Restructuring of Course Design for Blended Learning

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Abstract Blended learning (BL) means the systematic and thoughtfully planned integration of face-to-face instruction and online learning. The focus of its study has shifted from discussion of BL's definition, effect and decision of whether or not to adopt BL, to exploring how to carry out BL. Course design turns to be the essential factor contributing to the success of BL approach. This paper summarizes the multi-dimension factors and modes of BL, puts forward the underlining principles of course design and constructs the framework of BL course design, for practitioners' reference.

Keywords Blended learning · Course design · Key elements

1 Introduction

With the advent of the era of big data and the innovation of network information technology, blended learning, as a new teaching paradigm that combines modern information technology with traditional classroom teaching and addresses the individual needs of students, gradually gets attention of researchers and teaching practitioners. Garrison and Vaughan [1] pointed out that when blended learning is fully understood and implemented, higher education will face the biggest changes since the expansion in the 1940s. Blended learning involves breaking completely the original model, redesigning the teaching objectives, teaching content and teaching methods. The research focus in this field has transformed from whether to blend to how to blend. However, in the teaching practice, course implementers often have insufficient understanding of the complexity of blended learning design [2]. In addition, due to differentiated environments, there are various BL design models. How to decide the most suitable model among all those designing choices? The confusion in

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deciding the appropriate BL design has become the reality of the majority of teachers of higher education institutions. This study analyzes the literature of the last 15 years to explore the elements, patterns, principles and steps of BL design for the reference of course implementer.

1.1 Connotation of Blended Learning

Blended learning has attracted the attention of researchers at home and abroad in the past decade. Relevant research and practice are mainly in the field of higher education and adult education. In defining blended learning, Bleed [3] referred to it as a mixture of bricks and clicks. Bricks are face-to-face classrooms, and mouse clicks represent online learning. Robinson [4] believes that blended learning is a kind of teaching method in which teachers and students conduct face-to-face teaching at a regular fixed time, supplemented by students accessing learning materials through the network, completing course tasks and participating in class discussions. These two definitions represent the views of early researchers, who believe that BL is a mixture of face-to-face teaching and online learning. Graham [5] holds that BL is related to three types of guidance and learning: the integration of online learning and face-to-face guidance, a mixture of guidance methods and a mixture of guidance modes. Ellis and Steed [6] proposed that blended learning is a systematic combination of face-to-face instruction and online learning, emphasizing the systemic integration. Nell and Wilkinson [7] believe that blended learning refers to the instructor's purposeful combination of face-to-face teaching and digitally supported online learning. This combination involves a series of instructional strategies.

1.2 Course Design, a Key Element for the Success of BL

BL has become popular in recent years, but it is still far from perfect. Its research and teaching practices face three major challenges: First, teachers or instructors have insufficient confidence in the application of digital technology. The current technology applications are mainly used for management purposes, rather than for learning purposes. The second is that there is no unified and convincing definition and interpretation of BL, and everyone has different understandings, which brings different standards for guiding practice. The third is the lack of standards for guiding and evaluating the design of BL courses.

Many researchers believe that the problem to be solved now is not whether to blend, but how to design an effective blend. It is by no means simple to reconstruct the online learning framework and determine the appropriate hybrid method [8]. Bleed [3] believes that blending does not mean that technology and traditional courses are rigidly tied together, nor does it mean that technology is used as an additional way or information to teach difficult concepts or knowledge. It should be regarded as the

development of college courses and an opportunity to re-plan the design. There should be systematic integration of face-to-face teaching and online learning. The process of BL design requires a lot of planning and forward thinking [9]. In addition, the key to blended learning is to create a positive and collaborative learning experience for students by redesigning the curriculum and help students actively build their understanding of knowledge through active participation in learning. Yang et al. [10] also proposed that the key to determine whether the effectiveness of blended learning can be exerted lies in how to integrate the online and classroom teaching activities through teaching design to maximize the benefits of both teaching.

In teaching design, multiple factors need to be considered, including how to apply technical tools, how to promote interaction and how to stimulate students' enthusiasm for participating in discussions. Course designers should also consider which content is most suitable for being presented over the Internet compared to face-to-face teaching.

2 Selection of Mixed Curriculum Design Mode

2.1 Course Design Elements

Course design is the result of comprehensive consideration of multiple factors, and BL design, as it joins the online platform and subverts the previous teaching arrangement, seems complicated, with a lot of factors to be considered.

