E-Learning and Its Role as a Learning Media in Education and Training

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Article Info	ABSTRACT
	This study examines the use of e-learning as a learning media in Education and Training. The role of e-learning in learning can bridge the gap between teachers and students in different spaces and times. The method used in this study is a literature review with a narrative review approach. The study result revealed that e-learning as a learning media is effective to improve student learning achievement such as increasing subject scores, collaboration, and enriching reference sources so that the learning process is more centered on students. In the training of the company, the use of e-learning can also improve the performance of employees such as increasing skills in the field of work, credibility, understanding of workplace operations, and organizational commitment. E-Learning that uses MOOC (Massive Open Online Course) provides benefits for learners in formal education and companies who want to develop their abilities and careers. It is important to emphasize aspects of content, users, and the latest technology to optimize the effectiveness of implementing e-learning.

I. INTRODUCTION

Information and Communication Technology (ICT) affects not only social and economy but innovations in education. Technology makes people get access to information and knowledge more easily, and enhance effectiveness in the learning process. ICT development includes the development of audiovisuals, computer-based media, and integrated media development. ICT programs produced include e-learning, PowerPoint, websites for learning [1]. E-learning Market Trends and Forecast 2017-2021 of Dacebo show that the size of the global e-learning market was predicted to grow by 5% between 2016 and 2023, exceeding USD 240 Billion. It is because the use of online and digital devices always increases [2]. It also indicates that e-learning is suitable for learning models in the future.

The development of ICT and the dynamics of education affect the methods and processes of learning. The application of ICT in distance education such as online learning or e-learning is beneficial because it can transmit content and use various methods to meet the needs and preferences of different learners [3]. E-learning is one form of application of changes in the learning process. It is a learning activity that uses electronic media and information technology, especially the use of internet technology. The learners can access learning materials anytime and anywhere. One of the main goals of e-learning technology is to be able to reach out to faraway students where they might have limited access to full-time and face-to-face education [4], [5].

The development of e-learning is not only used in educational institutions but also companies, organizations, and general users. The increasing number of technology-based industries will add to the benefits obtained by employees from e-learning. Companies or organizations use it for training and developing the quality of human resources in the organization [6]. Jokic et al [7] also argue that e-learning technology can save time and costs and improve consistency in learning. The use of electronic media, information, and communication technology in e-learning enables learners to study anywhere and anytime according to their needs and conditions. The ease of accessing information and workforce requirements makes the concept of MOOC evolves. It is open and available to the

public who want to improve their competence through online courses. The purpose of this study is to analyze the effectiveness of e-learning as a learning media and its benefits in education and training.

II. LITERATURE REVIEW

E-Learning

Technology-based learning is the basic idea of creating e-learning. The educational characteristics of e-learning are courses using online multimedia. The learning theory used is constructivist and cognitivist models. The Internet and ICT devices in e-learning create the concept of remote user interactions to overcome inflexible courses [8]. It includes learning applications and processes such as virtual classrooms, computer-based learning systems, and web-based learning [7]. It is also a flexible learning media, enabling characteristics to be altered according to the conditions, content, and the overall system used for learning.

Online learning is also part of e-learning that uses an internet network that connects students and teachers to provide direct learning interactions in different spaces. Automatic feedback for student learning activities on e-learning is an interactive forum where students can access learning content available online [9]. Besides learning material, the process of evaluation and measurement using computers or the internet through online test modules are also used in e-learning [10].

E-Learning has two communication modes that enable students to learn from the platform. They depend on the learner's choice of the category to be used. The two modes are Synchronous and Asynchronous e-learning. Both modes can connect interactions between learners and teachers in distance learning [11]. To manage both e-learning modes, the administrator can use the Learning Management System (LMS). It is an application system to develop and manage online courses, learning materials, content courses, and digital collaboration activities between students and teachers.

Synchronous e-learning is a mode that provides real-time teaching or learning process instantly (online) to students. Both the learners and instructors or teachers must be present during the lesson period. Asynchronous e-learning is a self-paced learning model process that can be done offline with or without the presence of the teacher or students [12]. The learners and teachers in e-learning are usually separated by time and place so digital communication tools are necessary to facilitate interaction and learning. The synchronous communication tool is real-time media such as video conferencing, web conferencing, audio conferencing, live chat, instant messaging, application sharing. The learners and teachers can use asynchronous communication tools such as discussion forums, Weblogs, e-mail, and social media messaging [13].

