



Digital Media and Its Implication in Promoting Students' Autonomous Learning

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Abstract

Computer and internet technology encourage learners' autonomy by allowing them to choose the time, place, and circumstances conducive to learning (Ayllon et al., 2019; Baseghi, 2018; Rohatgi et al., 2016). The application of digital technology has meaningful connections with developing students' learning autonomy and promoting their skills independently. This research aimed to present meaningful information for the readers about the effectiveness of digital technology in promoting students' autonomous learning by answering the two research questions; what kinds of digital technology's characteristics, and which digital technology condition effectively promotes students' autonomous learning. The Systematical Literature Review includes seven articles selected from 19 articles in Google scholar, 1.215 articles in Science direct, and four articles in Sinta (1, 2, 3, 4, 5, and 6). The reviewed articles indicated seven apps; Schoology, Multimedia-assisted Instruction (MAI), Information Communication Technologies (ICTs), Memrises, Quizlet, Socrative, Sli-do, and Three-Dimensional (3D). The virtual environments allow students to promote their autonomous learning in such conditions as long-distance learning, classroom learning activities, and self-training activities.

Keywords:

autonomous learning, digital technology

INTRODUCTION

Digital technology nowadays is an available alternative for many people globally to interact and share information. It is most essential and required in educational areas, especially where teachers and students cannot meet face-to-face to manage their teaching and learning exercises. The application of digital technology also has meaningful connections with developing students' learning autonomy and promoting their skills independently. In language learning, autonomy and digital technology lead students to adequate mastery of language skills (Ayllon et al., 2019; Baseghi, 2018; Rohatgi et al., 2016). Learner autonomy has gained prominence in language teaching and learning for more than three decades (Holec, 1981). Holec theorized that learner autonomy is the ability to take charge of one's learning and take responsibility for decisions, including determining the objectives, defining the content and progression, selecting the methods and techniques to be used, and monitoring the acquisition procedure evaluating what has been acquired. In related ideas, Benson (2013) defined the control concept of autonomous learning into three levels; control over learning management, control over cognitive processes, and control over the learning content. He argues that through the three approaches, learner autonomy is able to develop: by managing the planning, organization, and evaluation of the first level; moving forward, directing learners' attention to linguistic input, reflecting upon their learning, and building metacognitive knowledge in the second stage; and finally, being given the freedom to decide their goals and learning resources at the ultimate level. Little (1991) defines learners' autonomy as a capacity for detachment, critical reflection, decision-making, and independent action. Moreover, Little (2002) proposed a more holistic view of learner autonomy and indicated that the practice of learner autonomy requires insight, a positive attitude, and a readiness to be proactive in self-management and interaction with others. Students have been found to prefer being in control of their learning process, and they can feel more competent and motivated when they are empowered to make their own choices (Cotterall, 1995; Lepper, 1985).

In line with the effectiveness of digital technology in promoting students' autonomous learning, a study by Andina, Cahyono, & Widiati (2020) on autonomy in EFL affirmed that learner autonomy is strongly correlated with writing achievement and digital competence is moderately associated with writing achievement. They similarly detected a significant relationship between a combination of learner autonomy and digital competency towards writing achievement. Liu, Liu, and Tu (2020) state that one of the advantages of multimedia-assisted instruction is that it makes students more interested in sustainable learning and supports them in accessing information more effectively.

In addition, Mutlu and Eroz-Tuga (2013) claimed that computer and internet technology seem to encourage learner autonomy by allowing students to choose the time, place, and circumstances conducive to their learning. Additionally, the computer and the internet can raise learners' level of motivation in language education by offering topics of interest to the learners and introducing a diversity of study methods inside and outside the classroom. Moreover, the internet can contribute to the development of learners' language learning strategies by exposing learners to a digital social environment with many native speakers to whom the students do not have access in their local community.

Moreover, in their research findings, Ramamurthy and Rao (2015) stated that smartphones could boost learners' critical thinking, creative thinking, communication, and collaboration skills. They indicated the learners moved towards autonomous learning, but they were still reliant on the teachers to achieve their learning goals. Similarly,

Aminatun (2019) claims that the expansion of technology truly enhances many educational areas such as teaching, learning, and research. It supplies various resources that help teachers and students learn autonomously. Knowing how to use technology well for study will enable students to explore many things outside the classroom. Students also bring what they have got to be discussed with their teachers or classmates when learning activities. Accessing learning applications from any gadget such as a laptop, smartphone, or tablet is one way to utilize technology in a good way.

