



**Information and Communication Technology in Online
Learning Process**

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Abstract:

This study aims to analyze Information and Communication Technology (ICT) in the online learning process. The method used to meet the needs of analysis was the descriptive method with a qualitative approach. This study indicates the use of information and communication technology has an important role in the implementation of online learning. This learning process can run well with the existence of information and communication technology that has developed quite rapidly, coupled with applications that support the implementation of online learning, such as Zoom meetings that provide easy access and have many advantages and other information media. This paper aims to improve the quality of learning, expand access to learning, visualize abstract ideas, present learning material to be more attractive, and make it easier for us to find information; with this, students can learn easily and be done anytime and anywhere. This paper concludes that if information and communication technology (ICT) is well designed and developed and utilized according to the objectives and characteristics of an institution, the use of information and communication technology in learning will improve the quality of learning, both the process and the results.

Keywords: *Information Technology, online learning, ICT*

INTRODUCTION

Information and Communication Technology (ICT) development in the last few decades has developed rapidly along the lines of telecommunication technology. Various supporting technologies and applications have been developed to facilitate and support human and organizational life activities, including learning and teaching activities in education. Tchamyou, et al. (2019). Information and Communication Technology (ICT) Currently encouraging renewal efforts in using technology results in the teaching and learning process. Teachers need to improve their skills in creating learning media so the learning objectives can be achieved. Tondeur, et al. (2018). Learning is central to the education process. Quality of Education describes the quality of learning. Information and Communication Technology (ICT) offers various possibilities to improve the quality of learning. ICT can be used for enhancing and developing teaching professional abilities, as a learning resource in learning, as a learning interaction aid, and as a learning platform. Kiraly, et al., (2020). ICT is an electronic tool to capture, storing, and process communicating information. ICT usage in learning and teaching classrooms is essential because it provides opportunities for students and teachers to store, operate, retrieve, and manipulate information, encourages active and independent learning, as well self-responsibility for learning. For example, it motivates the students and teachers as well as establishing distance learning. Outside school hours can be used for designing materials, preparing lessons learning, as well as planning such as delivering course content and facilitating the sharing of advice, resources, and expertise. Aslam, et al. (2020).

Learning through online discussion is an important instructional strategy. Online discussion has many advantages - such as promoting students' critical thinking and knowledge construction and enhancing student relations. However, participants often do not appreciate online discussion as an effective means of knowledge construction. Therefore, online discussions need facilitation to be more effective. Malecela (2017). The positive impact obtained from the online learning process was to create a learning community. The learning process can take place with friends in the community, time and cost efficiency in learning that can be done anywhere and anytime. Students do not need to spend hours learning in class, and learning materials are accessed with technological sophistication. Learning materials can be downloaded and can be studied at any time without time constraints. Zhou, et al. (2020). Students felt more comfortable putting forward ideas and questions in online learning. Taking lessons from home makes them less likely to feel the peers' psychological pressure that they usually experience when taking face-to-face learning. The absence of the lecturer in person or physically also causes students to feel comfortable expressing ideas. The absence of physical barriers and space and time limitations causes students to be more comfortable communicating. Almaiah, et al. (2020). The influence of information support systems on the use of ICT by distance students. At a broad management level, this study requires an effective policy to balance investment in distance education programs and provide the resources needed to implement the effective use, integration, and diffusion of ICT in distance learning rather than paying for eye services. The impact was found to be relevant in administrative roles supporting access to distance learners. ICT provides specific solutions to administrative system problems, decision-making in the implementation of distance learning as a guarantee of effective administrative practice, and administrators and students' competence. Zhang, et al. (2021).

This study focuses on the use of ICT in the online learning process using descriptive methods with a qualitative approach to provide an overview of how ICT developments, advantages and disadvantages in the use of ICT, and supporting applications that make learning online can achieve goals well and maximally for teachers and students.

RESEARCH METHOD

The research method used a descriptive method with a qualitative approach. Namely, explaining in detail how ICT (information and communication technology) in the online learning process with supporting applications can provide an overview of the benefits, weaknesses, and advantages of using ICT for learning so that the objectives of learning can be achieved.

