Construction of Teaching Evaluation Model of Computer Aided Pedagogy

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Abstract. The computer aided instruction (CAPE) system should be able to collect data from students, teachers and parents. The collected data should be analyzed and then used in the decision-making process. The analysis should include both quantitative and qualitative aspects. There is a need to develop clear guidelines for the design of such a system. As this is a new field in educational research, it will take us some time to find an ideal model to describe how such a system works. The computer-aided teaching evaluation model (tepcap) is a teaching framework for designing and implementing a computer-based learning system. It was developed by Professor John J. Meister of the University of Illinois at Urbana Champaign in the 1990s. It is an extension of his early computer-aided instruction (CAI) work. Since then, the tepcap framework has been widely used, especially in higher education and distance education environments.

Keywords: Education major · Computer-aided · Teaching evaluation

1 Introduction

Since the founding of new China, pedagogy has been developing continuously. Development is a dynamic process. The development of pedagogy in New China has three meanings. First, from the perspective of development history, since the founding of the people's Republic of China, the Pedagogy Specialty has realized a process of change from scratch; Second, in terms of the development process, pedagogy has realized a quantitative change process from weak to strong, from fluctuation to stability; Third, in terms of the current situation and future trend of development, pedagogy has realized a qualitative change process from decentralization to integration and from edge to focus [1]. Pedagogy Major is the basic unit of education in Colleges and universities, which is based on the division of pedagogy and social occupation, aims to cultivate professional talents with solid educational theories, takes pedagogy and psychology as the main subject courses, and takes teachers and students as the main body of education. Its connotation is mainly reflected in the following aspects:

First, the Pedagogy Specialty is divided based on the pedagogy discipline and social professional division of labor. The division of majors is based on pedagogy and social professional division of labor. From the social point of view, the establishment of Pedagogy Specialty is to meet the training that people need to receive when they are engaged

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in education related occupations [2]; From the perspective of higher education, the establishment of Pedagogy Specialty is to undertake the function of cultivating pedagogical talents for pedagogy discipline, which constitutes the knowledge base of Pedagogy Specialty. The social demand for talents in the field of education has promoted the emergence and development of pedagogy; Pedagogy provides knowledge and theory support for Pedagogy Specialty. Pedagogy Specialty is the manifestation of the cultivation of pedagogical talents. The trained pedagogical talents promote the development of pedagogy, meet the needs of society and promote the development of society [3].

Second, the education major aims to cultivate professional talents with solid educational theories. Colleges and universities cultivate high-level talents. As the most basic teaching carrier of higher education, majors undertake the task of cultivating high-level talents. As a platform and manifestation to realize the function of cultivating talents in pedagogy, pedagogy is aimed at cultivating professional talents with solid educational theories. On the one hand, the knowledge that pedagogy majors learn is advanced knowledge, which is different from the educational knowledge learned in primary and secondary education; On the other hand, the talents trained by the Pedagogy Specialty are specialized and have solid educational theories [4].

Third, pedagogy is a major course with pedagogy and psychology as its main subjects. The talent training of pedagogy can not be separated from the support of curriculum. The core and main course of pedagogy is pedagogy and psychology.

2 Related Work

2.1 Components of Pedagogy

From the perspective of the constituent elements of pedagogy, there are mainly the training objectives of pedagogy, the courses of pedagogy and the main body of education, that is, the people in pedagogy. No matter what changes happen in pedagogy, these three elements are indispensable.

First, the training objective of pedagogy plays a guiding and normative role in the whole educational practice. At the same time, the degree of realization of the training objectives is also one of the test criteria for the classroom teaching effect. The training objectives determine the direction of future talent development. They are required to be the decision-making standard and assessment basis for pointing out the future development direction, improving teaching efficiency and cultivating talents. They need to be operable and practical, keep pace with the times and constantly adapt to social needs [5]. There is a close relationship between the professional training objectives and the training objectives of colleges and universities. The training objectives of the specialty specify the talents with basic quality and basic ability to be trained in different fields of the specialty, which is the embodiment of the training objectives of colleges and universities in different levels of higher education and different specialized education. The training objectives of colleges and universities can be reflected through the professional training objectives.

