A New Design Model of Collaborative Learning Environment in Online Courses

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Abstract. Based on a humanities and social science research youth fund projects from the Ministry of Education of China, this article introduces a design model of a collaborative learning environment in online courses. To integrate collaborative learning into online courses, this article analyzes the concept of the learning environment and collaborative learning environment, defines the collaborative learning environment and analyzes its elements. Finally, we design the model of collaborative learning environment in online courses.

Introduction

Online education is one of the most effective ways to promote equal education, as the core resource of online education, the quality of online course restricted the development of online education. Based on researching about online education’ practice of Beijing Institute of Technology (BIT), in online education, the instructors and learners are separate, learners usually learn by themselves. The lack of communication and collaboration often lead to a series of problems such as learners’ understanding level will limit the breadth and depth of knowledge. Thus, in the design of online courses, we should fully consider providing learners a collaborative learning environment. We have made many achievements in the construction of online courses, but there is almost no deep collaborative learning in existing online courses. Most of the online courses are lack of deep interaction of the students. The reason why this lack happens is that the research of the online courses learning environment is not enough; we haven’t found the way online courses and collaborative study integrated.

Since the 1990s, scholars have done a lot of work to understand and define learning environment. This article tends the definition of Zhixian Zhong (2005). He supposes that learning environment is the integration of all kinds of supporting conditions that promote learners’ development. Supporting conditions include resources, tools, people, activities and relationship between teachers and students. The integration of all kinds of supporting conditions will produce various teaching activity mode. We use this definition as the theoretical basis of research collaboration learning environment. The core of the learning environment design is what learners do (activity), with what support (resources). So, we do the following definition: a learning environment is the integration of learning activities and support (resources) to promote learners construct knowledge (as shown in Figure 1).
We define collaborative learning environment as follows: The integration of learning activities which organized in the form of team and learning support system which supports collaborative learning.

The Bit Model about Collaborative Learning Environment in Online Course

The BIT Model Design Principles

In this paper, there are two principles for the design model of collaborative learning environment in online courses: (1) To realize deep integration of online courses and collaborative learning; (2) Model easy to be popularized.

Construction of Collaborative Learning Environment in Online Courses

In order to integrate collaborative learning into online course, the BIT model has designed a “Collaborative learning supporting system” and a “Call mechanism”.

“Collaborative learning supporting system” is independent units of online course, it may work independent of the online course, it embodies a design principle of “Model easy to be popularized”. Based on the principle of deepening integration of online courses and collaborative learning, collaborative learning proceed at any time in the online course, “collaborative learning supporting system” will be integrated in a particular course, the collaborative learning and knowledge units have tied for the unit, learners may complete the collaborative activities and enter the next phase of the course learning.

Collaborative learning supporting system consists of collaborative learning activity pool and collaborative tools. Collaborative activity pool is a learning activity system based on certain rules, composed of several collaborative activities and can be called by the online course. Through specific code and data, we can integrate collaborative learning supporting system into an online course.

Through call mechanism, an online course can integrate with collaborative learning supporting system which serves as a separate unit of the online course.

As shown in figure 2: after learners complete knowledge unit and entered collaborative learning unit, the collaborative learning unit triggers call mechanism according to the type of knowledge. Call the most suitable collaborative learning activity from collaborative learning supporting system. As shown in figure 3: through call mechanism, collaborative learning activity pool can integrate with many online courses.
Figure 2. Collaborative online course.

Figure 3. Collaborative online course.
Design of Collaborative Learning Supporting System

Design of Collaborative Learning Activity Pool. Rui Yin takes generic analysis method and sums up five forms of collaborative activities (Xie & Yin, 2006): discussion, works design, data collection, work evaluation and role playing. Among them, data collection and work evaluation can be used in other activities. So we don’t classify them. In addition, co-text processing, brain storming, the discovery method, debate and others can be listed. According to the feature of learning activity, we classify the following collaborative learning activity forms: discussion, works design, role playing, co-text processing, brain storming, the discovery method, debate and so on.

The classification standard of these activities can be the type of knowledge or the different teaching strategies. It is also the basis of the call mechanism. The design of collaborative activity can be preceded by group size, activity duration, cooperative learning rules, resources and tools, etc.

Design of Collaborative Tools. The collaborative learning tools in online course include search tool, online dictionary, calendar, learning log, and communication tools (such as twitter, forum, and message board and discussion group) etc. There are also some abstract tools like method, mode, resources and scaffolding. These tools reflected in the curriculum and activities, provide learners’ guidance, for example, the assignment requirements and template when submit the homework. As shown in figure 4.

![Collaborative learning tools](image)

**Figure 4. Collaborative learning tools.**

Design of Call Mechanism
The design of call mechanism is on the basis of knowledge type and learners’ will:

a. Classify the content into different types: declarative knowledge and procedural knowledge;

b. When the system decides which type the content is, it will activate corresponding activity;

c. If there are many types of activities are satisfied with the content, then the learners’ turn to decide which activity type he will.
As the content and corresponding activities store separately, the call mechanism just needs to activate corresponding activity after learners done the knowledge unit. According to this, the call mechanism will realize by factory model of object oriented programming language. This model facilitates the expansion of later system. It defines an interface for creating an object to let subclasses decide which class to instantiate. In this system, we see the type of knowledge and corresponding activity as the interface for creating an object, learners as subclasses. Let learners decide which type of knowledge should be instantiated.

**Conclusion**

In order to realize the integration of an online course and collaborative learning we design a collaborative learning supporting system and call mechanism. Through the call mechanism, collaborative learning can be integrated into an online course. So in the next step of work, we will refine the classification of cooperative learning activities and realize the design of call mechanism. At last, we will adopt our collaborative learning supporting system in a specific online course.

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**References**