RESEARCH RESULTS AND DISCUSSION

- *Utilization of ICT (information and communication technology)*

Application of e-learning as an integral part of the entire learning process and method Higher education, especially in Indonesia, has increased rapidly in the last decade. It is supported by the development of technology and the community's skills to utilize technology. Rahayu (2020). Moreover, amid a pandemic that is currently hitting all countries globally, the concept of online learning by utilizing ICT (information and communication technology) (Figure 1). Different in each institution. Several schools, including international standard pilot schools (RSBI), have equipped themselves with ICT facilities to support the teaching and learning process. Application of e-learning as an integral part of the entire learning process and method Higher education, especially in Indonesia, has increased rapidly in the last decade. It is supported by the development of technology and the community's skills to utilize technology. Rahayu (2020). Moreover, amid a pandemic that is currently hitting all countries globally, the concept of online learning by utilizing ICT (information and communication technology) (Figure 1). Different in each institution. Several schools, including international standard schools, have equipped themselves with ICT facilities to support the teaching and learning process. It has become a necessity.



Figure 1. Learning Methods with Online Applications

Utilization coverage differs between universities. The presence and advancement of ICT in the current era of global communication have provided wider opportunities and interactions between lecturers/teachers/experts and learning resources that can occur anytime and anywhere without being limited by space and time. In addition, with the help of ICT, the process of delivering and presenting learning materials and ideas can be more interesting and fun. On the other hand, the presence of ICT as new technology presents a challenge for lecturers and teachers to master it to choose and utilize ICT effectively and efficiently in the teaching and learning process they manage. Online is one of the methods applied because it makes it easy for teachers and students in a flexible learning process that can be used anywhere and anytime. Fauzi, et al. (2020). Various kinds of ICT media that can be used are Smartphones, Laptops, and Computers. Information and communication technology (ICT) has been developed with various applications that support online learning, for example, Google Meet and Zoom (Figure 2).

- *ICT Tools / Devices Used for Online Learning*

ICT includes all technologies that can store, process, and display and convey information in the communication process. Which includes this technology is?

1. Educator technology, both supporting software and hardware. It includes data/information storage media (hard disks, CDs, memory, DVDs, flash disks, memory cards), processors, input devices (mouse and keyboard), recording devices (DVD and CD Writer), cameras, scanners, and output devices (printers, monitors, speakers, LCD projectors).

2. Multimedia technology, such as video and sound players as well as video and digital cameras.
3. Telecommunication technology, telephone, cellular telephone, facsimile.
4. Network technology, hardware (LAN, Internet, Wi-Fi), and supporting software (network applications).

In general, the term ICT refers more to technology. It is not surprising because, at this time, apart from functioning as a data processing tool, it can also function for communication via the network (Internet) and multimedia tools. The world has made various education efforts to improve the quality of education, especially the quality of learning with ICT. The use of ICT in an integrated manner in learning combines various ICT skills and functions in the learning and teaching activity. ICT usage as a learning medium can be in the form of PowerPoint slide files, images, animation, video, audio, CAI programs (computer-aided instruction), simulation programs, and others. (Fuazi, et al. 2020; Rahiem, 2020).

In online learning practices, the use of communication and information technology (ICT) cannot run alone but requires a tool (software/application) to be able to connect teachers and students at the same time, and in this research, researchers chose Zoom Meeting as supporting applications for learning online.

- *Zoom Application to Support Online Learning*

In current online learning, the use of ICT (information and communication technology) tools is very much needed as a means of learning, but not only a tool that is needed, to maximize this online learning, Teachers and Students need a system to help effectiveness. Learning from a distance is to use the Zoom Meeting Application (Figure 2).



Figure 2. Online Learning Support Application, Zoom

Video conference zoom meetings have been widely used during the beginning of the pandemic to date to carry out online learning activities because this application is considered effective in overcoming distance and time. (Rahiem, 2020; Lowenthal, et al. 2020). Learning with zoom meetings can optimize creativity in learning. Learning through video conferencing and being able to optimize the direct interaction between students, child learning companions, and educators can also display learning material that all participants can see. Participants not only hear explanations but can also examine the material provided. Mulyana, et al. (2021). (Figure 3).

