Research on the Optimization of Learning Model Based on Modern Information Technology

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Abstract: On the basis of modern information technology, this paper conducts a research on the optimization of learning model by investigating a large number of relevant literature and combining the connotation and elements of the new learning model with curriculum integration. The purposes of this research firstly lie in deeply studying the connotation, theoretical foundation, theoretical and practical value of the new learning model of information technology with curriculum integration. Second, the integration of information technology and learning model will be carried out to launch a new learning model of “independence, inquiry and collaboration” that is compatible with modern education technology, and then the integration theory of information technology and curriculum will be deepened to provide valuable literature materials for future research. Third, it aims to guide traditional teaching model under the advanced education thought, teaching theory and learning theory, and discard the dross and select the essence to realize the supplement and comprehensive optimization of the traditional single multimedia face-to-face learning model.

1. Introduction

Modern information technology is an active technology to acquire, process, store, transmit and use information of sound, image, text, digital and various sensing signals by means of the combination of computer technology and telecommunication technology based on microelectronics.[1] The advent of the information age has prompted the corresponding reform of the traditional classroom learning model.[2] The communication media has also transformed from the single chalk and blackboard to the multimedia. More and more modern information technology is also being widely used in various classes. The wave of informatization is sweeping the education field rapidly and promoting the fast development of education informatization, thus enhancing education modernization with education informatization and cultivating innovative talents to realize the rapid development of education across the field. [3] Education informatization emphasizes the use of information technology to optimize teaching, create a harmonious and pleasant learning environment, and cultivate innovative talents required by the information society, so as to promote the reform， development and modernization of education. In the learning activity, the learning model, which plays a leading role, restricts the learning organization form and activity form, the learning environment and the learning quality. [4] Therefore, the construction of a new learning model meets the requirements of the times and responds to the curriculum reform in the 21st century. We can achieve the organic integration of information technology and curriculum by taking modern education technology as the breakthrough.

2. Concepts and Elements of Learning Model

2.1 Learning model

In 1972, American scholars Joyce and Weil pioneered the study of learning model. In their book *Models of Teaching*, they proposed that teaching model is a pattern or plan that constitutes curriculum and assignments, selects textbooks and prompts teachers’ activities. In China, experts and scholars hold different views on the learning model, so there are many versions of the definition

of learning model. [5] Accordingly, the definition of learning model can be summarized as the following four aspects: theory, structure, procedure and method. Theoretical theory: learning model is formed in the learning activities used to organize the learning theory; Structure theory: under the guidance of a certain learning ideas or a theory, learning model is a basic structure or framework of all kinds of teaching activities; Procedure theory: learning model is a relatively stable teaching procedure and the strategy system based on the objective learning regularity and certain learning philosophy; Method theory: learning model is a kind of learning and operation method and also a strategic system for solving problems. Referring to various viewpoints, the author thinks that the learning model is a relatively stable, orderly and operable structure framework and activity program of learning activities established under the guidance of education thought and theory.

2.2 Elements of the learning model

The learning model is usually composed of five elements: theoretical basis, learning objectives, operating procedures, implementation conditions and learning evaluation. They are indispensable and inseparable and the regular connection between these five factors is the structure of the learning model.

Theoretical basis: Advanced and effective learning model is generally supported by modern education theory. The standard of learning behavior under the guidance of certain theory is the foundation on which the learning model is formed. Different education ideas produce different learning models, and the theoretical basis of procedural learning model is behaviorism psychology.

Learning goal: The learning goal is not only the core part of the learning pattern structure which has the restriction function to other factors but also as the standard of learning evaluation. Different learning models serve different learning objectives.