However, in line with the effectiveness of digital technology in teaching and learning activities, autonomous learning comes from the concept of life-long learning, which has been regarded as an important goal since the early 1960s (Gardener, D., M. 1999). Students' autonomy is defined as the degree of students' taking control of several factors such as pace, time-frequency, the topic of interest, method of learning, and goals in the learning process (Benson, 2011). The current publication conducted by Tseng et al. (2020) investigates the effects of implementing a 3D vocabulary learning program on EFL young learners' vocabulary acquisition. The findings confirmed the substantial impact of virtual environments in helping vocabulary learning. Besides, individual use and paired autonomous service, which dovetail with the program's design nature, instigated more profound vocabulary retention than teacher-directed use. Significantly, pair-work was determined to enhance more extended recognition than individual practice. It is suggested that successful vocabulary learning on a 3D program lies in the learners' autonomous control per se and their active engagement with the artifacts and close collaboration with partners. Most investigators' findings state that digital technology is easier, effective, and significant to promote students' autonomous learning. However, based on the reports above, it is necessary to find out the following queries.

1. What kinds of applications of digital technology effectively promote students' autonomous learning?
2. Which condition of digital technology effectively promotes students' autonomous learning?

METHOD

The study followed the PRISMA statement's criteria for publishing systemic reviews and meta-analyses, including providing a detailed summary of the questions addressed about participants, interventions, comparisons, and outcomes, as well as the study methodology (PICOS). It also frequently focused on literature analysis of digital technology's usefulness in promoting students' autonomous learning as a learning strategy. The study is determined from the inquiry components search term used appropriate inclusion and exclusion criteria in selecting the relevant publications for the final report. The databases "Science Direct," "Google Scholar," and "Sinta" are used to search papers in responding to the review questions. The search area identified the following search string by applying sophisticated search methods (such as "digital technology in promoting students' autonomous learning" and "information and communications technology in promoting students' autonomous learning").

Moreover, the search terms were used to seek titles and abstracts published between 2015 and 2020. The exclusion criteria, articles evaluated that are irrelevant to the topic of interest, articles published in a language other than English, and duplicate articles from the three web-based databases are all carefully eliminated from the database. In Inclusion criteria selected the articles relevant to the study objectives, research design,

and participants. The search operation, nineteen were discovered in Goggle Scholar, 1.215 in Science Direct, and four papers in SINTA. Following the application of the exclusion and inclusion criteria, a total of seven articles were chosen. More specifically, a four-step analysis process was employed on the seven papers, which consisted of the following components: 1) Examining and interpreting the first piece of research that has been selected. As part of this activity, we examined the first article by paying close attention to the research questions, the underlying theories, the study design, technique of data collection, data analysis, findings, and the conclusion compared to the other research. 2) Make a note of the information included within it. 3). From the second to seventh articles, we will look at them in detail. 4). All of the articles are being compared and concluded.

RESULT AND DISCUSSION

Research Question 1: *What kinds of applications of digital technology effectively promote students' autonomous learning?*

The analysis of the research procedure of the seven studies shows that the applications that effectively promote students' autonomous learning are:

Schoology

Schoology is one kind of Learning Management System (LMS) that provides an online social learning interactive mode. This e-media platform was developed by four students, namely Ryan Hwang, Jeremy Friedman, Bill Kindler, and Tim Trinidad, in 2007. According to Muhammad (2020), in his study, the use of Schoology successfully promoted students' autonomy by considering some facts, such as students' active participation through logging in and commenting on others' ideas, students' control over deciding learning modes, setting, and materials, and students' enthusiasm for finishing the lecturer's challenges. This study depicts how Schoology as an e-media promotes 25 seventh grade students' autonomy in EFL Learning in discourse analysis. Moreover, Schoology, as an e-media platform provided online, gives social and pedagogical experiences in learning. The learners may have interaction as well as collaboration during learning. As the learning management system, Schoology has many features like organizing lessons starting from planning, action, and evaluation; having discussion rooms; having a folder for resources; and owning external links to grab more information (Sarab et al., 2016). Besides, the e-media platform has been designed to have the capability to present pictures, documents, and even website links as sources of learning, and the media able to access through www.schoology.com with all kinds of browsers like Mozilla Firefox, Chrome, Puffin, Internet Explorer, and Safari.

Sustainable multimedia-assisted instruction (MAI)

MAI enables individuals to learn by themselves. Learners are provided with various media, such as graphs, videos, and images, which can help learners transform complex or abstract concepts into simple explanations and generalizations. Moreover, MAI can arouse learning motivation and reduce learning anxiety. According to Xianghu et al. (2020), their study revealed that MAI encouraged students in the experimental class to adopt reading strategies more frequently and improve their autonomy, from the low level to an intermediate level, to use an asymmetrical technology comparison with the control class. In addition, one of the most significant findings of this study is the effectiveness of

combining modern sustainable technology and advanced educational concepts with symmetry in promoting learner autonomy within a sustainable learning modern.

