

## THE EFFECTIVENESS OF ONLINE LEARNING IN HIGHER EDUCATIONAL INSTITUTIONS: A LITERATURE REVIEW

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### ABSTRACT

This study aims to review the effectiveness of online learning in higher education institutions through a literature review. Several factors influence the effectiveness of online learning, including the availability of adequate technology and internet access, good quality and design of online learning, students' ability to use technology and adaptation to online learning, student motivation in learning online, internal factors such as the ability to grasp the essence of the material. and being active in class, external factors such as internet connection errors and availability of quotas and devices, as well as the factor of trust in applications or online learning platforms. Other research shows that online learning using a learning management system (LMS) can have a better impact on student learning outcomes. Therefore, it is important for educators and researchers to consider these factors in designing and implementing effective online learning.

**Key words:** online learning, effectiveness, pedagogy

### INTRODUCTION

In the modern era, characterized by the proliferation of Information and Communication Technology (ICT), particularly the internet, numerous tasks can be accomplished remotely. One such task is distance learning, which utilizes internet technology. The integration of various ICTs into the educational environment plays a pivotal role in the teaching and learning process within the contemporary education system. The utilization of information technology tools for classroom instruction significantly enhances the quality of education in schools, universities, and other academic institutions. The term "online learning" was first coined in 1995 when the web-based system WebCT was developed as the initial Learning Management System (LMS), later evolving into Blackboard (V. Singh & Thurman, 2019). The advent of the internet and World Wide Web technology has been a monumental contribution to the realm of information technology, especially in the field of education. The internet has made online learning feasible, attracting the attention of educators and researchers who aim to augment student learning outcomes, despite facing various challenges, particularly in higher education institutions (Paper, 2010).

Although the current facilitation of distance learning through internet technology may seem novel, online learning is not a recent development. According to Sherry (1995), distance learning has been in existence for over a century and originated with correspondence courses in Europe. This educational approach allows students to engage in learning without physically attending classes. Technology is a fundamental element of 21st-century learning. The increased integration of technology in education has transformed the role of teachers from traditional knowledge conveyors to facilitators and motivators who encourage active student participation in the learning process (Onyema & Deborah, 2019). Essentially, online learning provides an alternative approach to teaching and learning. However, a prevalent issue in online learning is the insufficient incorporation of pedagogical principles into the online learning platforms (Bixler and Spotts, 2000). Therefore, the effectiveness of the online learning process relies on teachers' ability to implement pedagogical principles according to their specific needs. In March 2020, the Indonesian government declared the COVID-19 pandemic in Indonesia. This declaration led to the implementation of social restrictions nationwide and the closure of public facilities, including schools. As a result, face-to-face learning became impossible, and the teaching and learning process had to be conducted remotely. In principle, distance learning is not a novel concept in the Indonesian education system. However, this does not imply that educational institutions in Indonesia found it easy to transition to distance learning. Educators, from teachers to lecturers, had to quickly adapt to the challenges posed by online learning. Common issues faced included a lack of experience and insufficient time for preparing online learning materials (Mushtaha et al., 2022).

Online learning should serve as a gateway to innovation in the field of education. Oranburg (2020) asserts that two key components enable the connection between teachers and students in online learning: hardware and software. Hardware encompasses devices such as computers, laptops, webcams, microphones, and internet connectivity. Software proficiency is equally crucial, as both teachers and students need to familiarize themselves with online learning support applications, including teleconferencing and video call platforms such as WhatsApp, Zoom, and others. Video conferencing technology, in particular, facilitates essential meetings among users located in different places without requiring physical travel. This technology is considered convenient and practical when conducting live sessions, saving time and minimizing difficulties associated with physical meetings, especially during disease outbreaks, allowing individuals to work from the safety of their homes.

In understanding how online learning is widely used as a distance learning method, the author will present several definitions of online learning that have developed over time. Given the importance and consistent growth of online learning, it is critical for experts to understand, define, and clearly articulate the concepts associated with the field. Stem (2019) explains that online learning is education carried out via the internet. Distance learning is often referred to as e-learning among other terms. In describing the definition of online learning, experts in their research have used different terms which have evolved over time. Singh & Thurman (2019) in their research found that during the period 1988 to 2018, using 37 sources, there were 46 definitions of online learning. Furthermore, in explaining online learning, the terms used vary greatly, ranging from e-learning, blended learning, online education, and others. However, the term online learning is the term most often used. However, even though the terms used are different, researchers agree that one of the most crucial elements in online learning is technology. Therefore, several ways in which technology is used in elearning are as follows:

