

# TECHNOLOGY BASED LEARNING MODEL DURING THE COVID-19 PANDEMIC

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## Abstract

The Covid-19 pandemic has not been completely handled in almost every country in the world up until the end of 2020, its impact was felt by Indonesia. The major changes that continue to occur in all aspects of human life are also targeting the education system. Changes in the education system in Indonesia have a very significant effect on learning and students, where students experience difficulties in following the learning process, especially students at the elementary level. It can be ascertained that the cause is due to the fact that learning is usually carried out conventionally, dominance is still centralized on the educators, and the models used do not vary much. Within a short time period and without preparation, learning must be adapted to the needs, situations and conditions, so that learning can still be carried out. Distance learning process (Pembelajaran Jarak Jauh) using online modes is expected to bridge the relationship and communication between educators and students so that the learning process does not experience obstacles. To make Distance Education implemented optimally, Distance Education cannot be separated from the utilization of Information Technology. This article aims to examine further how the implementation of Distance Education relies on technology, as well as the use of appropriate learning models for students during the Covid-19 pandemic, using descriptive-analytical literature methods. The results and conclusions in this paper indicate that technology-based learning has an important role in the implementation of learning, especially during the Covid-19 pandemic. The management and implementation of technology-based learning is very dependent on Information Technology, facilitating educators so that the continuity of interaction between educators and students does not face any problems. It is hoped that the competence of educators in managing Distance Education using online modes is expected to be continually developed by utilizing various learning models, so that the learning process can be optimized. Although in its implementation there are still several obstacles related to academic culture, including values, attitudes, knowledge, skills, and readiness of technology-related facilities and infrastructure, education management by utilizing various learning models and supporting technology can be one of the solutions in facing challenges of Distance Education during the current Covid-19 pandemic.

**Keywords:** Technology; Learning; Learning Model; The Covid-19 Pandemic.

## INTRODUCTION

Currently, almost all countries around the world are being hit by the Covid-19 outbreak. Covid-19 is a virus that spreads very quickly and is a deadly virus, for this reason countries around the world are busy in setting various policies as an effort to break the chain of corona virus transmission, one of the countries is Indonesia. Indonesia establishes a Large-Scale Social Restriction (PSBB) policy which is enforced in

each region. This policy led to major changes, such as the economy, health and education sectors. (Khamim Zarkasih Putro et al., 2020)

It is nearly one year after the covid-19 pandemic outbreak has happened, the government through related institutions is still trying to find the right treatment so that it can minimize the effects that may arise later. The Indonesian people who were initially shocked, confused, did not fully understand what was happening, over time with

various efforts were made to adapt to new life patterns, as a tangible form of responding to the various changes that have occurred. One of the biggest impacts that is felt to be very heavy is the adjustment of the education system in Indonesia, which was forced to quickly establish a policy on learning patterns in the situation and conditions of the Covid-19 pandemic since mid-March 2020.

One of the biggest impacts that felt to be very tough was the adjustment of the education system in Indonesia, which was forced to quickly establish a policy on learning patterns in the situation and conditions of the Covid-19 pandemic since mid-March 2020. Accustomed to conventional learning and teaching patterns, being teacher-centered, not fully using active learning models, and still relying on media and simple tools, of course it is not easy to immediately move and rely entirely on the use of technology-based media and tools in managing the learning process.

The Covid-19 world pandemic which attacks all aspects of human life, forces the government to immediately take various countermeasures in order to minimize the impact felt by the Indonesian people, reduce the rate of transmission of Covid-19, and reduce the number of Covid-19 sufferers. The efforts referred to include the creation of national, provincial and regional government policies that target the education aspect, where education policy makers are mandated to temporarily replace conventional face-to-face learning patterns to distance learning with online modes, which are carried out face-to-face virtually, not only at the school level but also up to the university level by utilizing the internet network.