Concept of MOOC

A new educational phenomenon that appeared in the last decade which utilized the e-learning technology initiative is known as MOOC. MOOCs are online teaching and learning media through websites and as a system in future lesson delivery [14]. MOOCs are concepts and learning processes that were first used by Professor Dave Cormier in 2008 from Prince Edward Island University. The concept of MOOC is learning in the form of entirely online courses (Online Learning) through the web and designed to support the participation of a large number of students. Current types of MOOC platforms are Coursera, edX, Class2go, and Udacity.

Several universities using MOOC include the Massachusetts Institute of Technology (MIT) and Harvard University with edX; Stanford University with Class2go; and Coursera with 37 million students based on 2018 data [15]. MOOCs provide comfortable learning opportunities for students through technology as a platform to interact with professors, teachers, and trainers at lower costs [6]. In globalization dynamics, increasing attention toward the MOOC and its utilization is influenced by several main factors, such as technology, demography, pedagogy, and economics [16]. These factors can potentially make MOOCs revolutionize the learning model in higher education and corporate training because they can provide what the course participants need. MOOCs users are not only students in schools or universities but also workers or employees in companies. Workers who use the MOOC for work can be categorized as following: workers seeking new knowledge in their current work; workers wanting to be promoted in their current jobs; workers seeking a new position in their current jobs; and those switching to new fields [17]. It can be concluded that MOOC will evolve and be used according to the needs of the field of education and the field of work.

Utilization of E-Learning in Education and Training

In the education system, the use of e-learning can bridge the gap between teachers and students in different spatial and temporal constraints through internet and multimedia technology to attain a better quality of education. Teaching and communication techniques in e-learning can create an interactive online environment. Its activities include discussion groups, role-playing, simulations, chat rooms, online references, case studies, and streamed videos that can improve digital interaction and collaboration among students. Students' critical thinking may also be improved within a small group setting [18], [19]. E-Learning is important for education because it can solve some learning problems such as learners' learning style, speed of mastering a skill, and ease of understanding materials lesson. Students are active participants in the educational process. ICT can help solve cases and tasks of scientific problems successfully, leaving them improving their competency to work effectively. The quality and efficiency of the education system can be improved by integrating digital technology into the educational environment. All of those things are the positive impacts of the implementation of new technologies and innovations of e-learning [20].

Employees are human resources as the main source of economic value in a company. To gain profits, a company needs to have a strategic competition, which is identifying key skills and competencies needed for business and encouraging the development of all the employees. Training is one of the ways to develop the skills and competencies of employees.

The utilization of e-learning in training provides a solution for companies to achieve their goal. E-Learning is needed for companies to achieve success and they may attain opportunities if used well [7], [21].

The concept of e-learning grows rapidly in companies or organizations. They use it to help individuals to achieve job satisfaction, improve work skills, and help the company create a competitive workforce [22]. E-Learning technology will advance and make training programs more accessible and improve the integration of collaboration, performance support, information, and presentation. These benefits are important for employee development [23]. Companies need to train and educate their employees in an effective, efficient, and complete way, allowing them to increase satisfaction in the workplace, employee motivation and reduce training costs. E-learning may enable companies to gain investment returns. The benefits and limitations of e-learning should be carefully taken into account to achieve their strategic goals prior to its implementation for their employees' development. The use of e-learning is one among other ways to maintain employees' lifelong learning goals and educate a new generation of employees that enter the workforce [22].

III. METHODS

This study used a literature review method through a narrative review approach. This approach was designed to determine the conceptualized by reviewing each article relevant to the topic. A Narrative review is a traditional way of reviewing existing literature by summarizing or synthesizing what has been written on a particular topic but does not seek generalizations from what is reviewed [24]. This study used 4 steps offered by Demiris et al. [25] which include several steps.

Step 1: searching for scientific literature published and indexed in various databases, such as Google Scholar, Crossref, WorldCat, Research Gate, and EBSCO. A large number of databases are very important to ensure that most relevant studies have been identified. Step 2: identifying keywords relevant to the topic of studies, such as learning media, e-learning, education, and training. Wahono [26] argues that the determination of the number of articles is customized to the specific needs of each database. The database is searchable by title, keywords, and abstracts.

Step 3: reviewing abstracts and articles that can answer the topic of this study. This study describes in general about e-learning, MOOC, and the utilization of e-learning as an introduction and then it is specifically reviewed the effectiveness of e-learning as a learning media and the benefits of using e-learning in education and training. It was aimed to answer the objectives of this study. With narrative reviews, it is not necessary to include every article on a topic. Step 4: synthesizing and analyzing the results of the document to reveal the findings of the reviewed articles. The result of the analysis was then written in a narrative review. Finally, reference citations were done.

