

## **Systematic Literature Review: Utilization of e-Learning in Indonesian Higher Education**

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Received: 2025-February-18

Rev. Req: 2025-March-11

Accepted: 2025-April-24

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**ABSTRACT:** *This research is an empirical study of literature reviews published in journals from 2015-2022 to identify the methods, challenges, and benefits of e-Learning in Indonesian higher education. The results show that the use of e-Learning in Indonesian higher education has provided relevant benefits with the current technological advancements. Some benefits of e-Learning are: providing flexibility in the learning process, giving students the freedom to access learning materials, providing financial savings, providing access speed that is tailored to students' learning speed, applying current technology in the learning process, using current learning platforms, and reaching a wider area with e-Learning speed. However, the use of e-Learning is not without challenges, such as: limited internet network and electricity flow, lack of users (lecturers and students) in using current technology, not considering the differences in the abilities of each student, limitations in communication facilities for clarifying lesson material, limited material that can use e-Learning, and not all students are capable of using computers well.*

**Keywords:** *Learning Method, e-Learning, Higher Education.*

### **I. INTRODUCTION**

Along with the rapid development of technology, there is a growing need within society to create concepts that make it easier for them to carry out various activities (Utami, P. S., & Fadhli, M., 2020; Fadhli, M., et al., 2021; Zh et al., 2025). This is especially evident in the field of education, where technology-based learning and teaching mechanisms have become commonplace. Furthermore, its usage has accelerated due to the COVID-19 pandemic (Syarifuddin, S., et al., 2021; Zh et al., 2022). The COVID-19 outbreak, a global pandemic, has impacted all aspects of life, including the education sector (Fadhli, M., et al., 2021). On the other hand, the government, through the Ministry of Education and Culture, issued Circular Letter No. 3 of 2020 regarding the Prevention of COVID-19 in Educational Units as a precautionary measure against the spread of the coronavirus in schools and universities. The COVID-19 pandemic has changed human life, particularly in education, and to ensure that the educational process continues, the government

adopted new policies to adapt to the conditions that make face-to-face interactions impossible (Fadhli, M., et al., 2022). Education, by its very nature, plays a crucial role in advancing the educational system in Indonesia (Estiningsih, D., et al., 2022; Ashari, R., et al., 2017). Therefore, the government implemented an online learning system as an innovative breakthrough for Indonesia's educational system by combining offline and online learning methods, which can also be applied in normal conditions in the future (Ikhwan, A., & Qomariyah, S. N., 2022).

Teaching and learning scenarios need to be carefully prepared within a curriculum that is designed to be internet-based (Islahulben, I., & Widayati, C. C., 2021). Implementing online learning is not just about providing instructional material on a website but also about engaging students actively in their learning process. However, since the implementation of online learning is still relatively new, it presents various challenges for both students and educators (Utami, P. S., & Wulansari, B. Y., 2021). For instance, in remote areas where internet access is limited, as well as for lower-income communities who may lack necessary devices like smartphones and face high internet data costs. Additionally, the quality of teachers as educators and facilitators is often seen as lacking in terms of understanding how to effectively use information technology in the application of online learning processes (Yuliani, E. A., et al., 2022).

Based on the facts presented above, online learning using e-Learning is considered an appropriate solution during the pandemic due to its flexibility and minimal data requirements, making it more accessible. The e-Learning model is a viable solution for the learning process in pandemic situations, such as the one we are currently facing, by utilizing the internet as a medium for learning (Gumilar, R., & Hermawan, Y., 2021). e-Learning in higher education can be seen as an innovative approach to distribute well-designed content, learner-centered learning references, interactive learning, and facilitating a learning environment for individuals anytime and anywhere through the use of digital technology. The trend of developing e-Learning as an alternative method of learning in various universities has increased along with the improvement of internet infrastructure that supports e-Learning implementation (Pardede, T., 2011).

