Review

Online learning: Adoption, continuance, and learning outcome—A review of literature

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ABSTRACT

The use of Technology to facilitate better learning and training is gaining momentum worldwide, reducing the temporal and spatial problems associated with traditional learning. Despite its several benefits, retaining students in online platforms is challenging. Through a literature review of the factors affecting adoption, the continuation of technology use, and learning outcomes, this paper discusses an integration of online learning with virtual communities to foster student engagement for obtaining better learning outcomes. Future directions have been discussed, the feedback mechanism which is an antecedent of students' continuation intention has a lot of scopes to be studied in the virtual community context. The use of Apps in m-learning and the use of cloud services can boost the ease and access of online learning to users and organizations.

1. Introduction

Online learning and training are gaining popularity worldwide, reducing the temporal and spatial problems associated with the traditional form of education. The primary factors behind using online learning are not only to improve access to education and training, and quality of learning, but also to reduce the cost and improve the cost-effectiveness of education (Bates, 1997). Online learning is mainly provided in two ways—in synchronous and asynchronous environments (Jolliffe, Ritter, & Stevens, 2012). The time lag attributes of asynchronous learning unlike synchronous learning in online platforms take the advantage of accessing materials anytime and anywhere, ability to reach a greater mass at the same time, and uniformity of content. Online learning along with face-to-face learning is successfully used in industry as well as academia with positive outcomes (Chang, 2016). The geographically distributed team in an organization can get their skill training through online platforms at the same time, gaining a greater level of competitiveness. Online learning is also beneficial for students as they can learn at their own pace with the availability of online materials. The e-learning market is becoming popular and widely adopted by the education sector and industry. The growth of the e-learning market can be demonstrated by the fact that the global e-learning market is expected to reach 65.41 billion dollars by 2023 growing at a cumulative average growth rate of 7.07% (Research and Markets, 2018a). In addition to this, the global learning management system (LMS) is expected to increase from 5.05 billion USD in 2016 to 18.44 billion USD by 2025 growing at a rate of 15.52% (Research and Markets, 2018b).

Despite several advantages of online learning such as improving access to education and training, improving the quality of learning, reducing the cost and improving the cost-effectiveness of education, retaining students in such platforms is a key challenge with a high attrition rate (Perna et al., 2014). Several strategies such as briefing, buddying, and providing feedback on the platform are proposed to retain and engage students (Nazir, Davis, & Harris, 2015). It is also noted that more self-discipline is required by students in online education, unlike traditional classroom education (Allen & Seaman, 2007). Keeping users enrolled and engaged is a challenging job as a personal touch by the instructor is missing or limited. The learning engagement which is an important antecedent for learning outcome is lower for technology-mediated learning than face-to-face learning (Hu & Hui, 2012). As a higher amount of money is spent on infrastructure, staff training, etc., organizations seek to take maximum benefit from online learning which requires an understanding of the factors that drive the adoption, continuation intention, and learning outcome of users on online learning platforms. Therefore, the primary focus of research remains on how to retain online learning users, and increase the efficiency of the online learning.

Users may learn inside and outside the classroom; inside classroom learning is through instructors either from face-to-face, pure online or blended learning (combination of face-to-face and pure online learning) whereas outside classroom learning is conducted by users anytime and anywhere after the class. The exponential growth of the Internet has enabled individuals to share information, participate, and collaborate

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to learn from virtual communities (VC) anytime and anywhere (Rennie & Morrison, 2013). In a virtual community, people do everything that they do in real life but leaving their bodies behind (Rheingold, 2000). Virtual communities keep its users engaged based on familiarity, perceived similarity, and trust by creating a sense of belongingness (Zhao, Lu, Wang, Chau, & Zhang, 2012). It is essential to assess the role of a less constrained informal mode of learning (Davis & Fullerton, 2016) like virtual communities in the formal learning to engage and retain students.

The paper is organized as: Section 2 presents the research methodology with a bibliographical database and the framework in which the review is conducted. Section 3 provides details of the literature review with categorizations –technology adoption, the continuation of technology use, and learning outcomes. In Section 4, a detailed discussion is presented, followed by future directions in Section 5. Section 6 sums up the paper with concluding remarks.

2. Research methodology

The methodology used for the review of literature is presented in this section. The research methodology is divided into two phases which are Article selection, and Classification and Categorization as depicted in Fig. 1.