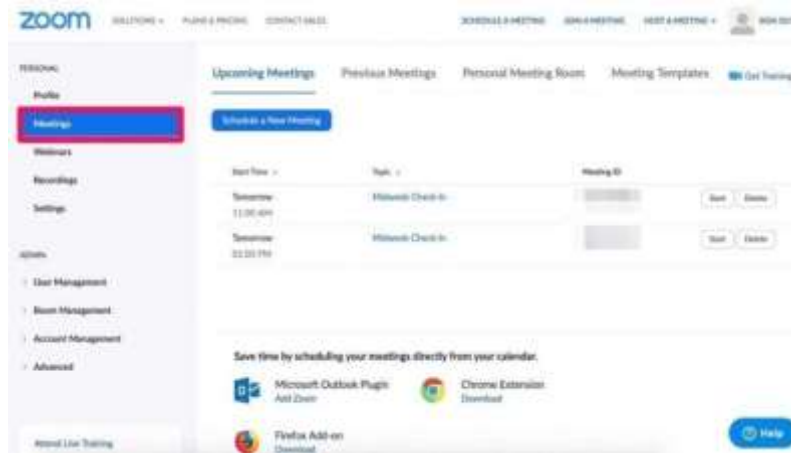


Figure 3. Zoom Feature

All groups widely use the Zoom Meeting Video Conference application because of the ease of the system is operating and several features that are not only used for learning (figure 3) but can make Webinars (online seminars), Recording (recording lessons/seminars) for sharing on social media pages to make it easier for students to repeat lessons. Meeting (Meeting), this feature is widely used to do online learning or for online meetings. de oliveira dias, et al. (2020).

Zoom is a renewable technology pioneered by the United States Communications Technology Company. Zoom itself is a type of application or website technology designed as a convenience for discussions or online learning. Zoom is one application that is widely used because it has several advantages for learning online, that is:

A. Large Space Capacity

Zoom provides solutions to userspace problems. The access to space capacity provided by this technology is quite large. Zoom provides 1,000 access for members in 1 discussion forum and 10,000 members in one live broadcast forum. It is quite easy for users, especially educators and students, to do online learning (Figure 4).



Figure 4. Large Space Using Zoom
Source: ayobogor.com

B. High Access Quality

High-quality access means that Zoom has a support system for clear and high-quality sound and images. For use in a discussion forum, live broadcast, and online learning (Figure 5).



Figure 5. High Access Quality
Available on a wide variety of devices

It is the reason Zoom is one of the supporting applications for ICT in online learning that, in addition to easy access, the Zoom Meeting application can be run on various devices, including Android phones, iPhones, computers, or even laptops (Figure 6).



Figure 6. All ICT Devices support for Zoom application

C. Supports Presentations

For teachers or students who want to explain or understand the material more deeply, we can present material files to other participants in the Zoom Meeting application. Both participants and presenters can scribble on the presentation to make it easier to deepen the material (Figure 7).

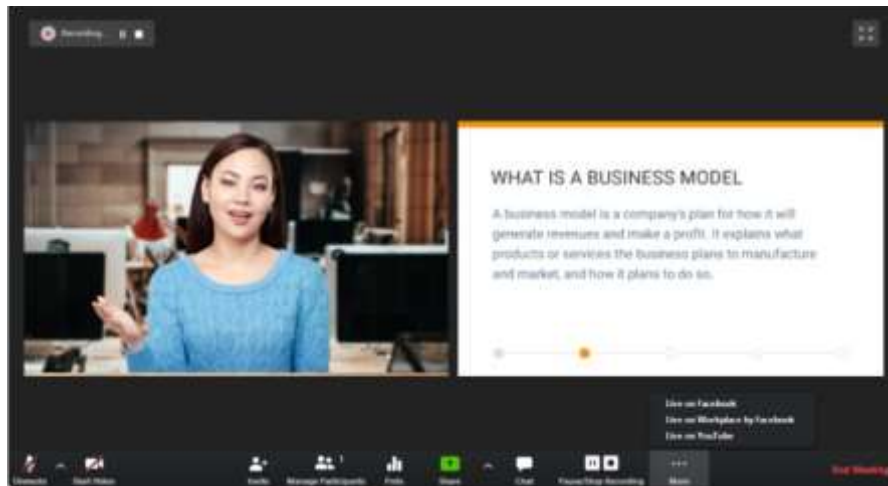


Figure 7. Zoom Supports Presentations

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CONCLUSION

With the development of ICT (information and communication technology) and supporting learning applications such as Zoom, Teachers and Students can freely learn wherever and whenever because all equipment can be used in the current era. Besides, the Zoom system supports the use of ICT tools and the advantages that make students and teachers start to follow and follow the times by taking advantage of technological advances, first during the current pandemic.

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