The use of e-Learning places students as the central focus in the learning process. They are required to have self-directed learning skills and not overly depend on teachers or lecturers. According to Gumilar, R., & Hermawan, Y. (2021), self-directed learning is defined as a learning process that occurs within an individual, where the person is expected to be active independently in striving to achieve learning goals without relying on others, including teachers. One of the benefits of e-Learning is that it fosters the development of self-directed learning and encourages students to actively participate in the learning process (Ikhwan, A., Anwar, S., & Mahmudah, N., 2021). For lecturers and educators, e-Learning makes it easier to assess and evaluate students' learning progress more efficiently and transforms conventional teaching styles, which can enhance professional work standards (Hidayat, M. C., & Syam, A. R., 2020; Koriati, E. D., et al., 2021). By using e-Learning as a teaching medium, it introduces innovation where students not only listen to the material presented by the teacher but also can see, hear, and engage in activities related to the material being taught using technology (Haryadi, R., & Al Kansaa, H. N., 2021).

Other technology-based tools that are expected to be used in efforts to develop a more productive learning environment include videos, multimedia/hypermedia, email, and the internet, in addition to software such as Computer-Assisted Instruction/Intelligent Computer-Assisted Instruction (CAI/ICAI) (Kusmana, A., 2011). The implementation of these activities takes into account the effectiveness and achievement of the planned learning quality. e-Learning is said to offer flexible learning time because it can be conducted anywhere and anytime, meaning it can be utilized over the long term (Cahyono, H., et al., 2022). In the implementation of e-Learning, there are several components that need to be addressed, namely: (a) content relevant to the learning objectives; (b) using teaching methods such as examples and practice to support successful teaching and learning; (c) employing media elements like text and images to distribute content and learning methods; (d) learning can be conducted either directly with an instructor (synchronous) or individually (asynchronous); and (e) fostering new insights and techniques that are aligned with the learning objectives (Maudiarti, S., 2018).

This study aims to analyze the learning process through the implementation of e-Learning in higher education institutions in Indonesia. The application of e-Learning in the education sector is expected to provide significant benefits, such as increased interaction between students and lecturers as well as among peers, and an unlimited range of learning resources to support the learning process. If e-Learning is developed with the correct guidelines for higher education, it will be effective. For example, it can improve the quality of graduates, foster the creation of learning communities with extensive interactions that are not limited by location, and enhance the quality of lecturers by providing access to a broader range of information and teaching materials.

## **II. METHOD**

This study uses a systematic literature review method aimed at addressing the research problem through several stages, including reviewing literature, formulating the problem, collecting data, analyzing and interpreting relevant data, and organizing and presenting the results. Furthermore, the goal of data collection is to identify empirical studies from the literature review published in journals from 2015 to 2022 to examine the methods, challenges, and benefits of e-Learning in Indonesian higher education institutions. The keywords used are “e-Learning,” “online learning,” “distance learning,” “model,” “method,” “learning media,” “utilization of e-Learning,” and “e-Learning in Indonesian higher education.” The databases or datasets used in this literature research include Google Scholar, VOSViewer, and Harzing’s Publish or Perish.

