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Research Paper

Flipped Classroom Approach: Emerging Applications, Functions, and Barriers

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Abstract

Aim: The purpose of this study is to investigate the role of emerging applications in the flipped classroom. The approach used in this research was a qualitative approach and the method of studying thematic content analysis (TCA). Therefore, in this study, using purposive sampling method and semi-structured interview tool, 13 experts and teachers of educational institutions were interviewed. The results showed that applications to enhance and facilitate educational interactions form five categories of communication enhancement applications, interactive-graphic applications, audiovisual facilitating applications, text-digital information applications and educational evaluation applications can be used in flipped classrooms. Based on the research results, the benefits of using these applications can be divided into two categories: educational functions of emerging applications and interactive functions of emerging applications. Barriers to the use of emerging applications in flipped classrooms can also be divided into two categories: technical barriers of emerging applications and human barriers of emerging applications.

Keywords*: Educational Applications, Flipped Classroom, Learning.*

Introduction

Technology, science and their constant changes influence education. Constant changes in the system show the importance of using technology in

all aspects of education. Technology-related changes lead to the emergence of new applications in the field of education, which evolve educational methods. Careful analysis and use of technology can significantly contribute to the efficiency and attractiveness of the classroom environment (Seaman and Gaines, 2013). Furthermore, educational technology focuses on improving learning and performance. From an educational perspective, integrating learning with evolving technology has been the subject of many studies (Howie & Blignaut, 2009; Kaya & Usluel, 2011).

Efficient and effective use of technology plays an important role in answering the question of what learners should know and do, and where they should be at the end of a subject or course (Sezer, 2017). Therefore, recent decades have witnessed the need to revise one-way teaching methods and to use new educational technologies in educational systems, which has expanded the application of these methods and technologies in various sciences. Under such circumstances, blended learning can be used for teaching and learning. As such, Ara and Mahmud (2021) consider the use of blended learning in education at the current era and even at the post-COVID-19 era a necessity and recommend the use of the wide potentials of blended learning. Flipped classroom is among the new teaching methods in blended learning, which uses technology to transfer presentations out of the classroom (Pallathadka & Pallathadka, 2020). In this regard, it is necessary to identify the requirements for, and move toward the use of emerging applications in flipped teaching and learning. In fact, it helps find a better way to improve learning at schools and educational institutions. Therefore, moving toward blended learning and the use of emerging applications, especially in the flipped classroom, is currently a need and demand.

However, the characteristics pervasive of emerging applications have rarely been studied. Similarly, educational institutions are less inclined to use and apply these applications at different levels of education due to various factors such as distracting factors or existing challenges. Further research is required to deal with this situation, and overcome the barriers to applying these applications and educational transformation, which has been discussed for many years, through a better understanding of their implementation and use. Therefore, in this article, in addition to introducing new applications in the field of flipped classroom, the functions and barriers related to this approach are examined. In order to be aware of the emerging applications in this field, the functions, challenges and barriers related to these applications are also presented.

Methodology

We used a qualitative approach in this study with 13 experts and teachers of schools and educational institutions. The participants were selected based on

criteria such as teaching in schools, use of information and communication technologies for teaching classrooms, courses, seminars and workshops. Semi-structured interviews were used as the research tool to collect and examine the views of experts and teachers on flipped classroom in the school environment. In the first part of the interview, the participants were asked introductory questions about emerging applications in the field of flipped classroom. The general context of the functions of this type of applications in the flipped classroom environment was then asked, and participants' views on the barriers to and challenges of emerging applications in the flipped classroom were discussed. The required data were collected through four hours of interview. The average time for each interview varied between 15-40 minutes. These data were analyzed during semi-structured interviews using thematic analysis method. The interviews were recorded using a digital audio recorder, transcribed and read several times to extract themes and concepts. Then the concepts were screened and merged to reveal themes and subthemes.

Results

The results showed that applications to enhance and facilitate educational interactions form five categories of communication enhancement applications, interactive-graphic applications, audiovisual facilitating applications, text-digital information applications and educational evaluation applications can be used in flipped classrooms. Based on the research results, the benefits of using these applications can be divided into two categories: educational functions of emerging applications (development of skills and personal information, creating an attractive and diverse environment in learning and content management) and interactive functions of emerging applications (participation and collaborative interaction and networking). Barriers to the use of emerging applications in flipped classrooms can also be divided into two categories: technical barriers of emerging applications (costs, infrastructure constraints and technological factors) and human barriers of emerging applications (user resistance). Although the flipped classroom model uses emerging applications, it presents barriers and challenges, and while some learners grow up in high-tech families, they have access to computers and the Internet only at school. Furthermore, problems with these applications and methods include learners' unpreparedness in the classroom (Rotellar & Cain, 2016), learner's lack of motivation (Milman, 2012), failure to use the right materials (Ramar, Hale, & Dankbar, 2015) and technical problems (See & Conry, 2014).

Discussion and conclusion

Flipped learning based on new applications not only brings positive scientific results, but also helps learners to practice in the classroom. Despite barriers to implementing flipped classrooms, emerging applications and their implications are an opportunity to highlight the role of flipped classroom in learning and teaching. Accordingly, further research is needed on the importance of emerging educational applications, and information and communication technology in general regarding flipped classrooms.

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