Responding to the policy changes in the education system in Indonesia, the implementation of conventional learning has changed to online distance learning (Pembelajaran Jarak Jauh), which provides challenges for education subjects, such as educators, students, institutions, and the wider community such as parents. In its implementation, educators must find ways how to continue to be able to convey learning material that can be accepted easily by students. Likewise, students are required to be able to adjust to situations and conditions like this, one of which is mental readiness. (Abdul Latip, 2020) Educators as the forefront of education,

must quickly search and find the right learning model to deliver the learning material so that it can be easily accepted by students and as for students, their capability is required to immediately adjust to these changes.

The implementation of distance learning (Pembelajaran Jarak Jauh) with online mode is certainly not an easy thing for those who have never used it at all, because it requires various technology-based skills, meaning that the implementation of online learning is very dependent on the role of technology. Even though the dependence on technology is no longer in doubt, because technology can simplify all needs; including in the teaching and learning process, not all parties are familiar with using it, including educators who are still technologically illiterate. Whereas the role of digital technology in educational institutions is very much needed as a supporting facility in learning; either for accessing information on learning sources or supporting learning activities relating to assignments and evaluation.

The use of technology in the learning process both in formal and non-formal education in the future is quite significant, especially after the outbreak of the Covid-19 pandemic, which enforces every school to conduct virtual/online distance learning. As with the efficiency of the Ministry of Education and Culture so that the implementation of learning does not experience shock and vacuum for too long by preparing an online learning media portal called Rumah Belajar, with the link address <https://belajar.kemdikbud.go.id/> Dashboard/. Other parties that also perform online learning which can facilitate educators and students such as Ruang Guru that accessible by students via <https://ruangguru.com/>. It can provide public resources and communication networks (forums) for school administrators, educators, and students. Along with the rapid development of technology, there are many platforms that can help implement online learning such as e-learning, Google Classroom, Edmodo, Moodle, Rumah Belajar, and even platforms in the form of video conferencing, such as Google Meet, Zoom, and Visco Webex.

There are two competencies of educators that must be continuously improved; pedagogical competence and professional competence. The two types of competencies become standardized abilities which are an absolute requirement for

an educator to be appropriate of the teaching profession and to get a certificate as an educator. Thus, an educator (teacher) needs to have special abilities, abilities no one other than an educator has. "A teacher is person changed with the responsibility of helping others to learn and to behave in new different ways"(Cooper, 1990). Teachers are professional jobs that require special abilities as a result of the education process carried out by the Teacher Education Institution.

Based on the various changes that have occurred and the demands of their application in the learning process, educators are expected to be able to adjust the learning that they manage by using learning models. The learning model can be said to be an educator's effort in designing and enriching learning activities; starting from planning that adapts to various needs, both from the abilities and characteristics of students, the environment, and supporting facilities, so the learning can be carried out properly and achieve the expected results.

As according to (Reigeluth, Charles, 1983), the strategy of organizing learning content is called a structural strategy, which refers to a way to make sequences and synthesize related facts, concepts, procedures, and principles. Sequencing refers to creating a presentation of the contents of the study field, and synthesizing refers to an attempt to show the student the relationship between facts, concepts, procedures, or principles contained in a field of study.

The strategy of organizing learning content is an effort regarding learning delivery strategies that emphasize the media used, the learning activities carried out by students, and the use of teaching and learning structures. (Gagne & Briggs, 1979) states this strategy as the delivery system, which is defined as "the total of all components necessary to make an instructional system operate as intended". Basically, the delivery strategy includes the physical environment, teachers, learning materials, and activities related to learning.

## METHODS

This study uses a descriptive-analytical literature method. According to (Sugiono: 2009; 29) descriptive-analytical is a method that

describes or represent an object under study through data or samples that have been collected as is without analyzing and making general conclusions. Meanwhile, according to (Bungin & Burhan, 2008) "the literature method is one of the data collection methods used in social research methodologies to trace event record data". The literature used in this study comes from articles, books and online journals related to the title of the study. The steps taken in this literature review include defining the scope of the topic to be reviewed, identifying relevant sources, reviewing literature, writing literature and applying literature to the study to be carried out. (Titik Rahayu, Safrimen Safril, Ismail Suardi Wekke, 2019)

## DISCUSSION

Globalization develops as a process that accompanies the growth of developed countries, marked by the expansion of various fields, not only technology but science, politics, culture, military and economics. The dominance of the important sectors of life which has continued to progress more rapidly since more than a decade ago has made developing countries very dependent on global policies. Indonesia as one of the developing countries is not immune from the swift effects of globalization and it cannot be denied that the impact it causes is both positive and negative. These impacts influence the education in Indonesia, where education as the most fundamental structure to equip the next generation of the nation also experiences a paradigm shift. Education is a conscious and planned effort to create an atmosphere of learning and the learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation and state. (UU No. 20 tahun 2003 pasal 1:1).