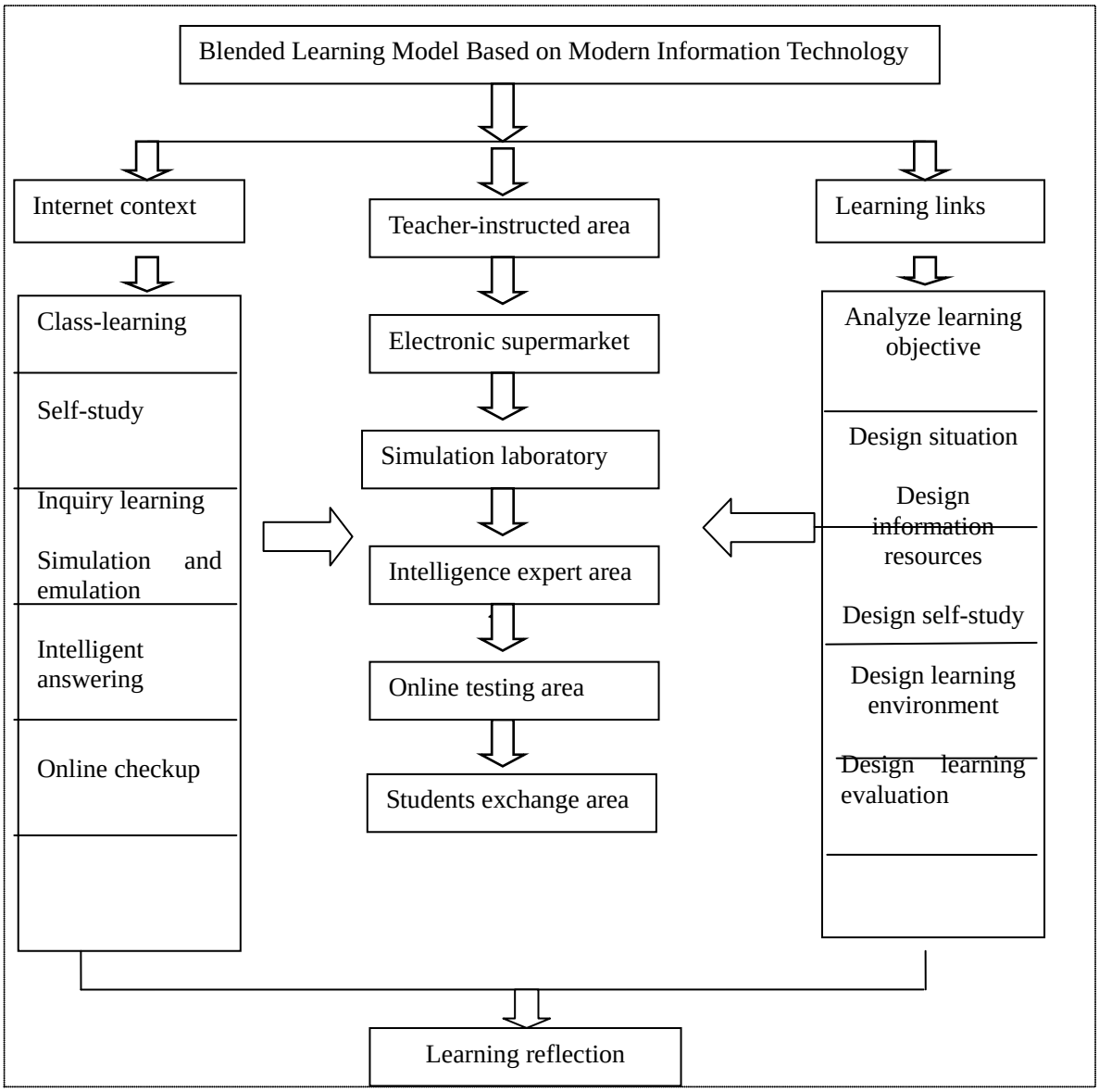
Operating procedures: Specific logical steps and operating procedures should be followed in the learning process, which stipulates the activities of teachers and learners and the sequence of activities.

Realization condition: It is the premise that the whole learning activity can be carried out smoothly, and a variety of factors that affect the learning model such as teacher, student, tool and so on.

Teaching evaluation: it refers to the evaluation methods and standards used by different learning models to check whether tasks are completed or goals are achieved.

3. Construction of New Learning Models

Based on modern information technology and combined with the core elements of the teaching model, this research constructs a new blended learning model featured with “independence, inquiry and collaboration”. This model emphasizes college students’ independent learning, research studying and the application of modern information technology. On the basis of the traditional learning model, it incorporates information technology into the modern education. Please refer to the following flow block diagram for the implementation steps of the blended learning model:



The theoretical basis of blended learning (B-Leaning) model follows the basic consensus of the academic community of education, that is, the traditional teaching dominated by direct instruction can achieve better teaching results in the well-structured subject area, but in the ill-structured subject area, the research-based teaching guided by the constructivist teaching method will lead to excellent results of students. However, the direct learning method should also include the factor of “independent inquiry”. The B-learning should be adopted to combine the advantages of traditional learning model with the advantages of digital or network learning. That is to say, teachers should not only guide, inspire and monitor the teaching process, but also fully reflect students’ initiative, enthusiasm and creativity as the subject of the learning process.

