

# Fundamental Research on "Flipped Classroom" Teaching Mode in Colleges and Universities

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**Abstract.** "Flipped Classroom" teaching model is based on information technology, students complete knowledge learning before the class, get rid of the traditional "knowledge + after class knowledge internalization" class teaching form of bondage. Aimed at the difficult problem of "flipped classroom" teaching pattern in colleges and universities, this article on the basis of the research, lays the foundation for further research and practical application. First, the theoretical basis, including autonomous learning theory, constructivism theory and blended learning theory; Then, the research consists of five steps to design the teaching activities of teaching model; Finally, the advantages, including students' autonomous learning to become a reality, teachers play the leading role, contribute to quality education to promote, promote the information technology and education, promote the innovative talents cultivation, the depth of the fusion of parents supervision, participation and so on.

## Introduction

Teaching mode is a theory, the simplified form of expression can be achieved by simple symbolic symbols, schema and the interpretation of the relationship, to reflect the basic characteristics of the teaching theory, based on which the people in the mind to form a teaching the implementation of the procedural program, which is more concrete than a abstract theory. Facilitated people's understanding of a certain teaching theory, is an abstract theory to exert its function of practice of the intermediate links, is teaching theory to specific guidance, and use of mediation in practice.

Intellectual standard of the teaching goal, the overall teaching method of teaching, quantitative score evaluation method, depriving of the opportunity students explore independently, seriously taking up students self-study time; Teaching activities, teaching process, classroom teaching, teachers explain and teaching value all respectively by teachers, classroom, lectures, teaching materials and examination as the center, from teachers to students of one-way transmission relationship has been formed, students are accustomed to accept, serious lack of autonomous learning ability and the ability to deal with things alone; Just attaching great importance to the teaching of social values, not caring students' personalized development, failed to do according to their aptitude, cultivating students with different characteristics according to the fixed mode, neglecting the students personalized autonomous learning; Value students' cultural knowledge level, attaches great importance to the knowledge of receiving and memory, despise the exploration and application of knowledge, make students intelligence developed, beginning ability is poorer, intelligent development deformity, hinder the overall development. In order to improve the teaching quality and the learning environment, the disadvantages of traditional teaching mode need to be solved.

"Flipped Classroom" teaching model is based on information technology, making the teaching video through education technology, to make the students completed knowledge learning before the class, and teachers provide the opportunity for students to communicate and collaborative learning, making students realized the internalization of knowledge learning, to influence students learning environment, so that the students become the master of real learning. "Flipped classroom" teaching

mode, the author of this paper questions the basis of the study, and lay a foundation for further research.

### Theoretical Basis on "Flipped Classroom" Teaching Mode

From the perspective of the nature of "Flipped Classroom", the theoretical foundation of the "flipped class" consists of autonomous learning theory, constructivism theory and blended learning theory.

(1) Autonomous learning theory. Autonomous learning is corresponding with the traditional accepting study a kind of modern learning style. Take the student as the main body of learning, students themselves, not controlled by the others, undisturbed. Through reading, listening, study, observation and practice that individuals can get continuous change behavior. Learning independence, self-behavior and self-discipline is the embodiment of the three aspects of learning autonomy, are the three basic characteristics of autonomous learning. Among them, the independence is the basis of autonomous learning, self-behavior is the essence of autonomous learning, self-discipline is the guarantee of autonomous learning. This shows three characteristics are that the same thought: study subject is the master of his own learning, learning is ultimately dominated by learning subject yourself and complete. The famous American education psychologist Barry j. Zimmerman's autonomous learning model is shown in Fig.1 [1].