### III. RESULT

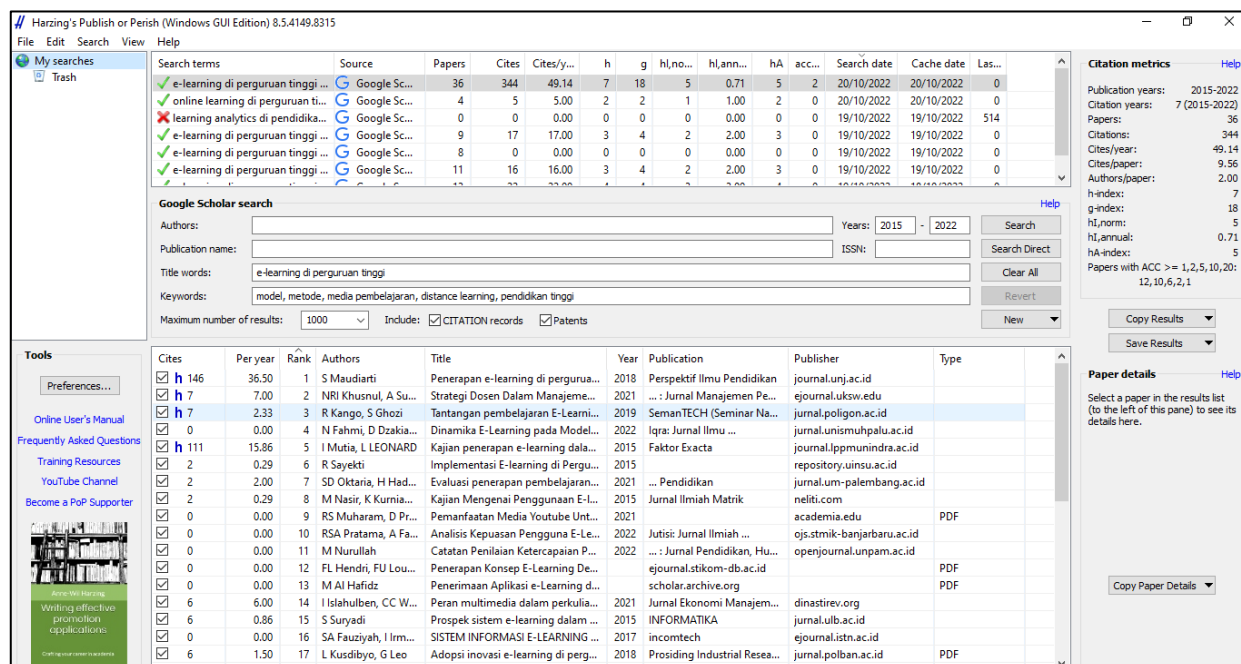


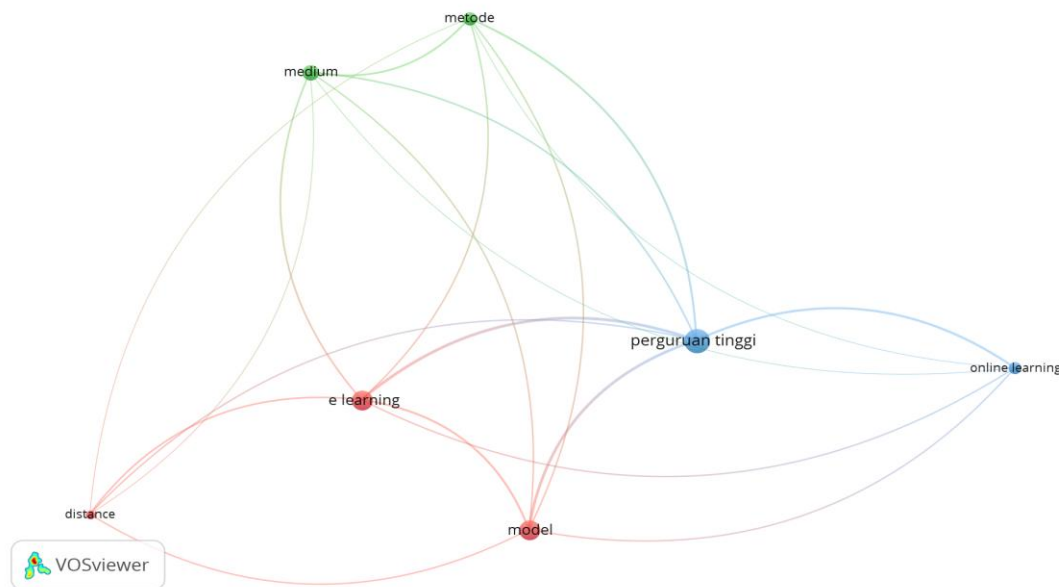
Figure 1. Search Method Using Harzing's Publish or Perish

Based on the search results from the Harzing's Publish or Perish database using Google Scholar as the search platform by entering the title "e-Learning in Higher Education" with the keywords "model," "method," "learning media," "distance learning," and "higher education," a total of 36 papers with 344 citations were found, published online from 2015 to 2022.

Table 1. Documents Retrieved from Harzing's Publish or Perish Search

Author	Citation	Year
I. Mutia, L. Leonard	111	2015
V. Sahfitri, M. Ulfa	14	2015
I. Zufria	9	2016
S. Maudiarti	146	2018
R. Kango, S. Ghazi	7	2019
F. Arianto, L.H. Susarno, U. Dewi, A.F. Safitri	11	2020
N.R.I. Khusnul, A. Suharyadi	7	2021

Based on the search results from the Harzing's Publish or Perish database, the documents were then exported in RIS/RefManager format, imported, and analyzed using VOSViewer. Based on this process, the following results were obtained:



Gambar 2. Tampilan Network Visualization pemanfaatan *e-Learning* di perguruan tinggi

The results of the network visualization of the co-word map on the utilization of e-Learning in higher education are divided into three clusters, as shown in Figure 2:

- Cluster 1: Represented in red, consisting of three topics: e-Learning, distance, and model.
- Cluster 2: Represented in green, consisting of two topics: medium and method.
- Cluster 3: Represented in blue, consisting of two topics: higher education and online learning.

