

FLIPPED CLASSROOM WITH CLOUD BASED TECHNOLOGY

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Abstract

In the recent years, the teachers in the universities, colleges and schools have increased their use of new technologies and resources in their classrooms. The use of new technologies change the way class time is used which increases active learning and student engagement in the classroom. This paper briefly explains about the flipped classroom and cloud computing where students gain some features according to their preferences and learning style. Flipped classroom is an instructional method in which students learn new content online by watching video lectures at home, and homework is done in class with teachers' guidance and interaction with peers, instead of lecturing. Cloud based technology has been a successful paradigm which provides remote computing resources in a competitive and scalable way. Cloud computing changes the way of using computer and the internet. This technology is capable of assisting students which can make them engage in learning activities successfully. Cloud computing enables monitoring students' progress, total time students have spent in the system and their activity in the class.

Keywords: Flip classroom, Cloud computing, Active learning, Student engagement

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Introduction

With the development of information technology, flipped classroom has become a new challenge in the field of education because of its new learning concept and learning style. Flipped classroom, an innovative educational technology combines the advantages of traditional teaching method and online or offline learning methods to meet the individual needs of students which provide a new way of thinking. This method enhances the student-teacher interaction and helps the teacher to train the students based on their performance (Priyaadharshini, Sundaram & Vinayaga, 2017).

Flipped classroom method is a reversal arrangement of imparting knowledge and provides an environment for the teacher-student interaction and students' independent learning. It plays an important role in enlightening the innovation ability and practical ability of students. Construction of teaching platform with cloud computing technology subverts the teaching and learning, and it is a means of effective implementation of flipped classroom (Feng, 2016).

Cloud computing technology signifies a major change in storing information and running applications. Instead of storing data on an individual desktop computer, the data and information are hosted in the cloud and the computers and servers can be accessed through the internet. Cloud computing lets to access all the applications and documents from anywhere in the world, freeing from the restrictions of the desktop and make it easier to collaborate with the group members in different locations (Bloomberg, 2013).

Cloud computing adopts the provision and use of IT infrastructure, platforms, and applications of any kind in the form of services that are electronically available on the Web. The cloud services are provisioned by a provider on the Internet or on the intranet of a larger organization (Paulsson, 2016). Cloud resources are virtualized and scaled dynamically with distributed infrastructure. If an application requires additional resources, it can be added immediately without much effort by an automatic process. Cloud computing adopts the ideas of effective computing (Baun, Kunz, Nimis & Thai, 2011).

In the present era, education is not just learning knowledge, but to cultivate students learning ability as the goal (Chai et al., 2015). The application of the cloud based technology received more attention by many countries since the cloud computing has been proposed. Information and communication Technology (ICT), online educational tools and cloud services have showed a great way to incorporate the concepts more flexibly in the universities and colleges. The students are more exposed to technology and other gadgets for incorporating flipped classroom in innovative styles and those gadgets acts as a motivational mechanism for teaching-learning process (Shahzd, 2014).

Cloud and online learning

A cloud is an internet-based computing system that provides shared computer processing resources and data. It is an information technology paradigm that enables universal access to a shared pool of resources such as computer networks, servers, storage, applications and services, which can be rapidly provided with minimal management effort over internet. Cloud computing relies on sharing of resources and data to achieve consistency and financial prudence of scale parallel to a public utility. Using cloud computing technology, users are able to access software and applications from wherever they are (Liou, Bhagat & Chang, 2016).

The cloud has a huge impact on the digital world and to access information and resources. It has a particularly large impact on the online learning sphere. It facilitates quality learning experiences for online course providers and students throughout the world. Cloud based technology helps the students to access a full collection of teaching and learning resources from their own computer, uses a handheld device such as a smartphone or tablet to study on, provides virtual learning space from any computer, smartphone or tablet, easily communicate with their instructors and their peers (“What is the cloud” 2018).