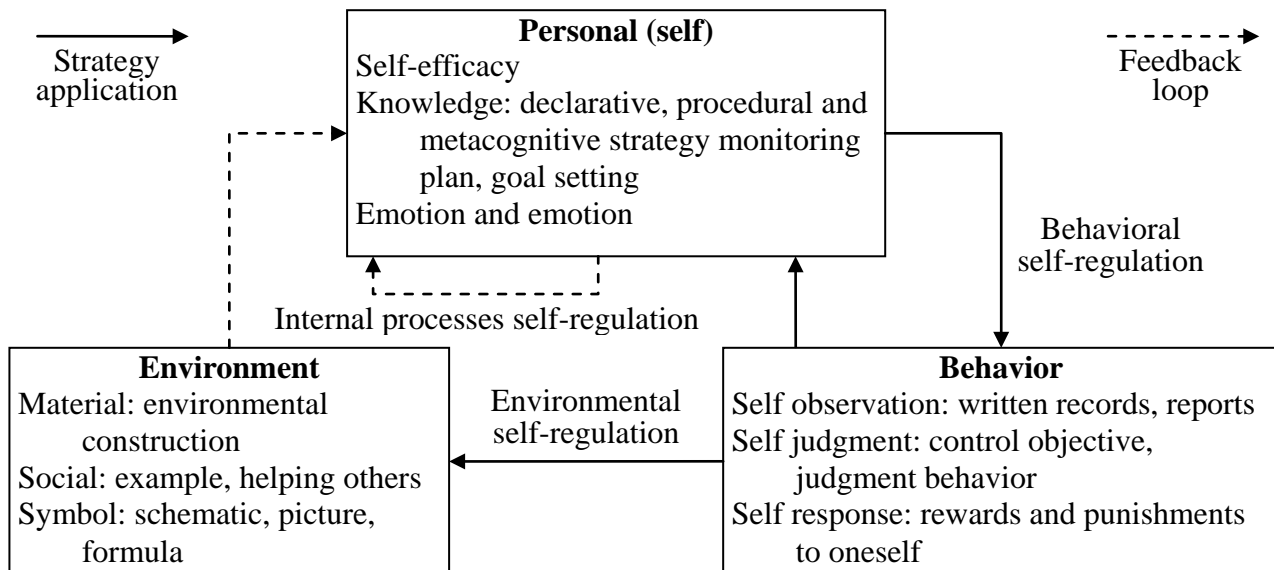


Fig. 1. Self-learning model of Barry J. Zimmerman

(2) The theory of constructivism. Constructivism is a branch of cognitive psychology school. Constructivism theory is an important concept schema, schema refers to an individual's perception to the world understand and way of thinking. Also can be regarded as a psychological activity framework or structure. Schema is the starting point of cognitive structure and core, or the things on the basis of human knowledge. Constructivism thinks on the concept of learning, "Education is not a stimulus to the reaction phenomenon, need to self adjusting, and established through reflection and abstract concept structure" [2]. Learning is a process of learners' active meaning construction, rather than the teachers "force-feeding" process. At the same time, under the theory of constructivism, knowledge construction, social, situational and complexity. Constructivism thought in the teaching, teachers should not ignore the students' existing knowledge experience. In classroom teaching, we should give full play to the enthusiasm and initiative of students, to students' own initiative, interactive way to learn new knowledge.

(3) The blended learning theory. With the development of education technology, the traditional classroom is gradually replaced by hybrid learning methods, through the use of high-tech equipment such as computers, can make different grades of the students sitting in the same classroom, using the previous knowledge and learning styles that match the equipment, tools, technology, media and

materials, according to the arrangement of their own learning progress. A mixture of three levels as shown in Fig. 2.

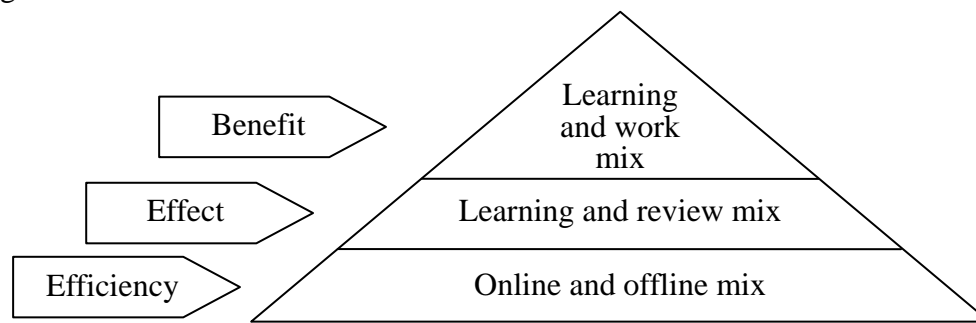


Fig. 2. Three levels of mixing

In the blended learning, both reflect the dominant role of teachers and the students' main body status. Network learning resources and the integration of traditional teaching resources, not only created the network learning environment, and there was a traditional classroom environment. From the perspective of students "flip" class, students according to their needs, choose the suitable teaching pace to watch video, online learning, to complete the knowledge transfer. In a face-to-face classroom, students have a problem, enlist the help of a teacher or peer at any time, under the guidance of teachers, peer collaboration to solve problems, realize the internalization of knowledge.

### "Flipped Classroom" Teaching Model

"Flipped Classroom" conducted in maximize the pre-course reading is one of the features of, on the basis of continuously extend the classroom learning time, improve the learning efficiency. The key lies in how to design through class activities which maximize the internalization of knowledge. Teaching design is the core of the "Flipped Classroom" teaching mode, mainly includes five steps [3] : first, identify problems, according to the course content of the teachers and students to watch the teaching video, practice before class put forward questions, summed up some to explore the problem of value; Second, independent exploration, the respect for the independence of the students throughout the class design, let the students construct their own knowledge system in independent learning; Three is, collaborative learning, be helpful for developing students' individual thinking ability, enhance the communication between the student individual ability, and students mutual tolerance; Forms of four is, communication, communication can be varied, such as holding exhibitions, presentations, debates, and small game, etc.; Five is, feedback, not only should pay attention to the learning results of evaluation, but also through the establishment of students' archives, and to evaluate the learning process."Flipped Classroom" is the core of the students, the teacher is the student to study the designers, instructor, helper and study partner. In this model, students and teachers promote each other and common development. "Flipped Classroom" teaching model is shown in Fig. 3.

