, which gives full play to the advantages of lecture and discussion.

4. The reconstruction of classroom teaching mode in colleges and universities based on the integration of "Flipped classroom" and "PAD class"

Through the above analysis, the characteristics of the two teaching modes are summarized: "Flipped classroom" is a mode of "teaching before class + internalization of class". Students conduct in-depth learning before class, exchange and collision of learning experience in class, and deepen cognition, which reflects learning before teaching. "PAD class" is "classroom teaching and extracurricular internalization + class discussion" mode, the classroom teachers are concentrated on construe positively multiple content, for a period of time after class the students internalize absorption of content, then to the classroom, using the generating, division, group discussion, the whole class, such as free speech way, get a new cognition, reflects the teach me first.

On the surface, the two models are quite different. In fact, there is a certain foundation for the integration of the two models. Since 2016, the research on the integration of "Flipped classroom" and "PAD class" has been on the rise. Based on the visual analysis of research hot topics and development trend retrieval common words based on CNKI, 1 article appeared in 2016, 5 articles appeared in 2018, and 6 articles appeared as of April 2019. From the perspective of scholars' research, hybrid research based on two teaching modes will also be a future direction.

4.1. Analysis of fusion foundation

These two kinds of teaching modes are the reform to solve the problems in the traditional classroom and have the common foundation in many aspects.

First of all, both of them highlight the guiding ideology of "two-subject" classroom reform and take students as the teaching center. In educational practice activities, "Flipped classroom" and "PAD class" both emphasize that teachers and students are the main body of educational activities, teachers are the leading teacher and students are the main body of learning. The teaching process is a process in which students interact with external information to generate understanding and construct empirical reality on the basis of teacher-led, rather than a process in which teachers "teach" and students "learn". The traditional teaching only takes the teacher as the main body, takes the teaching as the center, neglects the student main body "the study" the function, neglects "the student as the main body" which the constructivism, the humanism and so on study theory emphasizes and the modern education theory "takes the student as the main body" the situation.

Secondly, both emphasize "personalized learning" [5]. Whether "Flipped classroom" turns the classroom upside down or "PAD class" divides the learning time into different stages, it is hoped that through the transformation of learning mode, students can become the subject of learning, stimulate their enthusiasm for learning, and improve their enthusiasm and learning efficiency.

Finally, and most importantly, there is a theoretical basis for the integration of the two. Constructivism theory holds that learning is not a process of passively accepting external information, but a process in which learners interact with the external environment and actively construct meanings with the help of existing knowledge and experience [6]. From this point of view, both of them emphasize the importance of independent learning. After class, learners are given enough time to learn independently, internalize and absorb, and then return to class for explanation or discussion, which lays a certain foundation for subsequent learning. At the same time, both pay attention to creating a certain learning environment, through teaching, self-study, as well as discussion and interaction between teachers and students, and between students and students, arouse learners' initiative to construct learning meaning as much as possible. It can be seen that "Flipped classroom" and "PAD class" can exert their advantages through integration.

4.2. Selection of fusion mode

Mixed teaching mode is to integrate the advantages of different teaching modes and give full play to their advantages. The biggest advantage of "Flipped classroom" is video teaching, in which

students learn independently through video contents. There is also an autonomous learning process of "internalization and absorption" in "PAD class". Therefore, it can be considered that teachers should first explain in accordance with the teaching requirements of "PAD class", and then increase the video learning process in the internalized absorption stage. Video content can be expanded in combination with the actual situation of students, and learning efficiency can be improved according to the requirements of independent learning in "Flipped classroom".

Meanwhile, the second part of "Flipped classroom" is the internalization of the classroom, which is mainly achieved through teachers' "teaching", while the third part of "PAD class" is achieved through classroom discussion. Therefore, in the mixed teaching mode, the internalized understanding can be combined with the discussion and interaction between teachers and students, students and students, so as to test the effect of early independent learning and deepen the understanding of knowledge.

Therefore, combined with the requirements of "Flipped classroom" and "PAD class" on the learning process, this paper proposes the selection approach of hybrid teaching mode integrating the two modes:

The main teaching mode is "Flipped classroom", which can follow the two main parts of "Flipped classroom". In the first link, due to autonomous learning, video should set up certain learning requirements and consciously increase the links of interactive discussion, such as organizing learning communities and using certain technical means to strengthen the role of discussion. In the second part of classroom teaching, interactive discussion can be increased to broaden the way to solve problems, so as to solve problems existing in independent learning in a targeted way.

The main teaching mode is based on the "PAD class" teaching mode, and the classroom in the first and third stages is completely in accordance with the "PAD class" operation. Only in the second stage of independent learning, video learning in "Flipped classroom" is integrated. That is to say, independent learning is assisted by network video and other tools at this stage to improve the efficiency of internal absorption.

4.3. Assessment under fusion mode

In the era of personalized education, students are required to carry out independent learning and research learning, and the assessment method is the baton of students' learning. It is difficult to accurately and scientifically detect students' ability to master knowledge and apply practice by traditional single summative assessment methods such as closed book and written examination. In order to ensure the learning effect under the integrated teaching mode of "Flipped classroom" and "PAD class", the evaluation method should be changed from the original one examination to the evaluation combining process and finality. Such as the final result can be made by grades (+ lessons before class, a total of 60%) and the final grade (40%) of two parts, through the form of diversification, flexible forms of assessment, outstanding creative and innovative, to give students more independent space and free individual development opportunities, pay attention to the cultivation of the students' practical ability and the quality and improve.

Pre-class task learning evaluation: students are evaluated according to the video duration, viewing frequency and online self-test questions they watch in Flipped classroom. This evaluation method will pay attention to the degree of effort and accuracy at the same time, which can mobilize students' subjective initiative to some extent and stimulate students' vitality in learning.

Learning evaluation in class: students are evaluated according to their performance in "liang kao bang" [7], such as the quality of summary speech, learning attitude, spirit of cooperation and mutual assistance, and according to their logical thinking ability and innovation ability in the link of learning to application. The key is the principle of "emphasis on participation, quality over quantity". This evaluation mechanism pays more attention to learners' process evaluation, and can evaluate students' daily investment and learning quality more objectively and impartially.

By adopting the assessment method of "process evaluation" + "summative evaluation", we can pay attention to the learning process of students and attach importance to the unexpected results, so

as to enhance students' ability of self-summary and reflection, promote the common development of teachers and students, and improve the education and learning effect. This learning process based on assessment and evaluation is full of challenges and interests, which greatly stimulates students' learning potential [8]. Excellent students, in every step of learning to see their own learning results, learning confidence; The students who have difficulty in learning see their progress bit by bit.

5. Conclusion

Classroom teaching mode is a kind of teaching behavior norm, any mode should fully implement the concept of modern education and new curriculum reform, with the fundamental goal of improving teaching quality and cultivating talents. Individual differences determine that a universal teaching model does not exist. Any teaching model may be affected by the discipline or the application environment of teaching, and the discussion strategies and tools will be meaningless if separated from the specific teaching situation. Teachers should actively practice and explore teaching strategies and rules according to the different subjects and audiences, devote themselves to studying and creating classroom teaching paradigms in line with our teaching reality, and pursue the best educational effect. In this paper, two teaching practice modes, "Flipped classroom" and "PAD class", which are popular in colleges and universities, are sorted out. On this basis, a hybrid teaching mode combining the advantages of the two modes is proposed, and an alternative practice path is given to provide reference for college educators.

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