2.1. Article selection

2.1.1. Initial pooling
The initial pool of sources or articles is obtained from recent IS (Information Systems) journals, education journals, books, and articles. The most recent research papers are searched in the databases by using advanced search options with keywords 'Online learning', 'e-learning,' 'Virtual communities,' 'Technology adoption,' 'Continuation intention,' 'Technology use,' 'Virtual worlds,' 'Learning outcome,' etc. Also, a backward and forward snowballing method is applied to the initial pool of journal articles. Snowballing method in literature review is a technique for identifying additional papers based on the reference list of the current paper and the citations to the paper (Wohlin, 2014). Here, the articles are searched from the reference list and the cited-by articles to ensure that the risk of missing relevant studies is reduced. The backward snowballing method is where the sources (reference section) of

the journal articles with any contribution in the area of online learning are investigated. On the other hand, the forward snowballing method is where the articles citing the journal article under study are examined to discover the contribution in the area of online learning. Along with it, the seminal works related to technology adoption and use in the area of information systems are also selected for review.

2.1.2. Inclusion/exclusion criteria
The inclusion/exclusion criteria are applied to the initial pool of research articles. All the research articles in the initial pool are examined. The abstracts and keywords are thoroughly studied and checked for any theoretical contribution in the area of online learning; virtual communities; mobile learning; seminal works on IS theories; the extension of theories; etc. However; the research papers with detailed technology architectures are excluded from the pool. For example; articles with a complete implementation focus or tools development are excluded.

2.1.3. Final pool
The final pool of articles contains all the research articles in the initial pool minus the excluded articles based on the inclusion/exclusion criteria applied. The major journals considered in the final pool are provided in Table 1. The final pool of articles is now ready for classification and categorization.

2.2. Classification and categorization

2.2.1. Attribution identification
As organizations are moving towards providing education and training with the help of technology with spending in the infrastructure and training, it is essential to understand the factors that affect adoption, continuation use of technology, and learning outcomes. Therefore, the attributes identified to map the final pool of articles are factors affecting adoption, continuation use, and learning outcomes in online learning.

2.2.2. Attribution mapping
The final pool of research articles is mapped to the attributes identified in the previous step, technology adoption, continuation of technology use, and learning outcomes. These mapped articles are
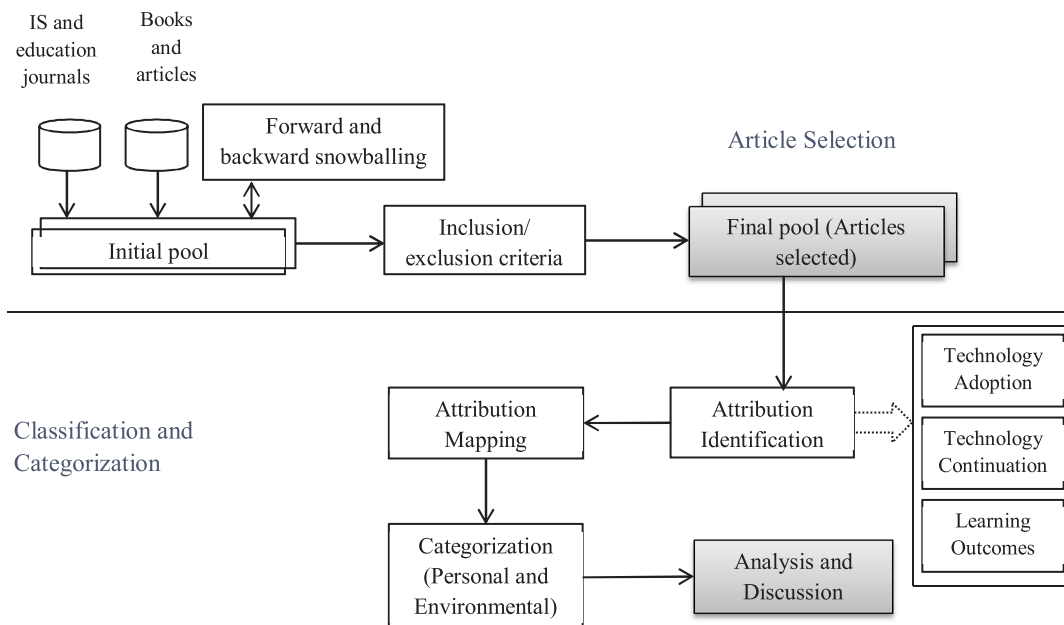

Fig. 1. Research Methodology.