IV. RESULT AND DISCUSSION

Effectiveness of E-Learning as Learning Media in Education and Training

The effectiveness of e-learning as media for learning is measured by how much are learning goals accomplished. To achieve effective online learning, it must empower e-learning content. The research is about the effectiveness of learning class X students in Physics subjects held online [27]. The e-learning "wiziq.com" website was used to provide online learning tools and environments. It was found that student achievement scores who used e-learning were higher (mean = 17.70) than those who only used face-to-face learning (mean = 13.65). A similar result is that Moodle-based e-learning can effectively improve listening skills in English lessons. The effectiveness of e-learning is proven to raise the learning achievement up 17.19% from the results of the pretest and posttest evaluations in class X students of Vocational High School 4 Yogyakarta [28]. It can be concluded that the use of e-learning is effective to achieve learning goals such as increasing student learning achievement. The roles of the teacher are also important in e-learning because they must facilitate individual and group discussions, design course assignments, and evaluate students learning. Those activities can lead to interactions between teachers and students and interactions among students.

Another research shows that there are the impacts of the use of e-learning to job satisfaction, productivity, overall work performance, and organizational commitment in employee training [29]. The results show that around 38% were satisfied with their jobs, 42% said that job responsibilities were easier, nearly 42% increased productivity, 48% improved performance, and about 32.5% were more committed to their organization because of the e-learning experience. The research shows that e-training and employees' performance have a positive and significant relationship with the value of the correlation coefficient 0.358 [30]. I can infer that the use of e-learning in training is effective to improve employee's performance and productivity. It is also important that the use of e-learning alone will not achieve good results. The companies have to consider the other aspects of e-learning such as strategies and managerial support.

Research by [31] about the post-learning development of MOOC students and linking them with indicators of their participation, involvement, and performance in the course. Overall, career advancement has a higher score. In online courses students who interact more frequently with course pages, video lectures, and discussion forums have better careers than students who tend to be passive. Overall, career advancements get higher scores. Other studies examine how MOOC infrastructure, content, and facilitation help optimize learner activities [32]. 368 participants from 10 countries registered for the course consisting of 4 modules offered for 3 months of learning. Overall, 18.2% of the course participants rated the MOOC's experience as 'very good', and 69.7% rated it as 'good'. Thus, it suggests that I can use the use of MOOCs for career development. In the future, designing effective MOOCs must understand learner behavior that is associated with positive developments and areas of the job.

Benefits of E-Learning for Education and Training

E-Learning provides many benefits in learning. Several of the benefits of e-learning in learning include: (a) it provides new, creative, and innovative ways to motivate and stimulate students of all abilities; (b) it can help students who need improving in ICT-based literacy and numeracy; (c) the learning experience quality among lecturers, tutors, and individualized learning experience for all students can be improved by e-learning; (d) the digital learning resources can be customized by teachers or students easily to adapt their style and ability of learning; (e) the students can take part in active, creative, and innovative learning with others through collaboration by virtual learning worlds; and (f) it can provide personalized learning support through information, advice, and guidance services [33].

E-Training is training employees which applies e-learning technology as a learning media has several benefits such as flexibility of delivery of training, cost-saving and real-time, productivity-enhancing. These benefits can make a company improve competitiveness for the employees [30]. The use of MOOC for workers shows that workers as students use MOOC for work because it has the following benefits: (a) easily accessible resources; (b) can improve their skills in their current field of work; (c) can increase their credibility; and (d) can better understand their current workplace operations [17].

To optimize effectiveness and get benefit from the implementation of e-learning, it is important to emphasize content, user, and the latest technology. New technology has increased the benefits of online training According to [34], online learning depends on 1) well-designed course content, motivated interactions between instructors and students, instructors who are well prepared and fully supported; 2) creating a sense of cooperation through the community or online learning forums, and 3) rapid technological progress. It implies that important aspects to optimize effectiveness are course content, user-oriented, and technology [35].

V. Conclusion

E-Learning is learning that uses ICT media to achieve flexibility, accessibility, and affordability of students. The role of e-learning as a learning media that can solve learning problems, especially for students who cannot get an education because of physical distance, schedule conflicts, and unreachable costs. Good e-learning must consider some aspects such as kind of multimedia, personalization of user, the collaboration of work, and scalability of the network. E-Learning also has roles in improving learning achievement, collaborating ideas, and sharing reference sources outside the classroom.

Companies or organizations use e-learning to train employees for developing their performances based on their work assignments.E-Learning that develops its concept to be MOOC provides benefits for informal educations students or company employees who want to continue to develop their abilities and careers. One way to optimize e-learning is to emphasize the aspects of content, user and, the latest technology. However, ICT per se is not enough in e-learning success; it requires the ability and activeness of the teacher/instructor in managing the course and content. For a company, it is necessary to train and motivate employees to use it as optimally as possible.

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