Types of cloud computing

The different categories of cloud computing are listed below:

Infrastructure as a Service (IaaS): In IaaS a third party hosts elements of infrastructure, such hardware, software, servers, and storage, which provides backup, security, and

maintenance. *Software as a Service (SaaS)*: SaaS, is the most common type of cloud service development. A single application is delivered to thousands of users from the servers. Clients don't pay for owning the software, but they pay for using it.

Platform as a Service (PaaS): PaaS refers to cloud computing services that supply an on-demand environment for developing testing, delivering and managing software applications. PaaS is designed to make it easier for developers to quickly create web or mobile apps, without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development (Miller, 2008).

In cloud computing system, the front end is the side of the computer user or client. The back end is the cloud section of the system. The front end consists of the user's computer or computer network and the applications to access the cloud computing system. It is not necessary that all cloud computing systems have the same user interface. On the back end of a cloud system, there are various computers, servers and data storage systems that make up the cloud. A cloud computing system could possibly include any computer program, from data processing to video games. Generally, each application will have its own dedicated server ("Cloud computing", 2018).

Flipped Classroom with cloud computing platform

An effective modern technology called cloud computing platform can flip the teaching and learning within the classroom. In the cloud platform students can experience the innovativeness working environment, training to real projects, effectively improve the teaching effect and teaching competence. Flipped classroom provides watching videos over cloud to learn new knowledge. When the teacher is recording the video of his/her own lecture, prepare video around a knowledge point with clear subject and purpose, and the time control within 10 minutes. Cloud computing teaching platform not only provides the various learning resources for the students, it also provides the necessary practice environment for the students, so the students can conduct the experiments through the network access platform and individual test status and time information will be recorded. In cloud teaching platform the teacher can check the students watching the videos, check the progress of the

exercise, understand the students' learning status, and monitor the students' learning process (Alam, 2013).

Benefits of cloud computing and flipped classroom

In flipped classrooms, the teachers are able to engage students to support a deeper level of understanding through active learning activities. The class time is utilized by the students by collaborating with each other and other interactive exercises. This strategy yields a number of benefits to both students and teachers.

Students learn at their own pace and make academic process more efficient: In a traditional classroom, the teacher lectures and demonstrates during the class period. The students are passive listeners in the class. One of the most common use of cloud computing is online learning in which academic resources are available. In flipped classroom, students learn the cloud resources from home through online. The availability of videos allows students to review and preview and become mastery in their topics.

Teachers can customize and update the curriculum: Even though many teaching videos are available online, teachers can make their own videos and provide it to students. By designing their own curriculum, teachers also can emphasize topics for students which find most challenging. Based on their collaborative analysis of student work, the teachers update and revise homework videos regularly and bring a variety of other resources into the curriculum. The teaching lessons provide benefits for students those who missed the class due to ill-ness, sports, vacations, etc. Those students can access course materials anytime, anywhere and they can stay up to date.

Students have access to multiple teachers' expertise: Teaching assignments often change. Different teachers might teach the same content differently. If a student has trouble with a concept presented in the video, he/she is no longer stuck with their teachers' explanation. Rather, they can turn to one of the other teachers' video lessons. This helps the students for insight into a new angle for understanding a difficult concept. All teachers' videos will cover the same content, even if lessons and examples are presented in different ways.

Teachers flip professional development by watching each other's videos and learning from each other: Teachers can analyze student work and they can review each other's videos to see how their colleagues taught the concepts. The online resources make it possible to visit other's teaching and help the teachers in their professional development by watching each other's videos and learning from each other (Garza, 2014).

Classroom time can be used more effectively and creatively: In the flipped classroom, students learn by doing, and the doing is happening within a hand-raise of the teacher. Teachers can use class time to make meaningful contact with students, observing, guiding, and helping. Teachers have time in class to try new things - including more hands-on activities and problem-based learning (Bruns & Jacobs, 2006).

Boosts collaborative work: Both students, teachers and administrators can access information from their computers without the installation of a specific program. This makes access flexible and facilitates interdepartmental collaboration. While one area supplies records to a common repository, another area can provide other records. At the same time forms, text files, presentations and spreadsheets can be edited by different people at the same time from any computer, helping in an efficient distribution of tasks and improving the quality of information by boosting peer feedback.

