

Analysis of Evaluation Model of Multimedia Network Teaching Development Mode under Cloud Computing

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Abstract: The application of cloud computing technology in the field of multimedia network teaching is the inevitable result of education informatization. This paper analyses the present situation of the evaluation model of multimedia network teaching development mode under cloud computing and its effects, and discusses in detail the forms of teaching media resources presented in multimedia network teaching mode curriculum, the teaching methods used in multimedia network teaching mode curriculum, the satisfaction degree of network learning environment provided by multimedia network teaching mode and the effect of learning-guided teaching in multimedia network teaching mode, and finds that the evaluation model of multimedia network teaching development mode under cloud computing is conducive to promoting teacher-student interaction, realizing resource sharing, and improving the intellectualization of teaching process.

Keywords: Cloud computing; Multimedia; Network teaching; Development mode; Evaluation model

1. Introduction

Resource integration is the essence of cloud computing. In the field of education, it is to integrate complex multimedia educational resources or data resources, then use these resources according to specific requirements, and promote the service to cloud customers. In the information society, knowledge can no longer be fully mastered only through teachers' teaching or explanation. The learning in the modern society needs to adopt new ways. Under certain circumstances, through the help of the third person and the active use of relevant learning resources, the educatees can achieve their learning goals under the combined action of these factors. This new learning way requires not only the conscious and active learning of the educatees, but also the consideration of the role of teachers. Teachers are the promoters of learners rather than the dominant ones. It emphasizes the learners' cognitive subject roles, and does not neglect the teachers' guiding roles. Teachers are the helpers and promoters of learning, not the inculcators of knowledge. It emphasizes that "situation", "cooperation", "conversation" and "meaning construction" are the four elements of the teaching environment [1]. The multimedia teaching platform based on cloud computing not only provides a technical feasibility guarantee for the teaching process, but also provides a situation for teacher-student interaction learning, so that they can share resources, better achieve the absorption of knowledge, stimulate students' enthusiasm for learning,

achieve the teaching goals, thus promoting the overall progress of society, and the continuous improvement of the evaluation model of multimedia network teaching development mode under cloud computing.

2. Evaluation Model of Multimedia Network Teaching Development Mode under Cloud Computing

2.1. Determine the indicators classification

The co-construction and sharing of resources plays an irreplaceable role in the development process of multimedia network teaching under cloud computing. The development of multimedia network teaching mode needs to construct a technological teaching environment, which is the basic construction. The multimedia technology can promote the vividness of teaching. It can perfectly express the important and difficult points in the teaching process, so that students can grasp the knowledge more quickly. Currently, in the information age, as a new teaching mode, network teaching is welcomed by more and more people. However, in the process of its rapid development, there are also some problems such as scattered network resources, low degree of information sharing and unreasonable online teaching organization, which make learners waste a lot of time in searching for the information they need. In addition, the teaching resources are actually very large, so if you want to store them as your own data, you need a lot of storage space, but the

storage space on the market is very expensive, so this is an inexplicable dead cycle. But with cloud computing, this problem can be solved very well. The multimedia resource library can provide professional and relevant materials for the learning of teachers and students. Most of these databases are purchased by the schools or the provinces. The funds are generally paid by the relevant education departments. The huge resource library is centralized in the cloud. Teachers and students can use it through online retrieval when they need it. Whether they are working or studying, learners can use the resources in the resource library when they need it, which realizes the real resource sharing. The teaching resources of the multimedia teaching resource library cover media materials, case materials, literature materials, courseware materials,

learning websites, information resource databases and other forms, include text, sound, animation, image and other forms of expression, cover all grades and various disciplines, and organize the resources reasonably in an orderly manner, and classify them so that users can find the resources they need in the shortest time, which is convenient for teachers' lessons preparation [2]. The integration platform of resources is the whole system on the line, and the communication platform can be used together by various disciplines and different projects. In addition, when we use this online platform, we can also generate corresponding educational resource links and upload them to the cloud, which can help more teachers and students in colleges and universities to truly realize the maximum value of educational resources.

Table 1. Evaluation indicators and classification

Indicator	Time delay/ms	Delay variation/ms	Loss tolerance/%
Excellent	$0 \leq x \leq 150$	$0 \leq x \leq 50$	$0 \leq x \leq 5$
Good	$150 \leq x \leq 300$	$0 \leq x \leq 60$	$0 \leq x \leq 10$
Bad	$400 \leq x$	$150 \leq x$	$10 \leq x$

According to the data analysis presented in the table of determining and grading the indicators of multimedia network teaching evaluation model, it can be clearly understood the importance of the data indicators and corresponding grading of the evaluation model.

2.2. Comprehensive evaluation model of multimedia network teaching based on cloud computing

Cloud computing can easily realize the sharing of data and application among different devices. It has low requirements on the devices of the client. As long as there is a computer or a mobile phone that can access the Internet, the required resources and services can be obtained [3]. The teaching content of multimedia network teaching based on cloud environment can be presented in many ways, such as electronic documents, audio, video, animation, image, and so on. In the teaching process, using these presentation methods will produce better results than the simple oral teaching mode. Students will have different acceptance of these resources, which can be shown in Table 1. Through the operation of specific practice, it can be clearly seen that the teaching resources service provided by cloud computing is very convenient and targeted. This teaching method can not only meet the actual teaching needs, but also meet the development of education in the direction of information technology in China.