### Advantage on "Flipped Classroom" Teaching Mode

A lot of advantages "Flipped Classroom" teaching model, combining previous research results, briefly summarized as follows:

(1) The students' autonomous learning to become a reality [4]. The traditional teaching model, students has already got the answer before created problems and explored. Seeking knowledge desire and ability to innovate is suppressed, is not conducive to cultivate innovative talents. Einstein once said: "the development of independent thinking and independent judgment ability, should always be in the first place, should not give top priority to acquire knowledge". Autonomous learning is the student through self-study, discovery, research and develop solutions to gain knowledge. Turn in the classroom, the students to use micro class teaching materials such as self-study, learning environment and rhythm can be controlled. Found problems in the process of

self-study, communication with classmates and teachers on the teaching platform, after the return to the classroom under the guidance of the teacher in question, through a variety of activities to learn the knowledge of deepening development, the whole process of the key steps are controlled by the students themselves. After the student to obtain basic knowledge, have the time to think and reflect on, with questions to class, under the guidance of teachers to find a solution. Independent learning as the main study way, got exercise self-management ability.

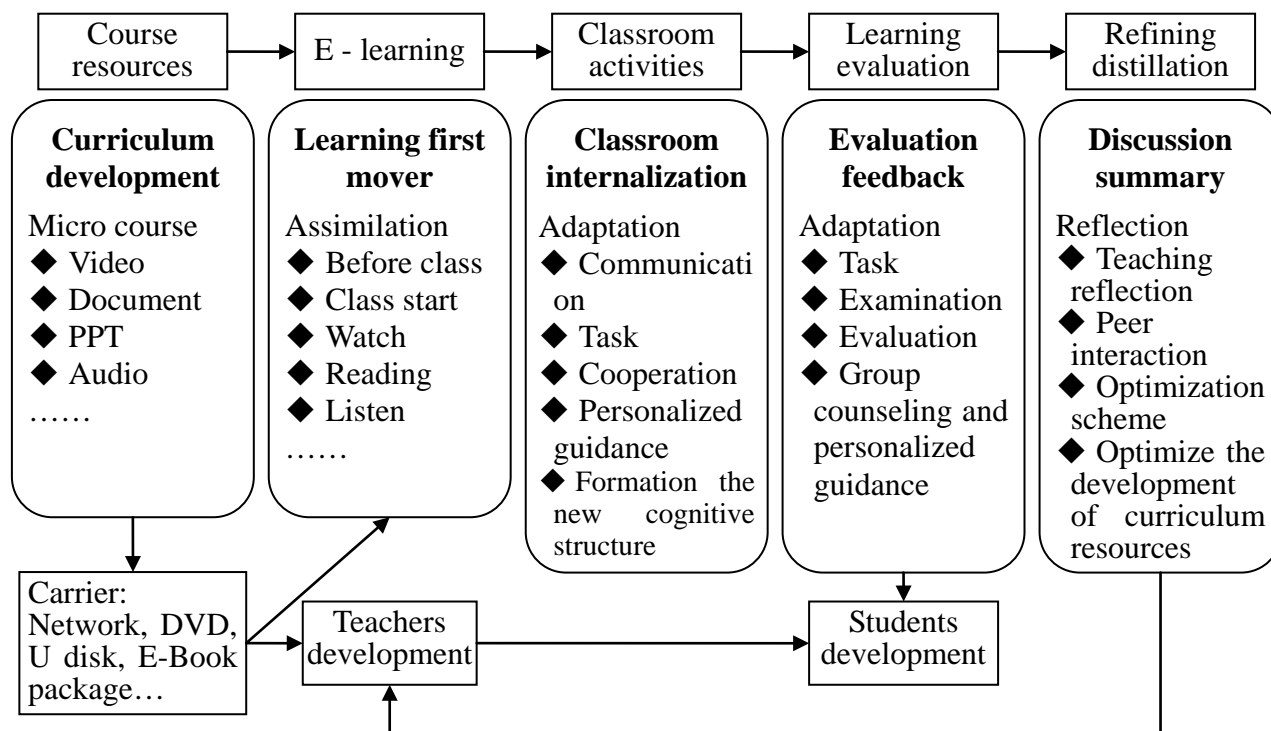


Fig.3. "Flipped classroom" teaching model

(2) The teachers' leading role into full play. In "Flipped Classroom", the teacher's role has changed, must learning materials for students, to guide students independent learning, class masters from the past to guide students to learn and change of the helper. Flip the classroom for teachers put forward higher requirements and challenges. Teachers on the basis of curriculum planning, the design take the student as the main body of learning tasks, surrounding the teaching focus on the difficulties in design class, supervise the students watch the video, for students to reflect the problems were explained. Teachers pay more attention to the students, the teaching material, learning new skills and new method. Teachers are no longer only focus on student achievement, pay more attention to the comprehensive development, including the autonomous learning ability, language expression ability, interpersonal skills, organization and management ability, emotion attitude and values, etc. Evaluations about students from multiple dimensions, process evaluation to seriously, much attention has been paid to the development potential of the students.

(3) Help to promote quality education. Quality education on the basis of the development of people and social actual needs, in order to improve the students' basic quality as the fundamental purpose, respect students' personality, pay attention to the exploitation of the potential, pay attention to the form of sound personality is a fundamental feature. Quality education is one of the basic form of higher animals, train to become a man of the basic quality education. In "Flipped Classroom" teaching mode, students according to their own actual situation to carry out the study, and always get personalized guidance, fully reflect the students' subject position. The class is given priority to with the students' independent inquiry and collaborative inquiry, develop self-study ability, exploring ability and creative ability. "Flipped Classroom" enriches the teaching content, expand the utility, broaden the students' field of vision, to cultivate students' comprehensive quality has a significant effect. Turn at the same time, students focus on the whole learning process, focus on student individual all-round development.