- Learning is organized or delivered via web or internet based technology
- Use of the internet to increase interaction
- Use of the internet to enhance the learning environment
- Use of information and communication technology
- Technology-based learning
- Audio/video CD-ROM, pre-2000 era

As mentioned previously, where technology is an important element in online learning, online learning pedagogy uses technology as a mechanism for educators to provide quality learning experiences for students to engage in student-centered learning (Sim et al., 2020). In addition, Finch & Jacobs (2012) defines online education as part of distance education and can be referred to as online learning, elearning or web-based learning. While distance education typically refers to all forms of teaching and learning where students and instructors are separated geographically and temporally, the term "online" refers specifically to teaching and learning environments that use computer mediated communication (CMC) modalities such as the World Wide Web and other distance learning software. . In addition, e-learning is also defined as E-learning is defined as “the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services, as well as long-distance exchange and cooperation (EC, 2001).

With the current increase in the world's population, society's tendency to learn is growing rapidly, which is indicated by the high demand of society for education that can be provided to everyone. This is also supported by a developing education system that continues to strive to reach more levels of society. For example, currently there are many students with various backgrounds, such as students who are married, have children, work full time, work part time and various other responsibilities. So, the need for online learning is important to help today's students. However, the implementation of online learning is not always perfect and as expected. One issue that is still being debated is the effectiveness of online learning itself.

In online learning, there are several things that need attention, including factors that influence online learning. Saharoh et al., (2022) stated that the factors that influence the effectiveness of online learning consist of the availability of technology and good internet access, adequate quality and design of online learning, students' ability to use technology and students' ability to adapt to the online learning system. Apart from that, Robiati et al., (2022) mentioned factors such as student motivation in online learning, internal factors such as students' ability to grasp the essence of learning material and external factors such as internet connection, internet quota and devices used.

The effectiveness of online learning also depends on how and what learning methods are used. Castro & Tumibay, (2021) state that based on previous literature there are five types of designs, models and theories that have become standards for online learning, including: (1) Alonso, Lopez, Manrique, and Vines' E-Learning instructional model, (2) the Instructional Design Model for Online Learning (IDOL), (3) Roblyer's online and blended learning design theory, (4) the online instruction rubric by Quality Online Learning and Teaching (QOLT), and (5) Quality Matters (QM ) Publisher Rubric. However, the main purpose of online instructional design models is to help teachers to better design online designs or programs and to facilitate students to be able to better focus their learning, and to encourage more active teaching and learning.

## METHOD

This research is a qualitative study conducted through the literature review methodology. It aims to assess the effectiveness of online learning within higher education institutions by employing a systematic literature review approach. A comprehensive review was conducted, encompassing a total of 25 scholarly articles published in diverse national and international journals. These articles were analyzed in accordance with the research's primary focus. The research design employed in this study is descriptive in nature. It involves systematic and meticulous examination of real-world issues and subjects. The research primarily concentrates on contemporary challenges, and the acquired data is methodically structured and elucidated through analytical means.

## RESULTS AND DISCUSSION

Various studies have been conducted to examine the effectiveness of online learning in higher education institutions. To discuss this topic, conclusions were drawn from 25 studies conducted both in Indonesia and other countries in Table 1.

Various studies have been carried out to find out whether online learning carried out in higher education is effective or not. These studies produce different findings which make this research topic provide space for further research. The outline that can be drawn from these studies is that it cannot be concluded that online learning will always be effective or ineffective in the learning process at the tertiary level. One of them is research conducted by P. Singh et al. (2021) who found that online learning at the diploma, bachelor's and master's levels has poor effectiveness. Coman et al., 2020 had similar research results where the effectiveness of online learning was not achieved properly due to technical problems and lack of skills on the part of the teacher. In contrast to Hussain, et al (2020) and Bahasoan et al. (2020) who found that online learning was a good alternative during the COVID19 pandemic. Similar results were also obtained by Leung (2010) who found that online learning was as effective as traditional learning. This research states the benefits of e-learning, such as flexibility, accessibility, and convenience for students, institutional cost savings, time savings, and ease in updating and revising courses. This result was also confirmed by Soffer & Nachmias (2018) with similar research results.