Information and Communication Technology (ICT)

The application of ICT tools has a significant role in making learners more independent and autonomous. The learners are well motivated when provided with various materials through tools like the web, emails, multimedia, and many more. The most notable thing that we claim through this study is that ICT is just a tool, neither a method nor an actor. It is used to manage knowledge and as a method for searching for and integrating information. Joshi and Poudel (2020) investigate learners' perceptions and attitudes toward using ICTs in English language classes and examine the role of ICTs in promoting learner independence and motivation. The participants were 37 students who were purposively selected. The primary ICT tools adopted for the study were websites, emails, and multimedia. This study's findings show that if ICT is used adequately among the students, it must facilitate roles.

Memrise

Memrise is helpful to improve students' English knowledge, especially in enhancing their vocabulary. Aminatun and Oktaviani (2019) explored the use of Memrise to enhance students' autonomous learning skills outside the classroom, especially in studying English. The findings showed that Memrise helps students learn English and significantly improves their vocabulary. Memrise enables teachers to make a learning group for their students to learn a specific topic. Memrise is an educational tool to teach various subjects available online and on a mobile device (Luczak, 2017).

Quizlet is an online quiz service.

Quizlet is a multimodal mobile and web-based study app. Quizlet consists of auditory inputs and visual inputs, allowing the students to explore the learning materials. Quizlet provides a new learning experience in an online atmosphere that is interactive and fun, which might not be found in an offline learning model. Abdillah and Thohiriyah (2018) aim to review the Quizlets multimodality, promoting students' autonomy in learning English. Quizlet provides auditory and visual inputs through its features to build up students' autonomy.

Mobile apps (Quizlet, Socrative, and Sli-do).

Purwati's (2018) descriptive qualitative study explores mobile apps to promote autonomous learning for students of the English Education study program in syntax subject. Purposive sampling was applied for data collection. She analyzed data using content-based analysis and found that mobile apps (Quizlet, Socrative, and Sli-do) could promote students' autonomous learning. They are eager to delve deeper and learn more to locate materials for their subject, Syntax.

3D virtual environment mediation.

Tseng, Liou, and Chu (2020) conducted quasi-experimental research to investigate the effects of 3D virtual environment mediation, learner autonomy, and pair-work cooperation on vocabulary learning. The findings confirmed the positive impact of virtual environments in facilitating vocabulary learning. Importantly, pair-work was found to

enhance longer retention than individual practice. It is suggested that successful vocabulary learning in a 3D program lies in the learners' autonomous control of the learners *per se* and their active engagement with the artifacts and close collaboration with partners.

Research Question 2: Which condition of digital technology effectively promotes students' autonomous learning?

The analysis of the research procedure of the seven studies shows that the condition the applications that effectively promote students' autonomous learning are:

Schoology

Students' active participation through logging in and commenting on others' ideas, students' control over deciding on learning modes, settings, and materials, and students' enthusiasm for finishing the lecturer's challenges were all factors in Schoology's promotion of learner autonomy, according to Muhammad (2020). Schoology's effectiveness as a media technology for teaching and learning activities is also supported by Villanueva, Ruiz-Madrid, and Luzon (2010), who argue that technology triggers are developed to help people learn and practice exercises more by providing them with more access to authentic materials as learning sources, increasing the opportunity for users to interact with any sources, and enhancing metacognitive ability as self-experienced learning. Students' self-directed attitude to regulating their learning till they reach the target achievement is improved by technological advancements. Schoology, a web-based e-media platform, provides a social and educational learning environment for students. Schoology is a learning management system with various features, such as lesson preparation, action, evaluation, discussion rooms, a folder for materials, and external links to get additional information. Schoology also provides a learning management system (Sarrab et al., 2016).

Sustainable multimedia-assisted instruction (MAI)

Teaching with the use of many media (MAI) is a sustainable learning model, according to Xianghu et al. (2020), effectively integrates modern sustainable technology, advanced educational principles, and symmetry to promote learner autonomy. It means that individuals can learn on their own with the help of MAI. Graphs, movies, and photos are some of the media used to help students break down complex or abstract concepts into more straightforward explanations. According to Carrell (2006), it aids students in acquiring background knowledge on a particular subject. Garcia and Arias (2000) further assert that MAI gives teachers the flexibility to provide students with a wide range of learning tools.

Information and Communication Technology (ICT)

Using ICTs in English language lessons, Joshi and Poudel (2019) claim, students might become more motivated and self-sufficient in their learning. When learners are given the many resources, they require via ICT, they are highly motivated (web, email, and multimedia). When it comes to advancing abilities, ICTs have the potential to do all of the above. They can also motivate and engage students while helping them connect their schoolwork and real-world situations. An ICT-Integrated Instruction is a means of learning interactively with excessive use of the internet, email, webpages, blogs, and

wikis incorporating Information Communication Technologies (ICTs) or ICTs (Davies, 2013).