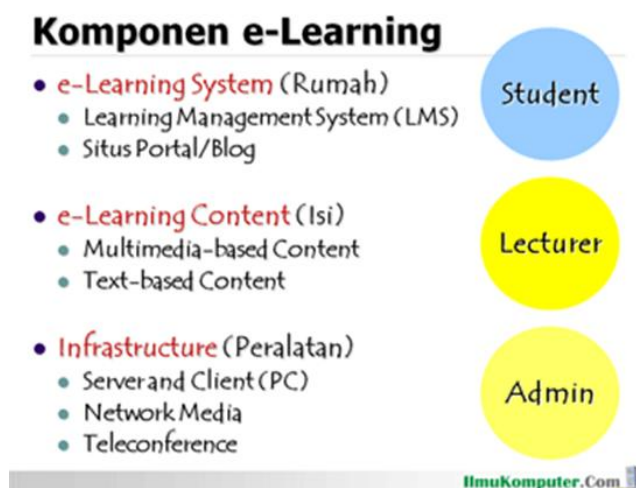
#### IV. DISCUSSION

The term e-Learning carries a very broad meaning, leading many education experts to define e-Learning from various perspectives. According to Koran, J. K. C. (2001), e-Learning is a learning effort that uses electronic networks (LAN, WAN, or the Internet) for the delivery of content, interaction, or facilitation. In the Wikipedia Encyclopedia, it is explained that e-Learning is a form of learning that utilizes electronic technology as a means of presenting and distributing information. From these definitions, it can be interpreted that e-Learning is a learning model that uses technology and the Internet as a medium for delivering information. The e-Learning method can be applied in the teaching and learning process over a distance without limitations of time and place.

The term e-Learning has two types: synchronous training and asynchronous training. Synchronous refers to learning that takes place in the same "classroom" at the same time, although the locations may be different. This means that during the learning process, instructors and students interact in real-time by accessing the internet simultaneously. Synchronous training is depicted as

a real classroom environment, but conducted virtually, where instructors and students are connected through an internet network. On the other hand, asynchronous refers to learning that takes place in the same "classroom" but at different times and locations. This means that students can engage with the learning materials at different times from when the instructor delivers the content. Students can access the materials anytime and anywhere within the designated schedule. According to Wahono, R. S. (2008), e-Learning media consist of three key components, namely:

a. e-Learning Infrastructure.



Gambar 3. Komponen *e-Learning*

e-Learning infrastructure may include Personal Computers (PC), computer networks, the internet, and multimedia equipment. It also includes teleconference and video conference tools, especially if synchronous learning services are provided through teleconferencing or videoconferencing.

b. e-Learning Systems and Applications

The implementation of e-Learning requires a software system commonly referred to as a Learning Management System (LMS). This system functions to manage the administration of learning activities within the e-Learning model, such as classroom management, content creation, discussion forums, assessment systems, online examinations, and all features related to the teaching and learning process. Many LMS platforms are open source, such as Moodle and Odoo, making them easily and affordably accessible for development in schools and universities in Indonesia.

c. e-Learning Content

Content and teaching materials within an e-Learning system (Learning Management System) can take various forms. This content may include Multimedia-Based Content (interactive multimedia content), Text-Based Content (text content, such as in traditional textbooks), or a combination of both. These materials are typically stored in the Learning Management System (LMS) so that students can access them anytime and anywhere. This is an important step in preparing for the development of e-Learning from the content perspective. The users of e-

Learning can be considered to follow a similar structure to conventional teaching and learning processes, where there is a teacher who delivers the lessons, students who receive the teaching materials, and administrators who manage the administrative aspects and the learning process.

