



10th International Conference of Information and Communication Technology (ICICT-2020)

The construction of mobile education in cloud computing

Lin Hu*

JiLin University of Finance and Economics, Jingyue Street No. 3699, Changchun, China

Abstract

Mobile education has made great progress. Currently, there are a lot of elements to curb its development. The existence of cloud computing provides new era for the development of mobile of mobile education. This article studies and elaborates cloud computing. After summarizing its features, the article analyzes the possibility of combining it with mobile education and puts forward a new mobile education mode based on cloud computing in order to carrying out explorative research on the development of mobile education.

© 2021 The Authors. Published by Elsevier B.V.

This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Peer-review under responsibility of the scientific committee of the 10th International Conference of Information and Communication Technology.

Keywords: Cloud computing, mobile learning, mobile education mode;

1. Introduction

With the rapid development of science and technology, mobile education has become a new education mode with the Internet as the main carrier. It promotes the pace of building a learning society and makes life-long education possible. Although the construction of mobile education resources has developed for many years, there are still many problems, such as poor knowledge transplantation, seriously uneven distribution of education resources, knowledge updating, less cooperative learning opportunities among learners, etc., which seriously restrict the further development of mobile education.

With the emergence of cloud computing technology, various educational institutions can apply cloud computing technology in mobile education, and constantly develop and build new educational resources. The future development goal of mobile education is to create a personalized internet learning environment for each learner, so that learners can conduct boundless collaborative learning through the Internet.

* Corresponding E-mail address: 27844208@qq.com.

2. Overview and characteristics of cloud computing

2.1. Construction of references

Cloud computing is the development of distributed processing, parallel processing and network computing, or the commercial implementation of these computer concepts [1]. Its main working principle is to store a large amount of data in the cloud, not on the local computer or remote server. If users need to get any data, they can get it through various devices. Enterprises providing cloud services only need to manage and maintain the normal operation of the data center in the cloud, so as to ensure that the computing power is strong enough and the storage space is large enough for users to use. In the future, as long as there is a network, users can access the cloud anytime and anywhere through any mobile device, get information and enjoy the convenience brought by cloud computing.

2.2. Characteristics of cloud computing

- Cloud computing is a large collection of various technologies with high information security

With the development of cloud computing, its basic technologies include grid computing, virtual technology, Web 2.0, distributed computing and public computing [2]. Among them, the core technology of cloud computing is virtual technology, which virtualizes various components in cloud computing into a resource pool, unified deployment, flexible use, universal virtual platform to extend, migrate and back up various application data.

- Cloud computing provides the safest data storage

Cloud service users can store information in the cloud without worrying about the loss of data information or virus infection. Because the cloud service has the most professional team management and maintenance, and the technology of data storage center is advanced, so that any user using cloud computing can enjoy its services at ease.

- Low requirements of cloud computing on user terminal equipment

As long as users have a computer that can access to the Internet, they can log in to the cloud at any time and enjoy the massive data information there. Computers do not require large storage space and fast running speed. At the end of the cloud, there are professionals to maintain your hardware, install and upgrade software, and ensure the security of information on your personal computer.

- Realization of data sharing in cloud computing

In the era of cloud computing, when the data is saved in the cloud, all users' electronic devices can access the same data at any time just by connecting to the Internet. At the same time, they can also transfer their data to the cloud to share data with others.

3. Feasibility and significance of cloud computing assisting mobile education

The figure number and caption should be typed below the illustration in 8 pt and left justified [**Note:** one-line captions of length less than column width (or full typesetting width or oblong) centered]. For more guidelines and information to help you submit high quality artwork please visit: <http://www.elsevier.com/artworkinstructions> Artwork has no text along the side of it in the main body of the text. However, if two images fit next to each other, these may be placed next to each other to save space. For example, see Fig. 1.

There are two kinds of traditional mobile education: SMS and WAP education sites. SMS refers to mobile learning through SMS, while WAP is based on browsing mobile data education. Both of these two kinds of education have their disadvantages. SMS is a passive data receiving, which has been compiled short messages for learning, so learners can not have active and real-time communication with teachers. Whether short messages can be sent to learners' mobile devices in real time or not is restricted by many factors, which often leads to learning failure for unknown reasons. The number of WAP education sites and learning resources are limited. In addition, the fees are high, so it is difficult to popularize. The restriction of many factors makes mobile learning difficult to popularize and restrict its development. The characteristics of cloud computing can make up for many defects. In the era of

cloud computing, massive information exists in the cloud. As long as learners can choose learning content in real time to the cloud through mobile terminal devices, cloud computing will integrate multiple computers, integrate Internet technology, break through the limitations of a single WAP protocol, so that learners can enjoy high-speed and efficient cloud services with low investment.

The introduction of cloud computing reduces the investment cost of mobile devices. Traditional mobile education requires a lot of mobile devices, large storage space and high information processing ability. Because of the limitation of mobile device software, many mobile phones can only access WAP protocol server, which limits the transmission of many information resources. Cloud computing can solve this problem. All data processing is in the cloud. Therefore, for mobile devices, only the computing power required by the browser itself is needed. Such a requirement can be met by ordinary mobile phones.