Step 1 Establish the factor domain of the evaluation object $U = \{u_1, u_2, \dots, u_n\}$.

Step 2 Establish the comment domain $V = \{v_1, v_2, \dots, v_m\}$.

Step 3 Use the cloud computing indicator $W = \{w_1, w_2, \dots, w_n\}$.

Step 4 Perform a single factor evaluation between the factor domain S of the evaluation object and the comment domain u to establish a fuzzy relationship matrix s .

$$S = \sum_{i=1}^n \Delta m \Delta d_i s_v^2$$

Step 5 Comprehensive evaluation model.

$$\begin{cases} a = \Delta m \Delta d / S \\ l = (S \Delta m \Delta d) / v \end{cases}$$

Through the analysis of data and indicators of the model, the practical data of the multimedia network teaching model can be feedback in real time, so that the teaching work can be adjusted in time with the sampling and analysis data, which can realize the development of multimedia network teaching under cloud computing.

3. Evaluation Results

3.1. Satisfaction degree of network learning environment

The mutual communication of learning subjects plays an important and irreplaceable role in the teaching process. The multimedia network teaching mode based on cloud computing attaches great importance to collaborative learning. The multimedia teaching under cloud computing can provide a convenient information exchange for the teaching process. For example, there will be a discussion and answering area in the teaching platform, which can help students to ask questions both inside and outside the class. Teachers can also answer these questions any-

time and anywhere, and teachers can actively participate in the discussion of students, guide the development of students' thinking in the process of questioning and answering. The network teaching platform is an integrated virtual learning environment that integrates teaching resources, learning resources and teaching support services [3]. One of the great advantages of the multimedia network teaching environment under cloud computing is that the learning records can be shared to the cloud space synchronously. Even if the learning device is replaced, the learners can continue learning without distinction, and the communication between teachers and students is more flexible and convenient. Teachers can make full use of cloud resources to improve their own courseware. They can also use the platform to correct student assignments, manage students' examinations, interact with students and answer questions, understand current educational trends, and so on. Teachers can also share resources such as e-learning and courseware that they think are particularly excellent in the resource library. Students can discuss problems, submit assignments, conduct network reviews, on the cloud platform, and exchange learning experiences will make students master the knowledge more firmly. As a whole, teachers and students are very satisfied with the network learning environment provided by the multimedia network teaching mode under the cloud platform. This teaching method has a strong driving effect on the teaching process.

3.2. The effect of learning-guided teaching in multimedia network teaching mode

The application of teaching information resources has great limitations in traditional teaching, and the use scope of the resources is relatively small. However, with the development of multimedia network teaching mode under cloud computing, the teaching resources available in classroom are more and more abundant, and the interaction of teaching process is constantly improving. Cloud storage provides nearly unlimited storage capacity and absolute security. Teachers and students can save a large amount of learning resources and exist them on the "cloud" without the need for storage devices such as USB flash drives and hard disks, without worrying about virus infection [4]. The teaching environment based on cloud computing provides a convenient network teaching tool. Teachers can obtain all available teaching resources, make full use of cloud computing software, storage, security and other elements to build a personalized teaching environment to support teachers' effective teaching and facilitate students' constructive learning [5]. Cloud computing can bring various resources together, and make various resource devices to connect with each other and operate together. The multimedia resource library and teaching platform are the main places to realize the meaning construction. The multimedia resource library contains rich and diverse teaching resources, which express the teaching content in a vivid, intuitive and visual way [6]. It can realize the combination of situation creation and knowledge, and help students to establish the overall connection of knowledge. The data of matching degree between learning-guided method and curriculum teaching shown in Table 2 proves the new development of teaching curriculum under cloud computing.

Table 2. The matching degree between learning-guided method and curriculum teaching

Project	Very suitable (%)	Generally suitable (%)	Not suitable (%)	Total(%)
Guide students to extracurricular research and practical application	40	40	20	100
Guide students to collect relevant information	37.5	30	32.5	100
Encourage more discussion among students	55	15	30	100
Use multimedia teaching reasonably	37	43	20	100
Advocate students to express different opinions or question	66	24	10	100
Teacher-student interaction, mutual evaluation, exchange of experience	50	35	15	100
Guide students to read after class and urge them to take notes well	46	33	21	100
Ask students to choose topics in groups and write written materials	68	11	21	100

According to whether the sampling teaching method is suitable for the course, it can be determined that the teaching in this way can basically achieve good results.

4. Conclusions

Based on the analysis of the evaluation model of multimedia network teaching development mode under cloud

computing, this paper discusses in detail the means, resources utilization and satisfaction degree of teachers and students in the actual teaching process of this teaching mode, which proves the necessity and effectiveness of the development of this mode. It is hoped that the analysis of this paper will provide theoretical support for the

further development of multimedia network teaching under cloud computing.

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