The utilization of e-Learning can bring significant changes to education through various learning development strategies, aiming to improve learning outcomes to the fullest when e-Learning is properly utilized. Some of the benefits of e-Learning include:

- a. Provides flexibility in the learning process, allowing students to choose the time and place to access lessons.
- b. Offers freedom for students to access learning materials they wish to study first, decide when to complete them, and review the content repeatedly until they feel confident in their understanding.
- c. Engages students actively throughout the learning process.
- d. Provides financial savings, such as transportation costs to the learning location, accommodation expenses during study periods, costs for providing physical learning facilities, and more.
- e. Offers access speed that can be adjusted to the student's learning pace.
- f. Enhances the effectiveness of the learning process by incorporating current technology.
- g. Utilizes modern learning platforms like TalentLMS, Odoo, Edmodo, Quizizz, and others.
- h. Expands access to a broader area, with e-Learning being available at any time or on-demand.

The implementation of e-Learning in the learning process also presents unique challenges for higher education institutions. The full implementation of e-Learning has not yet reached its optimal level. The challenges of e-Learning in higher education, when viewed from the perspective of educational technology, include mobile learning, cloud computing, collaborative learning, mentoring, hybrid learning, and student-centered learning. Therefore, alternative approaches are needed to address these challenges in order to ensure that e-Learning has a positive impact on the learning process.

- a. *Mobile Learning.* Considering the benefits of e-Learning, which provides flexibility in terms of time and location for higher education institutions, e-Learning faces challenges in terms of network infrastructure in areas with limited access to the internet and electricity. This becomes a weakness in the transformation of learning based on e-Learning. Moreover, the testing and assessment systems in e-Learning, which are often monitored by proxies, make it difficult to regulate activities such as monitoring cheating that may occur during tests or assessments based on e-Learning.
- b. *Cloud Computing.* Accessing e-Learning through websites often presents issues for users. The lack of skills among users in utilizing technology, computers, and the internet necessary for the e-Learning process becomes a challenge for higher education institutions, as it makes users hesitant to apply e-Learning (Putra, C. A., 2017). The use of multiple websites to access dense e-Learning information leads to high traffic on hosting servers, causing a heavy load on the server as well as unexpected costs. To address this, it is important for higher education



institutions to focus on accommodating innovative design trends in the use of social networks within e-Learning. With the support of user-friendly interface designs and the completeness of e-Learning features, this can provide comfort and support the success of the learning process.

- c. *Collaboration Learning*. The success of e-Learning-based education depends on the educator's capabilities and the learners' motivation (Putra, 2017). A challenge for higher education institutions is considering the differences between individuals. Often, some learners who have not understood the material choose to focus on the material they haven't understood, while other learners who already comprehend the material review the entire content. Additionally, if users improperly copy and paste information, it can lead to plagiarism, which is the act of copying someone else's work and violating copyright laws.
- d. *Mentoring*. The ease of accessing information in e-Learning can enhance knowledge acquisition in higher education. However, e-Learning methods are less effective compared to face-to-face learning methods. Another challenge in mentoring is that learning can be hindered if there are limitations in communication facilities for clarifying material and explaining information with the instructor (Rusman, K., 2013). A possible solution could be the use of video conferencing.
- e. *Hybrid Learning*. The use of the e-Learning teaching method is not universally effective for all fields of study in their teaching and learning processes. This is because not all learning materials can be stored in the cloud. Therefore, multimedia learning services and time management are required for a hybrid learning model that combines face to face and online learning.
- f. *Student Centered Learning*. The final challenge for higher education institutions is the individual students' ability to use computer technology and the internet. Not all students are capable of using computers. Therefore, a solution that can be implemented is providing learning guides to help students find relevant information on websites.

## V. CONCLUSION

The emergence of e-Learning has had a significant impact, particularly on the education sector. Access to information has drastically increased with the use of e-Learning in higher education. The e-Learning teaching method is an alternative approach to implementing online learning in Indonesian universities by utilizing technology. The successful implementation of e-Learning in Indonesian higher education includes providing flexibility in the learning process, allowing students the freedom to access learning materials, offering financial savings, providing access speed tailored to students' learning pace, enhancing the effectiveness of the learning process by applying current technology, using modern learning platforms, and reaching a wider area with the speed of e-Learning. However, the utilization of e-Learning is not without challenges, such as limited internet networks and electricity access, insufficient skills among users (faculty and students) in using current technology, failure to consider the varying abilities of each student, limited communication facilities for material clarification, limited content suitable for e-Learning, and not all students are proficient in using computers.



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