Apart from assessing the effectiveness of online learning, the research carried out also found influencing factors and what learning models can provide the best effectiveness. Al-Rahmi et al. (2015) found factors such as self-efficacy, interface, community, usability, student satisfaction, and intention to use e-learning, were positively correlated with e-learning effectiveness. This research also found that when these factors can be met, online learning can be effective. Meanwhile Sridharan et al., (2010) found that management, technology, resources, and metadata ontology dimensions influence the effectiveness of e-learning both directly and indirectly through increasing the effectiveness of learning resource management. Then Bolliger & Wasilik (2009) found that three factors influence faculty satisfaction in online environments: student-related, instructor-related, and institution-related factors. In contrast to others, Al-Jedaiah (2020) found that private universities in Jordan did not have clear knowledge management strategies and plans, which had a negative impact on the effectiveness of e-learning at these universities. This paper suggests that private universities build their knowledge management models and test them, and link their knowledge management strategies and plans to e-learning goals.

Tabel 1  
Hasil Penelitian Efektifitas E-Learning pada Pendidikan Tinggi

No	Researchers	Results
1	(P. Singh et al., 2021)	The study was conducted in India, Malaysia and other countries with 100 respondents, mostly from the youth population studying in Bachelor's, Diploma and Master's programs. The findings show that the effectiveness of online education is very poor, as students find it difficult to adjust to the online mode of education, and the offline mode of education remains the most preferred mode of education.
2	(Aali et al., 2021)	This paper states that this research aims to provide a model of the effectiveness of e-learning in the higher education system. This study identified 14 components related to e-learning effectiveness and classified them into three main classes including pedagogical, individual, and technical related factors. This study provides a model for evaluating the effectiveness of e-learning in higher education systems. The research results can be used to improve e-learning systems and bring flexibility to learning methods.
3	(Hussain, et al, 2020)	The study provides evidence that online learning can be an effective alternative to traditional classroom learning, especially in times of crisis. This research also emphasizes the importance of further studies on the effectiveness of online learning tools in Pakistan. The findings of this research can be used by educators and policymakers to improve the quality of distance education and ensure that students have access to effective learning tools, even in emergencies.
4	(Soffer & Nachmias, 2018)	This paper examines the effectiveness of online academic courses compared to face-to-face courses in higher education. The study compared three online courses with three of the same courses in a face-to-face format, which had the same characteristics. Learning effectiveness is examined by a variety of variables, including learning outcomes, perceived instructional aspects, perceived engagement, and satisfaction. The study found significant differences between online and face-to-face courses in most of the variables examined. Findings indicate that in most

		aspects of effectiveness examined, online courses are as effective as, or more effective than, face-to-face courses.
5	(Batdi et al., 2021)	Mixed methods research studies conducted during the pandemic found that students faced a variety of challenges during the sudden transition to online learning, such as technical difficulties, lack of social interaction, and difficulties with time management and self-organization. However, the study also found that students value the flexibility and convenience of online learning and that some students even perform better in online courses than in traditional face-to-face courses. The paper concludes that online learning can be an effective alternative to traditional face-to-face learning, but requires careful course design and pedagogical strategies that promote interaction, engagement, and self-regulation. The paper also suggests that online learning can provide flexibility and convenience for students, but should not be seen as a replacement for traditional face-to-face learning, especially for certain types of courses and students.
6	(Bahasoan et al., 2020)	The findings of this paper can be used by educational institutions to improve their online learning systems during the COVID-19 pandemic. The results of this paper can help policy makers to make informed decisions about implementing online learning systems during a pandemic or other emergency situations. This paper highlights the importance of using cost-effective applications such as WhatsApp for online lectures, which can help students facing financial constraints. This paper also highlights the need to address network issues that students face during online lectures, which can help educational institutions to provide better online learning experiences to their students.
7	(Xu, 2007)	This paper focuses on assessing the effectiveness of online learning programs in higher education institutions. This study used case study methodology to investigate the opinions and experiences of faculty and students involved in online programs. The research identifies factors that influence the effectiveness of online programs and provides insight into the main challenges, benefits, and limitations faced. The study also proposes suggestions on how the identified problems can be minimized and improve future directions for e-learning. However, the paper does not provide specific numerical results or statistical analysis.
8	(Jaggars & Bailey, 2010)	The meta-analysis included in the paper found no evidence that fully online delivery produces superior learning outcomes for college courses in general, particularly among low-income and academically underprepared students. The studies considered in the meta-analysis did not show strong advantages or disadvantages in terms of learning outcomes among the sample of students studied. This paper shows that online learning can even undermine progress among low-income and less academically prepared students without additional support.
9	(Sulčič et al., 2017)	His paper presents a case of a blended learning approach in higher education that is part of a wider nationally funded research project on ICT and e-learning. The research results presented in the paper show that ICT per se does not increase the effectiveness of e-learning. Only the use of teaching strategies (teaching and learning methods) that are different from those used in traditional education can increase the effectiveness of learning in e-learning. The research was conducted with students studying compulsory and elective courses at HE business schools. Data collection was carried out using a questionnaire delivered to surveyed students electronically (via e-classroom). Research proves that blended learning, which involves different teaching strategies from traditional education, increases learning effectiveness and is a suitable course delivery for part-time students, especially due to the temporal and spatial adaptation of the learning process.
10	(Al-Karaki et al., 2021)	This paper studies the perceptions of educators at key higher education institutions in the UAE on the impact, effectiveness and challenges of online education systems used during the COVID-19 lockdown period. This paper successfully evaluates the reliability and construct validity of online educational performance from an educator's perspective including the transition to student-centered online learning in a relatively short time. The paper evaluates two major sudden changes in the UAE's higher