Basturkmen [11] proposed that the key elements of BL design include the needs of students, specialized texts, methods, course content, resources and activities. Hockly [12] summarizes nine elements that need to be considered in BL design based on the analysis of influencing factors and design steps of blended learning: interaction, discipline research principles, task design and tools, materials, integration, evaluation, environment, teacher training and student training.

Exploring content design, the core part of curriculum design, Chen et al. [13] divided blended learning into three core components: pre-class online learning, in-class application and after-class practice. This kind of content design is currently adopted by many researchers, but it is not applicable to all disciplines. Valiathan [14] pointed out that there is an idea behind blended learning: The instructional designer divides a learning process into several modules and then decides to present these modules to learners with the best technology. According to this idea, the entire instructional design can be divided into three modules: tutoring aid module, task execution module and task evaluation module. Each module contains several tasks, and then, intelligent technology monitors and evaluates the task execution process of students, after which real-time feedback is given.

2.2 Course Design Model

Mirriahi et al. [15] summarized previous research and proposed a RASE framework for BL design and used it for self-evaluation of blended learning.

The four elements of BL design defined by the RASE framework include: R, resources, includes clearly structured subject content and exercises. BL resources can be divided into two categories: information transfer resources and those for interaction; A, activities, covers various activities designed for the purpose of acquiring knowledge and improving capabilities; S, support, refers to technology support, peer support and teacher support; E, evaluation, aims to make students know their own learning status, so that teachers can monitor students' performance, identify whether they need help.

The application of the four-element framework to the evaluation of BL design is an extension of the above theory. R, resource standards, includes two aspects: the availability of digital resources and availability of formative evaluation resources. Digital resources need to be stable and accessible at any time. Students may involve in creating resources. A, activity design standard, means that face-to-face activities and online activities should promote the learning experience and help students achieve the expected course goals. Matching online and face-to-face activity design with learning outcomes can inspire the best blend. S, support system standards, may include three aspects: support for students' digital application skill, support for interaction and feedback support. Seeking knowledge back and forth between the two worlds of classroom and online learning requires specific skills and qualifications for learners [16]. And maintaining interaction online proves no easy task, so it is necessary to provide a variety of interactive forms and tools. Feedback support can include instructor feedback, peer feedback, etc.

3 Principles of Blended Curriculum Design

3.1 Needs Analysis Being the First Step

Yalden [17] believes that the curriculum design includes seven steps, among which needs analysis is the first step and determines other steps. Needs are divided into objective needs and subjective needs. The former includes all objective information about the learner (such as the learner's current learning level and learning difficulties). The latter refers to the cognitive and emotional needs (such as confidence and attitude) of learners during the learning process. Hutchinson and Waters [18] divided needs into target needs and learning needs. Learning needs refer to what learners need in order to acquire professional abilities and communicative abilities in target scenarios. Target needs refer to what the learner needs to do in the target situation, which can be further subdivided into necessities, lacks and wants.

One of the main purposes of the BL is to increase students' engagement and participation. Students are the major participants of blended learning. To achieve the desired results, first of all, we must analyze the learners' needs and understand the learners' learning goals, resource preferences, etc. Medina [19] also believes that before starting any blended learning project, a preliminary needs analysis should be performed, and the analysis results will provide a factual basis for the next step. In the teaching practice, the step of needs analysis is often neglected, and the curriculum designers and implementers have insufficient understanding various needs of students.

3.2 Interaction Being the Focus

Social interaction is essential to exploit the advantages of blended learning. According to Lave and Wenger [20], learning is a process in which a learner internalizes knowledge, either acquired from others or in the process of interacting with others. For a new generation of learners known as Internet natives, the leverage of technology and social networks are important. In the social interaction with peers, high-level brain functions including reasoning, understanding and critical thinking can be achieved. The key to blended teaching lies in the deep integration of online learning and face-to-face classroom teaching. Yang et al. [10] also pointed out that various forms of communication and interaction are the key factors in the implementation of BL in English teaching. As an implementer of blended learning, teachers take up complicated roles, not only as facilitator to development of critical thinking and creative thinking, but also as a stimulator to provide social incentives to encourage multi-level interaction.