The B-learning model consists of the sub-models of class-learning, self-study, inquiry learning, simulation and emulation, intelligent response and online checkup. The specific explanations of the sub-models are as follows:

(1) Class-learning

The traditional classroom learning model is a traditional collective learning with teachers as the transmitter of knowledge and students as the recipients of knowledge.

(2) Self -study

Based on the independent learning model of local area network, the learning model of learners is characterized by collaborative learning with the help of network. At this time, the learning is not passively taught by teachers, but students acquire knowledge in a certain social and cultural

background and situation. Learners use necessary learning resources to carry out meaning construction through consultation, communication and cooperation with others, and promote the transfer of knowledge and the cultivation of creativity.

(3) Inquiry learning

The information technology-based research learning model includes four basic elements: setting up a situation, proposing a subject, self-inquiry, online collaboration, and subject summary, etc. This model is a learning method which takes students' activities as the center, with the exploration and research of scientific knowledge as the starting point, and takes the cultivation of students' ability as the fundamental. Similar to independent learning, learners use various learning resources to construct meaning to acquire knowledge in certain situations.

(4) Simulation and emulation

In the experiment—computer simulation—reinforcement model, the process of simulating experimental phenomena is simulated by computer, and learners talk to the computer and change parameters to promote students to identify the conditions and phenomena of the occurrence and change of experimental phenomena, and then make abstract generalization to form a good cognitive structure.

(5) Intelligent answering

The intelligent expert online tutoring and answering system is an intelligent system which can realize friendly man-machine interaction. It has the function of knowledge storage, data statistics and logical reasoning. When learners encounter problems, they input key words to search, which can automatically retrieve problems according to a certain matching strategy, and then present effective answers to learners.

(6) Online checkup

It's Students' online test and self-learning evaluation model. The main functions of the online examination system include: users select the type of examination paper, generate the examination paper from the examination database at random, save users' answers, search results and the system's automatic analysis of scores. Students can choose knowledge points, modules, chapters, and semester contents to take online exams according to their learning conditions. This will not only greatly save manpower and material resources, and also provide learners with more opportunities for self-evaluation.

4. Conclusion

The new learning model of "independence, inquiry and collaboration" is a learning model optimization research based on the advanced education idea and education theory of information technology and curriculum integration. The design of the operation procedure model of the new teaching mode of "self-determination, inquiry and collaboration" is the top priority. It is the arrangement of the whole teaching activities, as well as the activity sequence of teachers and students, which is related to whether the teaching activities can be carried out smoothly. The design of teaching process is the link of transforming the theory of new learning model into learning practice. In the learning process, the role of teachers and students has undergone a significant transformation from the original main role to the leading role, which is the "optimization" feature advocated by this paper. The new learning model of "independence, inquiry and collaboration" is a combination of traditional classroom and network classroom. In the learning process, teachers always focus on students and create an environment of their own for learners. Through collaborative communication between learners, group discussion, knowledge construction is completed. In the learning process, the teachers always appear as organizers and instructors, who do not bring much pressure to learners, thus creating a relaxed and pleasant learning environment for students to learn effectively.

References

[1] Applications of Mobile Social Media: WeChat among Academic Libraries in China [J]. Jianhua

Xu, Qi Kang, Zhiqiang Song, Christopher Peter Clarke. The Journal of Academic Librarianship. 2014

[2] Multiplex Multi-Core Pattern of Network Organizations: An Exploratory Study [J]. Youmin Xi, Fangcheng Tang. Computational & Mathematical Organization Theory. 2004 (2)

[3] Relationship betwe en participants''level ofeducation and engagement in their completion of the Understanding Dementia Massive Open Online Course. Lynette R Goldberg, Erica Bell, Carolyn King, Ciaran''Mara1, Fran Mc Inerney, Andrew Robinson1, James Vickers. BMC Medical Education. 2015

[4] Machine and Social Intelligent Peer-Assessment Systems for assessing large Student Populations in Massive Open Online Education. Jeffrey H Johnson, Cristian Jimenez Romero, Ricardo De Castro. 12th European Conference e-Learning (ECEL). 2013

[5] Medical students' reflective writing about a task-based learning experience on public health communication [J]. Yang Huang Koh, Mee Lian Wong, Jeanette Jen-Mai Lee. Medical Teacher. 2013 (2)