(4) Promote the depth of fusion between the education of information and technology[5]. In turn the classroom information technology has break through the concept of "auxiliary teaching", become an indispensable element in teaching. Class teaching "knowledge acquisition" means such as video and network resources, classroom "individualized collaborative learning environment", all need modern information technology. Only the support of information technology, the teacher make online teaching video can watch for the student learning, students' ability in the process of autonomous learning, through the network communication platform for your doubts to discuss with teachers and classmates. Students can really become the subject of information processing and the active construction of knowledge, rather than external stimuli to the passive receiver and the object of knowledge. Only with the aid of information technology, teachers can understand students' learning situation before class at any time and the test results, which according to the degree of knowledge acquisition instant change classroom teaching plan, classroom for students to explore the task. "Flipped Classroom" under the information technology support to make the role of teachers and students and historic changes have taken place in the classroom teaching structure, realize the depth of the education of information technology in the fusion.

(5) Promote the innovative talents training. Innovative talents refer to rich in pioneering, creative ability, can create a new situation. Usually show the individual character of flexible, open and curious, with energy and persistence, concentration, imagination and the characteristics of adventurous spirit, etc. The rote of traditional classroom teaching, the students passively accept teacher instilled knowledge. Due to all the knowledge will be the teacher told directly, so students get used to this kind of "time" mode of learning, thinking completely imprisoned on textbook, lost the initiative to explore new knowledge. And because in turn the classroom teaching process, students from passive to accept a "single textbook knowledge" into actively constructing knowledge "diversity", in the extracurricular teaching with the help of video, or other network resources for independent learning, in class according to their own interests and development degree choose teachers come to the conclusion that have to explore the value of the problems are explored. So gradually learned to explore and solve problems independently, creative thinking by exercise.

(6) Promote parental supervision and participation in [6]. The traditional teaching mode, parents and teachers focus on students' classroom performance communication, such as whether listening in class, after class is according to finish the homework, etc. Because of many teachers' limited energy , And the number of students is not possible for each student's performance in each class are described in detail. Question of "Flipped the Classroom" is: whether students in learning, parents can through what way to encourage them to learn? Turn over the implementation of the class not only turn the contents of the teachers and parents, and changed his parents in a passive role in the process of students' learning. When students study at home on video, parental supervision function is more important, to be able to see the students' learning situation clearly, and cooperate with teachers to take certain measures, is helpful to form a "student, parents, teachers" between interaction, promoting students to learn effectively.

## **Conclusion**

"Flipped Classroom" is a new and deeper blended learning mode, not only the traditional classroom instruction and online learning in the fusion of form, means and content is different, the idea of the teaching, learning and teaching mode. "Flipped Classroom" thoroughly get rid of the traditional "knowledge + class knowledge internalization" class teaching form of bondage, but will implement the order reversed, with the method of online learning, let the students according to the individual learning situation, select learning resources, complete knowledge before class, the classroom is no longer to carry on the knowledge, but the use of class time, the use of classroom learning activities, under the guidance of teachers to help students complete the knowledge internalization [7]. "Flipped Classroom" really achieve the teacher's dominant and the subjectivity of the students, improving student learning and promote the efficiency of teachers' teaching.

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