		education system, the first being the ability to undertake digital transformation and the second being the sudden transition to online learning processes. The paper concludes with many recommendations for the continued development of distance learning systems during and after COVID -19.
11	(Leung, 2010)	The study presented in the paper shows that e-learning is as effective as conventional learning modes for software engineering courses. The assessment scores of the cyber group and the conventional group were compared to determine the effectiveness of e-learning. The paper also highlights the benefits of e-learning, such as flexibility, accessibility, and convenience for learners, institutional cost savings, time savings, and ease in updating and revising courses.
12	(Mbuva, 2015)	This paper examines the effectiveness of online educational technology tools for teaching and learning, and the challenges that lie ahead. This study investigates the definition of online educational technology tools, the progress made using online educational technology tools, the advantages of using online educational technology tools, and the challenges of online educational technology tools. The research results show that online education has evolved over the years and schools are working hard to keep up with various Learning Management Systems (LMS).
13	(Bolliger & Wasilik, 2009)	This paper aims to identify and confirm factors influencing online faculty satisfaction at a small research university and to develop and validate an instrument that can be used to measure perceived faculty satisfaction in the context of online learning environments. This study found that three factors influence faculty satisfaction in online environments: student-related, instructor-related, and institution-related factors. Student factors were found to be the most important factors influencing online faculty satisfaction.
14	(Li & Pei, 2023)	This paper uses the Analytic Hierarchy Process (AHP) to analyze the key factors of the online learning community model. The AHP model and third order assessment matrix were formed to calculate the level of importance of each level to the previous level. The clustering algorithm method is superior to the random construction method in identifying groups of different learning styles. The final weights and hierarchical ranking results have been obtained, which can provide a useful reference for the sustainable development of online learning in higher education.
15	(Trakru & Kumar Jha, 2019)	This paper aims to study the effectiveness of e-Learning in higher education, specifically across gender, majors, and cities. The study collected data from 120 students, 60 from Delhi and 60 from Ahmadabad, with 30 students pursuing a master's degree in business administration and 30 pursuing a master's degree in computer applications in each city. This study uses various hypotheses to evaluate the effectiveness of e-Learning, including differences in gender, course, and city. The results showed significant differences in the effectiveness of e-Learning across genders and among students taking different courses in Ahmadabad. However, there is no significant difference in the effectiveness of e-Learning among MBA students across cities. The study found no significant differences in e-Learning effectiveness across gender or among female students across cities.
16	(Al-Jedaiah, 2020)	This paper investigates the influence of knowledge management (KM) on the effectiveness of e-learning (EL) in private universities in Jordan. The study found that private universities in Jordan do not have clear KM strategies and plans, which negatively impacts the effectiveness of EL in these universities. This paper suggests that private universities build their KM models and test them, and link their KM strategies and plans to EL goals. The paper concludes that recognizing the clear roots of EL and its close relationship with knowledge sharing and management will increase the value of EL among students and encourage them to concentrate on it as an alternative to traditional classroom knowledge transfer.
17	(Dumford & Miller, 2018)	The results showed that students who took more online courses were more likely to engage in quantitative reasoning but were less likely to engage in