Since the birth of pedagogy, the training goal of pedagogy has a relatively stable position. However, with the changes of the times and our understanding of education, the training objectives of pedagogy have also been differentiated. We can discuss it as five

orientations [6]. First, to train special talents for high-level education, after graduation, they can engage in education teaching, education research or administrative management in primary and secondary schools, education research departments, education administrative departments, etc. This kind of target orientation is actually the leading orientation of the training objectives of pedagogy in many normal universities. Second, train relevant teachers for primary school teachers or secondary school comprehensive activity courses. In the process of development, some colleges and universities have directly positioned the training objectives of pedagogy in the direction of primary education, and trained teachers for primary school teachers. Third, it is committed to training teachers of psychological counseling and mental health education in primary and secondary schools. Fourth, train educators from educational companies, news media, educational institutions or publishing units [7]. Fifthly, continue to pursue further studies and train master of education and doctor of education talents. For example, East China Normal University has cancelled the establishment of the undergraduate major of pedagogy and shifted the training focus to the training of master of pedagogy and doctor of pedagogy.

2.2 Computer Aided Teaching Analysis

In the traditional teaching mode, teachers usually use words, language, actions and other expressions to impart knowledge to students. Sometimes, for the sake of intuition, teachers will demonstrate and explain the contents to be explained with the help of some physical objects, models, teaching instruments, illustrations and other auxiliary teaching tools. These teaching aids are of course indispensable in teaching, but they also have their limitations: some of the described objects are too large or too small, such as the movement of celestial bodies or the thermal movement of molecules, which cannot be displayed in real objects; Some motion processes develop and change very rapidly, such as wave propagation process and electromagnetic wave process. Models and illustrations are not competent or even impossible to realize; There are also some processes, such as the biological growth process [8]. Although the means of video and film can reflect the process of movement change, it cannot be controlled by the teachers arbitrarily, such as changing the sequence before and after, changing the speed of change, or changing the display screen. Computer aided instruction just makes up for the deficiencies of the teaching aids mentioned above. It makes use of its interactive function to call out the multimedia information stored in the computer at will for teachers' selection. The text and sound are both rich, so that the content difficult to be expressed in traditional teaching is vividly and intuitively displayed in front of the students, so that the students' attention to learning is more concentrated, their understanding of the phenomenon or process is more profound, and their memory is more solid. The advantages of CAI can be summarized in the following three aspects.

① Computer aided instruction is helpful to highlight the key points, break through the difficult points, and turn abstract into intuitive. Multimedia is used to make some abstract, microscopic and complex dynamic change processes real and visualized, turn abstraction into intuition, turn difficulty into easy, and highlight the key points.
② Computer aided instruction is helpful to increase the classroom capacity and improve the classroom efficiency. Computer aided instruction (CAI) teaches students knowledge,

trains students' skills, and improves students' abilities, which is conducive to cultivating students' scientific methods and attitudes, so as to achieve the educational objectives in the emotional field and complete the task of quality education in an all-round way. If we simply explain in class, it is difficult to attract students. We can demonstrate some teaching computers that can be demonstrated by computers to students, which is intuitive and can deepen students' understanding of knowledge, saving time and improving classroom efficiency.

③ Computer aided instruction is helpful to optimize the classroom structure and strengthen some important contents in the teaching materials. Teachers should explain before class, explain and guide students to observe the phenomenon through demonstration, and finally summarize the conclusion.

The classification framework of CAI mode is shown in Fig. 1.

