

# Designing the Flipped Classroom Model Based on the Learning Cell

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## **Abstract**

*Flipped Classroom takes advantages of the network to redistribute the traditional classroom and reform the way of teaching and learning, which implements the fundamental change of traditional teaching mode. Especially with the new principle and new technologies appear constantly, the combination of flipped classroom and new technology is more eagerly awaited. The learning cell can provide learners with a situation cognitive environment where learners can co-construct resources, carry out self-study, collaboration session and inquiry learning, intergrating Learning Cell in the flipped classroom will contribute to the change of teachers and students' role, and promote deep learning in flipped classroom.*

**Keywords:** Flipped Classroom, Learning Cell, Deep Learning.

## **1. Introduction**

In 2007, the flipped classroom was first applied to help the absent student study in chemical classes by Jon Bergmann and Aaron Sams from The Colorado rocky mountain forest park high school, who made PowerPoint presentations, record the content of courses and uploaded to the internet. This teaching mode was widely welcomed by the learners. In 2011, Salman Khan firstly recommended the concept of flipped classroom in his report about "Use video to recreate education" in TED Global Conference. Henceforth, with the video of TED famous for the all over the world, flipped classroom has been regarded as potential application of emerging technologies from 2012 to 2014 in the Horizon Report. Now the educational circles has payed so extensive attention to flipped class that became a main direction to reform the traditional teaching mode. At the same time, the new idea and new technology provide the opportunity constantly to promote effective development of flipped classroom. But the key is to choose a technology to not only optimizing the way to create resource, but also in favor of internalizing knowledge in class. Learning cell developed by "Mobile learning education - China mobile joint laboratory" is a ecological learning model supported by a kind of technical, which combines professional resources, people and tools together in complementary ways. This mode innovates the relationship between the students and learning environment. In this article, we will apply the learning cell to the flipped classroom to establish an effective flipped class mode based on ecological model and provide a way promote the flipped classroom's development.

## **2. The definition and characteristics of the flipped classroom**

### **2.1 Definition**

Flipped Classroom called the reversal or reverse the classroom, classroom is supported by the information technology to radically reform traditional teaching mode. The teacher redistributes class time to require learners who are the protagonist study more out-of-class and internalize knowledge with the instructor's help in class.

### **2.2 The characteristics of the flipped classroom**

#### **2.2.1 Redistribute class time.**

Flipped classroom thoroughly break up the traditional teaching structure. Before the class, the learners study the basic knowledge by themselves without the teachers spending time instructing conceptual knowledge. In the class, teachers carry out various activities to help students absorb knowledge and deeply understand.

#### **2.2.2 Change the role of the teacher and the student.**

In the flipped classroom, the teacher makes the transition from instructor into a organizer, creator and promoter to design the learning activities. And the teacher will play consultative and harmonious role to promote students' growth and development by designing the teaching activities. Students are the center of the learning process, who can autonomously control the learning time and content. Under collaboration environment supported by the technical, according to the learning content, students can discuss repeatedly with including teachers and partner to expand and create the depth of knowledge. Flipped class increases interactive time between teachers and students, so that the students can self-control deep learning and meet the demand of personalized learning.

#### **2.2.3 Flipped class needs advanced information technology to support.**

The development of information technology provide the most powerful technical support, which has changed human's production, study and thinking way at an alarming rate. Before class maximizing preparation time demand to break up the limit of time and space and realize student can study anywhere. In class, collaboration and interaction completed by teachers and students require an open environment of information flows provided by information technology.

## **3. Designing flipped classroom pattern based on the learning cell**

### **3.1 Introduction to the Learning Cell**

Learning cell is a new open study platform directed by the idea of generating, evolution and sociality and a seamless learning environment which supports U-Learning, free exploration, knowledge construction, communication and coordination. It can effectively integrate professional resources, people, education activities and tools to make learners study independently and comprehensively. So the student can expand and create the depth of knowledge. The system includes learning cell, knowledge group, knowledge cloud, learning community, personal space, learning tools and so on six big function module and has a series of features support the flipped classroom pattern, such as the integration of learning activities and learning content, KNS network, collaborative editing, paragraph notation and procedural information evaluation, etc.

### **3.2 The design process**

Based on the implementation of the flipped class structure, the author design the flipped classroom teaching mode based on learning cell which include key features of learning cell in each educational activities phase. This mode is in order to facilitate the internalization of knowledge and realize the deep learning.

3.2.1 Before class, based on the learning cell, teachers and learners can create resources together, and learners study significantly by themselves and note the difficult points. Before class, students need to independently arrange time previewing conceptual knowledge in the learning materials provided by the instructors, complete the specific learning activities assigned by the teacher and record the questions appearing in the process of learning. Learning cell platform can provide supports for the flipped classroom as follows.