Education in the era of globalization is a challenge in itself, because it carries a competitive advantage that relies on quality human resources (HR). Educational institutions are required to be able to facilitate the entire education process in order to produce graduates who are globally competitive, that being said the national education has been integrated with world education. How can education practitioners respond to this, considering that

Indonesia is still adhesively attached with eastern culture and customs, will these values just disappear along with globalization and technological advances? The education today is required to develop a learning approach in accordance with the dynamics of our country's education, which is rooted in the 1945 Constitution and Law No. 20 of 2003 which is rooted in religious values, Indonesian national culture and responsive to the demands of the times and in accordance with the development of science and technology. (Muhammad, M., & Nurdyansyah, 2015)

Education has always been in the spotlight, not only from policy holders but also from users (students). At present and in the future education will be a challenge that will continue to change according to the standards of Science and Technology Development. (Moch. Bahak Udin By Arifin, Pandi Rais, 2018). As Nurdyansyah also emphasized that : “Educational process is the process of developing student’s potential until they become the heirs and the developer of nation’s culture”. Therefore, Duschl said that education is part of social engineering. Through the community, education can be shaped and directed to a specific goal. (Nurdyansyah, N., Siti, M., & Bachtiar, 2018)

In fact, there are still many problems that must be faced in order to improve the quality of education in Indonesia. This problem is influenced by a number of external factors that come from outside the students, as well as internal factors that come from within the students themselves .(Nurdyansyah, Nurdyansyah and Fitriyani, 2018). Nurdyansyah emphasized : “The education world must innovate in a whole. It means that all the devices in education system have its role and be the factors which take the important effect in successful of education system”.(Nurdyansyah, N., Rais, P., & Aini, 2017)

One of the external factors that is also very influential is the management of learning in educational institutions and supporting facilities. The learning process should be interactive, inspirational, fun, challenging, motivate students to participate actively, and provide sufficient space for initiative, creativity, and independence according to the talents and interests of students. (Nurdyansyah & Amalia, 2018). The learning process must involve many parties, which is balanced by technological

developments to make it easier to achieve a certain atmosphere in the learning process so that students are comfortable in learning. (Nurdyansyah. N. dan Andiek Widodo, 2015). Because, the essence of learning is a process of directing in achieving goals by doing actions through the experiences created. (Nurdyansyah Nurdyansyah, 2016).

### 1. Definition of Learning Technology

To know the meaning of learning technology, we should start from knowing the meaning both etymologically and terminologically. Etymologically, the word technology comes from the Greek word *techne* which means skill and knowledge, in other words it can be interpreted as knowledge related to skills. (Muhammad Yaumi, 2018). Meanwhile, in terms of terminology, the word technology according to Spector, quoted by Yaumi in his book, is a method used to provide knowledge easily. There are other definitions from several figures regarding technology as follows:

a. According to Saettler, quoted by Yaumi in his article, he explained that technology is applied science that is systematically and practically designed that can be used for the development of goods and services, production skills, information, and organization. (Muhammad Yaumi, 2016).

b. According to Siemens and Tittenberger, quoted by Yaumi, explained that the notion of technology is things related to the description of aids and tools for thoughts making.(Muhammad Yaumi, 2016).

For self-learning, it can be interpreted as a process of interaction carried out by several people, learning resources and learning aids to produce useful knowledge, develop self-potential, and also to channel their interests. (Dwi Priyanto, 2009). There is also another opinion regarding learning according to Susanto, which is quoted in his book learning the form of assistance provided by educators to shape students to acquire knowledge and character formation. (Dr. Ahmad Susanto, 2016). According to Effendy, quoted by Purnomo, the learning strategy not only serves as a concept map for the teaching process, but must be accompanied by operational tactics.(Setiawan Hari Purnomo, 2007).