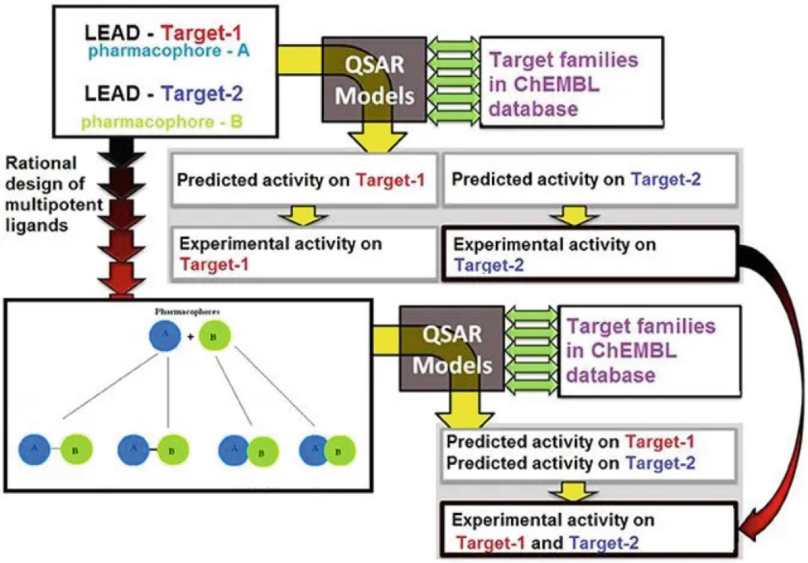

Fig. 1. Classification of computer aided instruction system

3 Construction of Teaching Evaluation Model of Computer Aided Pedagogy

3.1 Principles for Establishing Teaching Evaluation Indicators of Pedagogy in Colleges and Universities

According to the requirements of the guiding outline of physical education courses in national colleges and universities, the aim is to strengthen the educational evaluation concept of continuous progress between teachers and students, apply modern sociology,

pedagogy, physical education, mathematics and other theories, and start with various conditions and related aspects of pedagogy teaching.

(1) The principle of objectivity.

The construction of the evaluation system at the present stage is based on various evaluation theories and the actual situation of ordinary colleges and universities in Kunming as the starting point. It comprehensively and objectively analyzes many existing factors, so as to make each component of the evaluation system objective and truly reflect the characteristics that can effectively promote the teaching effect. Especially in the process of evaluation, it is required to be objective, fair and reasonable, and can make a fair A fair and realistic judgment [9].

(2) Feasibility principle.

The indicators in the teaching evaluation system of the Pedagogy Specialty in ordinary colleges and universities should conform to the characteristics of the physical education discipline and the physical and mental development of students. Before formulating the evaluation objectives and index system, the current situation of the Pedagogy Specialty Teaching should be systematically investigated and analyzed, and the evaluation system should be built on the basis of in-depth understanding, so as to find out the existing problems and shortcomings and affirm the existing advantages.

(3) scientific principle.

The overall evaluation index system must be complete so that the evaluation system can fully reflect the requirements of the evaluation objectives. When screening indicators, we should follow the educational law and make the indicators independent. The indicators at the same level should not have causality, but should be level, and there should be no overlapping relationship between aggregation and complement [10].

(4) Principle of comparability.

The indicators in the evaluation system reflect the common attributes of the evaluation objects and should be measurable. That is to say, the indicators should be defined in specific and operable language. Through the use of evaluation methods, it can be observed and understood to obtain clear results. The setting of evaluation indicators should be as simple as possible and should be comparable.

3.2 Teaching evaluation model of Pedagogy

The analytic hierarchy process is used to calculate the weight coefficient of the teaching evaluation index set of Pedagogy Major in ordinary colleges and universities. The steps are as follows:

(1) Build an evaluation system. Through a large number of investigations and studies, the indicators are obtained, the indicators are sorted out, and the relationship between the indicators is analyzed.
(2) The hierarchical structure model is established. According to the survey results obtained from expert questionnaires and interviews, the indicators are divided into multiple levels in a pyramid shape according to the importance;

(3) And a corresponding judgment matrix is constructed. The pedagogical teaching experts of ordinary colleges and universities compare all pedagogical teaching evaluation indexes of ordinary colleges and universities at the same level in pairs, judge the importance of them according to the bid winning degree of analytic hierarchy process, and form a judgment matrix.

$$A = \begin{bmatrix} a_{11} & a_{12} & \ldots & a_{1n} \\ a_{21} & a_{22} & \ldots & a_{2n} \\ \ldots & \ldots & \ldots & \ldots \\ a_{n1} & a_{n2} & \ldots & a_{nm} \end{bmatrix} \tag{1}$$

4 Conclusion

In the practice of the application of information technology in education and teaching, we deeply feel that the excellent computer-aided teaching software originates from its contribution to the transformation of students' learning mechanism and its grasp of the characteristics of the application of information technology. Scientific evaluation can help teachers effectively apply information technology in specific pedagogy teaching. However, with the rapid development of information technology itself, there will be many new models of computer-aided instruction, and the evaluation technology of computer-aided instruction will also develop accordingly. We believe that the future computer-aided teaching evaluation technology will have three development directions.

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