Create resource. Flipped classroom require teachers collect and take a lot of video or documentation to help students master basical knowledge. But the base and learning-style of student are so different that the data prepared by teacher cannot meet the learning needs of every classmate. With learning cell's way of creating and sharing by the group, on the one hand, it can stimulate maximally the learners' participation, the teacher is no longer the single founder. And anyone who participates in the learning cell can contribute the resource. In this case, the learners transforming from the content consumers into content creators not only maximally reduce teachers work, but also stimulate the students' initiative to deeply understand knowledge in the process of collecting information. On the other hand, learners can browse different material about some knowledge uploaded by multiple users and then have a comprehensive understanding of knowledge points. Plenty terminal display of learning cell can adapt and adjust by itself according to the presentation and organization of the resources in the different equipment. It is truly realizing to meet the learners' study demand and have more time to study anywhere.

Decorate a targeted learning activities. Learning cell provides a discussion forum, polls, answer questions, online communication, published works, six thinking hats, concept map, learning reflection, practice tests, and other 13 kinds of multilevel cognitive learning activities. And then teachers can make use of different forms of activities to strengthen the consolidation of learning content and find the difficulty of the students.

Submit questions. In the process of learning materials, student should record harvest and questions in time and published questions in the "question answering" of the learning cell. Then the teachers count and conclude problems and answer uniformly in the class. At the same time, students can use the "online communication" contact with teachers who can timely solve the question.

3.2.2 In class, integrating content with activities of the learning cell promotes students interact deeply with the knowledge. With the constructing together and paragraphs notation enable collaboration session and critical understanding. And then the students will complete the internalization of knowledge.

In the theory of reintegrating learning and teaching, Desmond Keegan has put forward that combining learning materials and learning activities effectively is to guarantee the students' knowledge, skills and attitude to have an expected change according to the teaching goal. So, in the flipped classroom, the key of knowledge internalization is to design the in-class learning activities. The mode of integrating learning activities with learning content of learning cell supports to embed the learning activity in the learning

contents and different curriculum design to make learning activities more targeted. It can maximumly promote learners input energy, carry out consultation session and inquiry activity, help learners deeply understand knowledge and realize to apply and migrate the knowledge, forming the ability of solving practical problems. For example, teachers can design the activities of the group discussion, or class discussions based on the discussion area and the students can speak freely. Then they can construct knowledge in the process of discussion with other learners. At the same time teachers can also design activities based on published work to explore the task and to realize the migration application of knowledge.

3.2.3 After class, learning cell's multiple subject participating's evaluation of process promote the learner's reflection and form higher-order thinking skills.

With the collaborative session, the students can critically understand. Although the class learning phase formation of the early knowledge system can provide scaffolding for students to solve the problem, only a simple shallow knowledge is not enough to support to solve complex problems, will need to understand complex concepts through dialogue consultation and reflection, and then establish a meaningful, deep knowledge system. For example, teachers can be based on specific collaboration topic to establish a learning element, and open the collaborative construction of the learning element, allowed each learner to participate in the study to edit existing resources content, add text, insert images, embedded external links, With the participation of each learner, the formation of high quality, multi angle learning resources will be formed, and the students' comprehensive understanding of knowledge will be facilitated.. for example, if learners has doubts about the contents of a section of their study or have their own views, they can use function in a timely manner to make a comment on the content of the content. which is helpful for the learners to communicate with each other for a specific problem, and expand the depth of the extension, create the depth of the extension in the process of interaction with classmates and teachers again and again.

#### **4. Conclusion**

The combination of flipped classroom and technology has a lot of way, but the key technology can bring change to flipped classroom. The concept of flipped classroom determined the students' autonomy and exploratory of learning. And the independent learning ability of students, team cooperation ability and team consciousness are very important. The main task of teacher is to answer questions and organize activities in the process of introduction. The purpose of the learning cell building and its features can promote the change on the right and help transform the role of teachers and learners to contribute to the students' deep learning in the process of introduction.

#### **Reference**

[1]Sums, Aaron.(2011).The flipped classroom, 242nd National Meeting of the American-Chemical-Society (ACS). AUG 28-SEP 01.

[2]Sarah D. Sparks. Lectures Are Homework in Schools Following Khan Academy Lead. [Online] Available: [http://www.edweek.org/ew/articles/2011/09/28/05khan\\_ep.h31.html](http://www.edweek.org/ew/articles/2011/09/28/05khan_ep.h31.html).(August 15,2012)

[3]Jingle Zhang, Wang Ying. (2012).Turn the classroom teaching mode study .Journal of distance education, 4,46-51.

[4]Shengquan Yu, Xiamen Yang.(2009) .The learning environment design and shared learning resources, the concept and structure of the original learning. Open education rsearch,2,47-53.

[5] Shengquan Yu, Chen Min. (2014) Based on learning platform micro class design. Open education research, 1,100~110

[6]Renkun Liu, Tingling Yang, Mali Wang.(2012) .Theory of modern distance education diversified way of learning evaluation. Journal of Chinese audio-visual education,4,53- 57

[7]Zhiyong Zhang, Gouging Li.(2013). Learning evaluation of deep learning effective way. Modern distance education, 1,31-37.