Other opinions regarding learning technology related to the development of learning technology are as follows : (Muhammad Yaumi, 2018).

#### a. Learning Technology Used for Media

According to Miarso, in his book that has been quoted by Yaumi, he said the beginning of a media was in the 1920s that used a visual aid, because it consisted of images, objects, and other tools to provided real knowledge through visuals. In 1924 several scientists conducted research which resulted in the findings of moving images such as films, television, and videos. Then many American universities use film as a medium in lectures. David Engeler's opinion regarding learning technology, quoted by Yaumi in his book, has two definitions, which are specific definitions and general definitions. For general definitions such as television, moving images, sound recordings, dish, textbooks, whiteboards, and so on.(Muhammad Yaumi, 2018).

#### b. Learning Technology Used for a Field of Science

The definition of learning technology for the field of science was formulated in AECT 1972, which was a method used for learning facilities that could help learning activities and the results of the learning process.

#### c. Learning Technology Used for a Process

Meanwhile, the definition of learning technology used for a process contained in the 1977 AECT definition is the interaction that exists between humans, ideas, information facilities, organizations that overcome problems, appreciate, overcome problems that occur in the world of human learning. (Bambang Warsita, 2013). In the previous definition, the other AECT with reviewed AECT now contains their respective functions.

#### d. Learning Technology Used for a Sector of Science

For the definition of learning technology used for the sector of science, there is a definition of AECT 1994 which is a theoretical opinion and how it is implemented in planning, implementing policies, and evaluating processes and resources for learning. (Muhammad Yaumi, 2018).

The term instructional technology is often used interchangeably with the term educational technology. The use of interchangeably is actually less precise if it is based on the reason that "learning" is part or "sub-set" of "education". Recent developments indicate that the term "learning technology" is more widely used by professions engaged in this field. According to (Barbara, Seels, and Richey, 1994) this is based on the following reasons: (1) Learning technology can more accurately describe the function of technology in education; (2) Learning technology shows more emphasis problems on learning and teaching.

The concept of learning technology can be seen in the definition of this educational / learning technology field. At the beginning of its growth, according to Reiser & Dempsey (2002) Learning Technology was seen as a medium. "Early definitions of the field of instructional technology focused on instructional media: the physical means via which instruction is presented to learner" (Reiser & Dempsey, 2002 : 7; Anglin, 1991 : 14).

The concept of current learning technology can be seen in the definition issued by the Association for Educational Communications and Technology (AECT) as follows: "Instructional Technology is the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning" (Seels, B.B. & Richey, 1994)

The formulation of the 1994 definition of learning technology was simpler when compared to the previous definition, namely the 1977 definition which reads :

"Instructional technology is a complex, integrated process involving people, procedures, ideas, devices, and organization, for analyzing problems, and devising, implementing, evaluating and managing solutions to those problems, in situation in which learning is purposive and controlled. (Association for Educational Communications and Technology (AECT), 1977)

According to the 1977 AECT definition, Learning Technology is seen as a theory, arable field, and a profession that seeks to assist the learning process through solving learning problems by utilizing learning resources or learning system components through the

development and management functions of both organizational management and personnel management. With the formulation of the 1994 Learning Technology definition by AECT, the 1977 Teaching Technology definition became less popular. If analyzed more deeply, the components of the definition of Learning Technology according to AECT 1994 consist of: (1) theory and practice; (2) design, development, utilization, management and evaluation; (3) processes and sources; (4) study. (Prof. Dr. Abdul Gafur, 2011)

The main mission of Learning Technology is to help, trigger and stimulate the learning process, and provide convenience or learning facilities. The achievement of learning objectives in the form of changes in knowledge, skills, and attitudes is relatively constant as a result of experience, not because maturity is the main measurement for successful learning. The provision of learning facilities is carried out by designing, developing, utilizing, managing, and evaluating processes and resources for learning.