		collaborative learning, student-faculty interactions, and discussions with diverse others. The proportion of online courses taken by first-year students has a positive impact on the amount of time spent engaged in quantitative reasoning activities. However, it had a statistically significant negative effect on three of the ten indicators of engagement, including collaborative learning, diverse discussions with others, and quality of interactions. This suggests that while there may appear to be some disadvantages to online learning in terms of first year student engagement, there are advantages as well.
18	(Coman et al., 2020)	This paper analyzes how Romanian universities managed to provide knowledge during the Coronavirus pandemic, when universities had to adapt educational processes for exclusively online teaching and learning. The research focused on students' perceptions of online learning, their capacity to assimilate information, and use of E-learning platforms. The research results reveal that higher education institutions in Romania are not ready for exclusively online learning. Technical issues are the most important, followed by teachers' lack of technical skills and their teaching styles not suited to the online environment. However, the last place is given by students due to lack of interaction with teachers or poor communication with them. Based on these findings, research implications for universities and researchers are discussed.
19	(Sridharan et al., 2010)	This study uses structural equation modeling (SEM) to identify critical dimensions in PTM models to increase the effectiveness of e-learning. The research results show that management, technology, resources, and metadata ontology dimensions influence the effectiveness of e-learning both directly and indirectly through increasing the effectiveness of learning resource management. However, the results do not support a positive influence of pedagogical strategies on e-learning effectiveness. The implications of this research show the importance of effective management of learning resources to increase the effectiveness of e-learning. Additionally, the study demonstrated acceptable discriminant validity between each pair of constructs, with all square roots of AVEs greater than the correlations between constructs.
20	(Satyawan et al., 2021)	The research results show that online learning using Undiksha E-Learning during the pandemic is quite effective. Specifically, 100% of study program lecturers use Undiksha E-Learning as a learning medium, and 88% of students have a very high understanding of learning material using this media. The research findings have implications for the sustainability of the use of Undiksha E-Learning as a learning platform for Undiksha lecturers and students.
21	(Amrizal, 2021)	This paper aims to analyze the effectiveness of online learning for Islamic-based universities in Medan City. The research uses descriptive research methods with a survey approach to prove that the implementation of online learning in Medan has been implemented optimally. The research results show that there has been a decline in the quality of work among lecturers and a decline in enthusiasm for learning among students. Apart from that, the high level of boredom among students is also caused by the lifeless lecture atmosphere. Finally, the most dominant thing is that this online learning method is considered burdensome and expensive by students and lecturers.
22	(Nguyen, 2015)	This paper examines the effectiveness of online learning compared to traditional face-to-face formats and the factors that influence the effectiveness of online courses. The study summarizes the findings and challenges of online learning into positive, negative, mixed, and zero findings. The main finding is that student learning outcomes are better for online learning than traditional formats, simple, but still significant. However, there were mixed results in some studies, where students in online or hybrid formats performed better, but in others, they performed worse, and for some, there was no significant difference between the two groups. Therefore, this paper suggests that researchers move beyond the "no significant difference" phenomenon and consider the next stage of online learning.

23	(Elcullada Encarnacion et al., 2021)	The results showed that teachers and students appeared to agree in their perceptions of E-Learning and gave higher ratings to E-Learning based on five effectiveness criteria. E-Learning is viewed by both teachers and students as an effective tool for improving the delivery of instruction and developing knowledge acquisition skills through learning transfer. The researchers emphasized that the provision of education can no longer be limited to one campus but can be extended across the country through distance learning and the integration of E-Learning solutions. It is strongly recommended that further studies be conducted to include other Higher Education Institutions in Oman to form a more concrete knowledge-based plan in creating E-Learning strategies.
24	(Sridharan et al., 2010)	This paper examines the effectiveness of e-learning in higher education from the learner's perspective. This study was conducted at an Australian university, and a survey was used to explore the relationship between important dimensions of e-learning and the learner-perceived impact of these dimensions on e-learning effectiveness. The critical dimensions examined are pedagogy, technology, and management of learning resources. The research results show that technology, learning resource management, metadata, and the effectiveness of learning resource management have a positive effect on the effectiveness of e-learning in higher education.
25	(Al-Rahmi et al., 2015)	This paper investigates the effectiveness of e-learning in Malaysian higher education, specifically at Universiti Teknologi Malaysia (UTM). This study found that several factors, including self-efficacy, interface, community, usability, student satisfaction, and intention to use e-learning, were positively correlated with e-learning effectiveness. The results show that e-learning can be an effective form of learning in higher education.

## CONCLUSION

Research that examines effectiveness in online learning still leaves open space for future researchers. This is because there are still differences in the research results. This difference in research results is normal because empirically the effectiveness of online learning can be influenced by many factors. In addition, different research locations can provide different research results. Although in general, it can be concluded that the effectiveness of online learning depends on several main factors, namely factors that come from humans such as the technical knowledge possessed by educators and technological factors such as the readiness of the software and hardware used. As a suggestion, the author advises future researchers to conduct studies using more articles as references and focusing on journals published in Scopus. Apart from that, the author also suggests using a systematic literature review method such as a Systematic Literature Review.

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