Backs up information: Cloud computing stores information in a large pool of servers around the world. This helps guarantee a speedy access at any minute, and backs up data in case of any physical or digital problem with a particular server or if in any circumstance, the university is threatened with the loss of critical information (Sagenmuller, 2016).

Conclusion

The videos and teaching resources on the cloud platform can be reused. Teachers can teach the important and difficult points according to the characteristics of each group of students to improve the work efficiency and enhance the teaching effect. This active method integrates flipped classroom with cloud computing which will be a successful method of teaching and learning. Flipped classroom with cloud allows for greater preparation, more time for focusing

on activities, involving deeper learning in class time, and more time to focus on student-centered learning (Bramley, 2016).

Recommendations

Educational institutions may focus on promoting instructors communication and peer commenting when designing training programs for instructors. Teachers may find challenges with cloud based technology with increased preparation time, technical knowledge and creating high quality videos. The institutions may provide training for the teachers regarding the use of cloud technology in various subjects and provide opportunities to have peer assistance and support in a more flexible and more comfortable way; Workshops may be given to teachers to explore learning cloud based technology. Schools, colleges and universities should take effort in promoting the use of cloud based technology in education.

References

- Alam, M. T.(2013). Cloud Computing in Education. *IEEE Potentials*. 32(4), 20-21.
- Baun, C.Kunze, M. Nimin, J., & Tai, S. (2011). *Cloud Computing. Web-Based Dynamix IT Services*. New York: Springer Berlin Heidelberg.
- Bloomberg, J. (2013). *The Agile Architecture Revolution: How Cloud Computing, Rest-Based Soa, and Mobile Computing are Changing Enterprise It*. New Jersey, Canada: John Wiley & Sons, Inc.
- Bramley , G. (2016). An analysis of using flipped learning in Higher Education: `How flipping difficult can it be?.
- Feng, J. (2016) Research on Cloud Computing Platform of Flipped Classroom Model for Software Engineering Professional. Retrieved from http://en-cnki.com.cn/Article_en/CJFDTOTAL-XJJS201308007.htm.
- Garza, A. (2014). The Flipped Classroom teaching model and its use for Information Literacy Instruction. *Communications in Information Literacy*, 8(1).
- Liou, W.K., Bhagat, K.K. & Chang, C.Y. (2016). Beyond the Flipped Classroom: A Highly Interactive. Cloud-Classroom (HIC) Embedded into Basic Materials

Science Courses. *Journal of Science Education and Technology*, 25(3), 460-473. Retrieved from <https://www.learntechlib.org/p/176152/>.

- Miller, M. (2008). *Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online*. United States of America: Library of Congress Cataloging-in-Publication.
- Paulsson, H. (2016). Geospatial Processing in the Cloud. Retrieved from <http://uu.diva-portal.org/smash/get/diva2:913600/FULLTEXT02.pdf>.
- Priyaadharshini, M., Sundaram, B. & Vinayaga. (2017). Lifelong Learning: Analyzing Behavioral Models Using Cloud Based Flipped Classroom. *Journal of Computational and Theoretical Nanoscience*, 12, Retrieved from <https://www.ingentaconnect.com/content/asp/jctn/2017/00060014/00000012/art00617>.
- Sagenmuller, I. (2016). Advantages and disadvantages of cloud computing in higher education. Retrieved from <https://www.u-planner.com/blog/advantages-anddisadvantages-of-cloud-computing-in-higher-education>.
- Shahzad, F. (2014). State-of-the-art Survey on Cloud Computing Security Challenges, Approaches and Solutions. *Procedia Computer Science*, 37, 357-362.
- What is the Cloud and Why is it So Important for Online Learning? (2018). Retrieved from <https://www.dexway.com/clouct-important-online-learning>
- What is cloud computing? How does the cloud work? (2018). Retrieved from <https://www.fastmetrics.com/blog/tech/what-is-cloud-computing/>