The process referred in Learning Technology is the process of design and delivery of learning. A process includes a sequence consisting of input, action, and output. Examples of processes include delivery systems, such as teleconferencing, various modes of delivery of instruction such as self-study systems, contract systems, etc. Learning models such as inductive and deductive models, learning development models such as learning systems design development models are other examples of the process. Processes can be procedural and non-procedural.

The sources referred in the component of this definition are learning resources. According to (Gafur, et al. 1986: 4; AECT, 1977: 3) these learning resources are categorized into messages, people, materials, tools, techniques, and the environment (or the planned learning resources and learning resources used. "Some of these resources become learning resources by design and others become learning resources by utilization" (Alan Januszewski, 2001). In order for the learning process and resources to be optimally useful, they need to be designed, developed, utilized, managed and evaluated.

Design, development, utilization, management, and evaluation are the five main components of Learning Technology. Each of these

components has its own uniqueness and put forth different professional activities and fields of study or research. From the five components, the design and development component has developed further than the other three components. The design area has made the most extensive contributions in the field of Learning Technology theory and practice. So does the development area; In the field of design, there has been a lot of research and theory produced by researchers in this field. Literature entitled "Instructional Design" has been widely produced. Practitioners in the design field have created many "Instructional Designer" professions, both those working in educational and training institutions. In other words, there is a tendency for the design profession to develop in various environments (Reiser, Robert A. & Dempsey, 2002). The design area includes learning system design, message design, learning strategies, and identification of student characteristics.

The development area has also contributed a lot to Learning Technology, especially in the fields of print media technology production practice, audiovisual technology, computer-based technology, and integrated technology. The area of use is seen as not well developed both in theory and practice. Although there have been many attempts to use media, the situation is still behind when compared to the two previous regions. Theories and practices in this area of use include media use, dissemination of innovation, implementation and institutionalization, as well as policies and regulations.

The management area plays an important role, because the implementation of the functions contained in the five Learning Technology areas which always involves many people, a lot of time, and many resources requires management. This management area includes project management, management of learning resources, management of delivery systems, and management of information systems.

The evaluation area is classified as having the least development and contribution. The most significant contribution from the evaluation area is formative evaluation, for example: "The formative evaluation of tape/slide guide to library instruction" (Evans, Lionel & Leedham, 1985), juga "Evaluation of a multimedia package and paedagogical design and display

visual (Akhori, Kanji & Kumar, 1999). This evaluation area includes problem analysis, needs analysis, benchmark measurement, formative evaluation, and summative evaluation.

Learning Technology is a theory, practice, arable field, and a profession that seeks to help the human learning process, so it is clear that there are many benefits or advantages obtained by applying the concepts and principles of Learning Technology. Since the early decades of its development, the benefits or advantages of learning technology have been felt, this can be seen from the results of the identification of the 1969 Presidential Commission on Instructional Technology which concluded that there are six potential advantages or uses of Learning Technology, namely that Learning Technology makes learning : productive, individual, scientific, highly capable, friendly, and evenly distributed (Yusuf Hadi Miarso, 2004) (Burton, John & Lockee, 2000).

## 2. Technology-Based Learning during the Covid-19 Pandemic

The development of a country can be measured from the progress of education in that country, because education is suspected to be able to produce generations who have high character, self-awareness and intellectuals. It means education is the most basic thing in building civilization and the life of an independent nation so that it can provide optimal impetus to produce various positive changes in humans. Including the development of science that is not limited as the influence of globalization and the advancement of technology. Of course it will be a determinant in the future with regard to human resources resulting from education.

In line with the massive handling of the Covid-19 pandemic, as an effort to reduce the transmission rate of the Covid-19 virus, the Indonesian government has established a formal learning policy to be implemented with a Distance Learning (*Pembelajaran Jarak Jauh*) pattern with online modes and integrating it with offline modes. This is in accordance with the appeal of the Minister of Education and Culture of Indonesia through Circular No. 4 of 2020 concerning the Implementation of Educational Policies in the Emergency of the Spread of Corona Virus Disease (Covid-19). This government policy began to be effectively enforced in several provinces and districts/cities

in Indonesia, several local governments decided to implement a policy to leave students off and began to apply this pattern. The online learning system is a learning system without face-to-face learning between teachers and students but is carried out online using the internet network.