3.3 Evaluation as Guarantee

Teachers who carry out blended learning often encounter such situation that they raise a question for discussion, while no one responds, or there is no constructive answer. Some students are not active in completing online tasks and classroom tasks and only fulfill the minimum requirements. Ensuring student participation has become major challenge. In order to address these problems, it is necessary to design an appropriate and continuous evaluation system.

In the evaluation system of BL, peer evaluation should be given full attention. Studies have shown that the application of online peer evaluation can effectively improve students' learning effectiveness, learning satisfaction and learning participation. Incorporating peer evaluation into BL design can help develop students' ability to think critically, listen and respond to feedback, and make feedback for others' performance.

4 Steps of BL Design

4.1 Needs Analysis and Deciding Learning Objectives

In order to meet the needs of blended learning learners and ensure the effectiveness of teaching, it is necessary to analyze the learners' target needs and learning needs and make clear the main purpose of the learner's learning courses, the type of learning resources they like, the learning method they prefer, the platform they usually use, the type of interaction which is more natural and appropriate, the lack of knowledge of their own knowledge, and autonomous learning ability and strategy. Acquisition of these data will provide a practical basis for later designing of instructional framework.

After conducting a needs analysis, the course designer should determine the stratified learning objectives, taking into consideration all those factors such as courses characteristics, the requirements supposed to be fulfilled of this major, curriculum requirements, learner realities and the context situation. The learning objectives may include the overall curriculum knowledge goals, ability goals and emotional goals, and they can also be subdivided into face-to-face goals and online learning goals, so that the overall course teaching is clearly oriented.

4.2 Determining the Mode, Content, Method, Evaluation and Interaction

The common issues about the proportion of online learning and face-to-face classrooms, the integration of the two components and the particular mode of blending need to be decided according to the characteristics of the course, course conditions and technical conditions. It is necessary to contemplate which content is suitable to be presented online and which is fit for face-to-face teaching. In addition, for the design of BL courses, the most important thing is the innovation and evolution of teaching methods. The implementation of blended learning will inevitably mean the redesign of teaching methods. Determining the best method to meet the needs of a specific course BL is a critical step. The choice of learning management system (LMS) also needs careful consideration. Decisions should be made matching the technical support strengths, learning management ability and interaction support alternatives of the LMS with characteristics of the particular course. The ultimate goal is to exploit the strengths of the LMS to serve the teaching objectives of the course. The BL course evaluation includes multiple components including evaluation of students' competence of exploration and team collaboration, self-evaluation of participation and achievement and peer evaluation in group work. It is necessary to carefully design the curriculum evaluation system, combining developmental evaluation with final evaluation. It is also necessary to appropriately increase the ratio of developmental evaluation, increase the frequency of peer evaluation and set the appropriate proportion of online task completion and face-to-face classes in the

overall evaluation. In addition, efforts should be made to design a multi-dimensional interaction system, which encompasses teacher–student interaction, peer interaction and interaction between learners and the learning content, so as to make the multi-dimensional interaction a powerful means of increasing student participation.

4.3 Implementation, Feedback and Improvement

After the BL course design is completed, a study guide for students needs to be drawn up, setting out the overall design arrangement and learning strategy recommendations, detailing the pre-class tasks, class content and post-class activity arrangements of each chapter, so as to make learners understand, accept and actively participate in the blended learning process. Before the start of the course, an orientation proves to be essential, which illustrate the purpose of blended learning, platform technology operation, course evaluation system, etc., and prepares for the implementation of technology and strategy for the course. During the course implementation, mid-term interview and survey may be conducted to find out the problems in online and face-to-face teaching, and the results can be used to adjust the design details. This initiative is especially necessary for novice teachers who are just beginning to engage in blended learning. After one round of implementation, the effects of the new BL design should be tested by conducting a comparative analysis of the teaching effect, students' engagement and satisfaction. After that, it is time to adjust the overall BL design according to the results of the students' feedback; therefore, it forms a closed loop of continuous course design improvement and development.

5 Conclusion

Course design is the key part of BL implementation, guaranteeing the effect of blended learning. In designing a BL course, the course designers should consider various design elements, follow the basic principles of needs analysis as the first step, interaction as focus, and evaluation as guarantee. The design process should also include continuous feedback, improvement and development, so as to acquire higher engagement and satisfaction of learners.

The blended learning reform continues to advance in the unremitting exploration of researchers and teachers. In terms of instructional design, it calls for more empirical researches, especially in the comparison of various design models and of methods adapted to the characteristics of blended learning.

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