Memrise

Memrise is a tool that allows professors or lecturers to create learning groups for their students for them to learn a specific topic (Aminatun & Oktaviani 2019). The program, which can be accessed at any time and from any location, might encourage pupils to learn independently. The application, which can be downloaded for free to students' mobile devices, is accompanied by interactive learning features and an intuitive user interface. Memrise is a fantastic tool for improving pupils' English language skills, particularly expanding their vocabulary. Luczak (2017), Memrise was described as an instructional program for learning multiple subjects available both online and on a mobile device. Furthermore, Shellenbarger's (2015) Memrise employs spaced repetition of flashcards to increase how students remember new information. The visitors can also learn about different words from a given language or specific fields by viewing their definitions, synonyms, antonyms, and even their pronunciation on the website.

Quizlet is an online quiz service.

Quizlet is a study application available on both mobile and web platforms (Abdillah and Thohiriyah, 2018). Quizlet comprises both aural and visual inputs, allowing students to explore the learning materials available on the website independently. With Quizlet, you may have a whole different learning experience in an online environment that is engaging and fun, which may not be available in an offline learning approach. Purwati (2018) states that the goal of Quizlet is to assist learners and their teachers in practicing and mastering their knowledge. Quizlet offers engaging, customized exercises that are made possible by contributions from individuals all over the world.

Mobile apps (Quizlet, Socrative, and Sli-do).

"mobile app" refers to software designed for smartphones and tablets (Purwati, 2018). Our definition of mobile learning is "any activity that helps individuals to be more productive while consuming, interacting with, or creating information" through "a compact digital portable device that individuals carry routinely and has reliable connectivity." Mobile applications are software programs for systems like Android (Google), iOS (Apple), or Windows (also known as mobile apps). Purwati (2018) employed Quizlet, Socrative, and Sli.do in her research. The Quizlet instructor community is enormous. Its purpose is to help students (and teachers) learn better by practicing and mastering it. Quizlet has thousands of entertaining, flexible games developed by individuals worldwide. Using Socrative, a teacher can assess all students' understanding throughout a session, not just those who speak up. Each element has a unique name and function. The quiz allows teachers to create multiple-choice, true/false, and short-answer assessments that can be reused. Instead of multiple-choice questions, students in the Space Race race their spaceship across the screen. The teacher asks a multiple-choice, true or false, or short-answer question during a Quick Question activity. Socrative helps students find the correct answer. This practice helps students reflect at the end of a lesson. Sli-do is a polling and Q&A tool for conferences and events. App users can tweet questions to speakers and panels, examine the event plan, build a personalized itinerary, and network with other delegates in real-time.

3D virtual environment mediation.

Children's ability to see, understand, and create their understanding of terms is aided by the 3D environment replicating real or imagined events for experiential word acquisition. By integrating rich context supplied by simulation with meaning-form improvement through multi-modal input, the 3D virtual environment is expected to aid language learning. Another potential benefit is the promotion of learner autonomy and learner collaboration that could result from this strategy. One of the many terms used to describe a group of technologies is known as 3D Virtual Environments (VEs). VRs are computer-generated realistic images of a real or imagined environment in which users can interact organically with virtual things (Freina and Ott, 2015). They lose track of reality and think the VEs are genuine due to their verisimilitude, which gives users the impression of presence and immersion (Portman et al., 2015).

CONCLUSION AND SUGGESTION

The expansion and widespread application of media technologies in ELT contribute to the positive effects on both teachers and students. The use of media technology is rapidly boosting the quality of teaching and learning activities. However, this paper is intended to provide readers with information about the characteristics of media technology that are compatible with the learners' conditions to promote autonomous learning. This information was gathered by searching for open access articles in Google scholar, Science direct, and Sinta (1, 2, 3, 4, 5, and 6) published between 2015 and 2020. The writers were able to get minor papers that go into greater detail concerning the role of multimedia technology in enhancing students' autonomy in their learning. The author discovered seven papers associated with 19 in google scholar, 1.215 items in Science direct, and four articles in Sinta using Google scholar. Seven media technologies identified as suitable for promoting students' autonomous learning, each of which refers to an online computer or mobile application: Schoology, Multimedia-assisted Instruction (MAI), Information Communication Technologies (ICTs), Memrises, Quizlet, Socrative, Sli-do, and Three-Dimensional Learning (TDL) (3D). Students in such circumstances have access to computer and mobile applications, long-distance learning, classroom learning activities, and self-training activities, among other things. As a guideline for prospective researchers, this study applies two keywords to search for relevant publications and only focuses on open access articles, a recommendation for prospective researchers. When searching for relevant papers, it is more helpful to read non-open access materials from various sources and construct keywords that are more than two words long.

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