The implementation of distance learning during the Covid-19 pandemic is very dependent on technology, technological mastery skills, and the ability to use technology to facilitate the learning process, so educational technology actually provides benefits in supporting the success of learning itself. The role of educational technology includes the following: (1) educational technology as a means of supporting knowledge design, (2) educational technology as a means of information to find out the knowledge that supports students, (3) educational technology as a medium in facilitating students in argumentation, (4) educational technology is able to increase the effectiveness and efficiency of the learning process, (5) educational technology as a tool to achieve educational goals..

The role of technology is very important in facilitating the online learning process. As written by Buselic M., Tavakcu T., et al in (Latip, 2020) emphasized that the essence of the implementation of online learning is how to choose the right learning method with the help of technology which intends to convey learning material to students even though they do not meet face to face directly like conventional learning. (Abdul Latip, 2020) Technology acts as a medium of interaction and transfer of information, as software related to learning to make it easy for educators and students to do distance learning using online modes.

Efforts made by the government to make educational activities continue to be carried out, including by facilitating subject matter through electronic television media broadcast on TV stations of the Republic of Indonesia according to their respective levels, namely TK, SD, SMP, SMA, SMK. Then various parties provide various platforms to make it easier for educators to carry out online mode distance learning by utilizing technology, communication and information, such as e-learning, Google Classroom, Rumah Belajar, in the form of video conferencing such as Zoom, Google Meet, and Visco Webex, including the use of Whatsapp Group, while for virtual assessments using

Google Documents as a medium for conducting online discussion forums, submitting exams via Google Form, and procuring quizzes through websites or applications.

Technology also plays a role in helping students obtain subject matter by accessing various websites and applications such as edutafsi.com, wolframalpha.com, slide share, inspigo. Increase the creativity of educators and students, by utilizing various social media sites such as Facebook, Instagram, YouTube, etc. to innovate and be creative, create learning content, and fulfill product and project-based learning assignments, so that technology can provide benefits in supporting the success of distance learning with online modes in the midst of a pandemic that has not ended.

Along with the high role of technology today, another thing that can support the success of distance learning is the quality of human resources (HR). Internet technology in particular will not have a significant effect if human resources or users do not have adequate knowledge and skills in the use and management of technology. Therefore, an understanding of technology is a major factor in the activities and success of online distance learning. Regarding the application of technology in distance learning, there are five important criterias for the application of information and communication technology to support learning during the Covid-19 pandemic, which are as follows :

The first criteria, the application of information and communication technology must provide easy access to learning resources to learning resources. Distance learning demands independence and initiative of students in accessing various learning resources. To make it easier for students to access various sources of information for learning purposes, these learning resources must meet the following conditions: 1) The content must facilitate students' interest in completing their learning, 2) The content must be in accordance with the cognitive level of the students, 3) The content structure is simple and clear, 4) The content is well designed according to visual conditions, and 5) Navigation to the source learning the layout must be clear so that it makes it easier for students to use and access these learning resources. Referring to this, the learning resources available during the Covid-19 pandemic must be easily accessed and obtained

by students. Thus, students can take the initiative to learn many things from the available sources.

The second criteria, the application of information and communication technology must present the similarity of virtual learning conditions with traditional learning environments (face-to-face classes). The technology system used in distance learning is expected to present a learning atmosphere that is not much different from face-to-face classes held in traditional classrooms. To fulfill this atmosphere, there are several things that must be considered, which are : 1) Teachers must build a learning environment that is full of enthusiasm and trust by encouraging students to be actively involved so that the virtual classroom atmosphere can be felt by all who are involved in learning, 2) The teacher must provide feedback on time and in accordance with what students need, and 3) Allows students to be emotionally involved in virtual learning so that a learning environment that demands performance and is competitive among students. This second criterion is a challenge for teachers to continue to create a comfortable, active and enthusiastic learning environment in distance classes. Moreover, the conditions of the Covid-19 pandemic that lasted for a long time could make teachers and students feel bored with the existing situation and conditions.