The introduction of cloud computing can integrate educational resources. The Internet brings all kinds of resources together, while cloud computing can integrate, store and share information well. In the traditional education mode, teachers teach what they have learned to students, and the content taught by teachers is more restricted by the syllabus and the knowledge system of the educators themselves, and the depth and breadth of learning are also very limited. Cloud computing has been introduced into mobile education, and resources around the world have been integrated into cloud storage. Learners only need to input keywords to access educational resources around the world. The role of teachers is only to assist, classify and manage. In the process of learning, teachers and learners can constantly improve and supplement or modify the learning resources in the resource base to make them perfect.

4. The construction of mobile education environment assisted by cloud computing

- Building up a cloud education resource base with high quality and large capacity

Mobile education resource base is mainly provided by some universities at home and abroad, as well as some non-profit educational institutions and some online learning service providers. After the emergence of cloud computing, various colleges and universities and various educational institutions should make full use of the characteristics of cloud computing, establish their own cloud computing platforms, and transform the existing or not established mobile education resources into cloud services for more teachers and students to share.

Teachers and students play several roles in the era of cloud computing. They not only use information, but also create information, and at the same time publish and process information. This series of actions make the mobile resources in the cloud update dynamically and grow continuously, which makes the mobile resources more targeted and available, thus forming a virtuous circle of information sharing and innovation.

- Creating mobile learning environment assisted by an efficient cloud

In mobile learning environment assisted by the cloud, teachers are just the guide of learning process. They provide mobile education software, build a platform with rich learning resources, create collaborative learning environment and learning opportunities, and students can discuss freely on the platform. In the process of learning, students choose their own learning content, meet the needs of personalized learning, and realize independent learning.

- Design of mobile teaching content based on learner centered

Mobile education cloud service enables learners to enjoy a wide learning space, in which learners' learning enthusiasm and initiative are greatly stimulated. The status of teachers has been a perfect change. They have changed from the original leader to the assistant. Learners can freely control learning activities. Teachers are completely liberated from teaching activities and can devote themselves to the design of teaching content and teaching methods. Therefore, in the teaching activities, the relationship between teachers and students is not loose, but more compact, because in the mobile education cloud service, more emphasis on communication between teachers and students and adhering to learner-centered teaching can better improve the teaching effect. Teachers fully analyze the characteristics and learning habits of learners, carefully select learning contents, design teaching activities, reform assessment and evaluation methods, and cultivate students' innovative spirit.

- Improving and cultivating cloud service awareness

According to the characteristics of mobile education cloud and modern teaching activities, it is necessary to cultivate the cloud service awareness of teachers and students. The traditional teaching method has existed for thousands of years, and people have been used to it. For the new concept of cloud computing, teachers should first learn how to get to know the cloud, and then guide students to use the cloud to collect, organize and process information. Teachers should keep pace with the times, often participate in various teaching seminars and training courses, learn to use various mobile education software, find teaching content and strategies on the cloud service platform, share effective teaching design with others, reduce teaching preparation time, and complete the teaching process in Colleges and universities.

5. Conclusion

The application of cloud computing technology in the field of mobile education will bring new changes and innovations to classroom teaching. At the same time, it will greatly reduce the operating cost of educational institutions and save for low-carbon innovative education. Mobile education cloud is the basic structure of the future education mode, which provides stable learning services for the majority of learners.

In the era of cloud computing, educators need to adapt to the needs and changes of the times. They need to study the learning characteristics of students and cloud computing technology in the cloud era, apply cloud computing in daily teaching, build a cloud digital learning environment, meet the needs of personalized learning and collaborative learning of students, and constantly enrich the cloud resource base, so that learners can carry out independent mobile learning at any time, any place and any way.

Acknowledgement

This paper is supported by the social funds program of Jilin province No. GH180277 and the “13th five year” educational and technological program of Jilin province No.2017B122.

References

1. Kress, G., & Pachler, N. (2007) Thinking about the ‘m’ in m-learning. In N. Pachler (Ed.), *Mobile learning: towards a research agenda. Occasional papers in work-based learning 1*. WLE Centre for Excellence, London.
2. Winters, N. (2007) What is mobile learning? In M. Sharples (Ed.), *Big issues in mobile learning* (pp. 7–11): LSRI University of Nottingham.
3. Jones, A., Issroff, K., & Scanlon, E. (2007) Affective factors in learning with mobile devices. In M. Sharples (Ed.), *Big Issues in Mobile Learning*, pp. 17–22, LSRI, University of Nottingham.
4. Cook, J., Bradley, C., Lance, J., Smith, C., & Haynes, R., “Generating Learning Contexts with Mobile Devices”, In N. Pachler (Ed), *Mobile Learning: towards a research agenda. Occasional papers in work-based learning*. WLE Center for Excellence, London: 2007.
5. M. Dorigo, E. Bonabeau, and G. Theraulaz. Ant algorithms and stigmergy. *Future Generation Computer Systems*, 16(8):851–871, 2003.
6. V. Dhar, D. Chou and F. Provost, “Discovering interesting patterns for investment decision making with GLOWER - a genetic learner overlaid with entropy reduction,” *Data Mining and Knowledge Discovery*, vol. 4, no 4, pp. 251-280, 2000.