The third criteria, the application of information and communication technology must present an effective learning system by utilizing and using a Learning Management System (LMS). To present effective learning with LMS, it must pay attention to 1) The structure of the LMS and the teaching process must be in line, 2) LMS provides automatic services that facilitate the learning process carried out by teachers and students, 3) LMS has a system that protects various data related to the learning process, both teacher data and student data, and 4) The LMS must be well designed so that it provides ease of use, both for teachers and learning. In the context of these criteria, distance learning during the Covid-19 pandemic should use an LMS that accommodates various learning processes such as assessment, attendance, material giving, assignments and others. The existence of LMS will make all these processes well controlled by teachers and students. One of the many LMSs used in distance learning during the Covid-19 pandemic, including the Google Classroom.



The fourth criteria, the application of information and communication technology must facilitate all users without being limited to the experience of using the technology. It is hoped that the technology system used during distance learning is not limited to users who are experienced in its use, but can be used by anyone who has an interest in using the technology. To present these conditions, it is necessary to pay attention to the following: 1) The components and labels used in technology for learning are universal so that they can be known and understood by all users, both teachers and students, and 2) The existence of a simple, clear and concise guidebook / tutorial. In the context of the Covid-19 pandemic distance learning, these criteria need to be considered when determining the technology system to be used in distance learning. This is because the implementation of distance learning during the Covid-19 pandemic was an emergency, so there was no careful planning and preparation. Therefore, the technology system used is not limited to experienced users, but can be used by all groups and ages.

The fifth criteria, the application of information and communication technology must be able to facilitate interaction between teachers and students, especially when students experience difficulties and want to ask the teacher. To encourage students to ask questions when experiencing difficulties, there are several things that need to be considered, which are 1) There is appropriate encouragement from teachers and other parties, 2) Build a comfortable atmosphere when teachers and students interact during learning, and 3) The existence of appropriate and effective feedback to students who have difficulty. In the implementation of distance learning during the Covid-19 pandemic, teachers must provide services that provide fast and accurate feedback to students. For example, providing the opportunity to ask questions directly via Whatsapp if anyone experiences problems during the implementation of learning from home.

The five criteria for the application of information and communication technology in distance learning illustrate that the use and application of technology systems needs to be well designed and pay attention to various aspects. The aspects that need to be considered are related to the technology itself and its users,

in this case teachers, students, administrators and other users such as parents. Users must have the ability to access, use and manage any technology systems used in distance learning. If the user does not have these abilities, then no matter how sophisticated the available technology system is, it will not be able to support the continuity of distance learning. Therefore, information and communication technology literacy is an important part for users in carrying out distance learning.

### 3. Technology-Based Learning Model during the Covid-19 Pandemic

The naming of the terms online and offline learning in distance learning appears as a form of learning pattern in the era of information technology as it is today. Daring is an acronym for "dalam jaringan" instead of the word online which we often use in connection with internet technology. Daring is a translation of the term online which means connected to the internet network. Daring means learning that is done online, using learning applications or social networks. Online learning is learning that is carried out without doing face-to-face, but through existing platforms. All forms of subject matter are distributed online, communication is also carried out online, and tests are also carried out online. This online learning system is assisted by several applications, such as Google Classroom, Google Meet, Edmodo, and Zoom.

Online conditioning if it meets the following requirements: (a) Under direct control of another device; (b) Under the direct control of a system; (c) Available for immediate or real time use; (d) Connected to a system in operation; (e) functional and ready to serve. During the implementation of the online model, students have the freedom to learn. Students can learn anytime and anywhere, without being limited by time and space. Students can also interact with the teacher at the same time, such as using video calls or live chat. Online learning can be provided electronically using forums or messages.

Meanwhile, the term luring is an acronym for "luar jaringan" as a substitute for the word offline. The word "offline" is the opposite of "online". Thus, offline learning can be interpreted as a form of learning that is not at all connected to the internet or intranet network. Offline learning system (outside the network)

means learning using media, such as television and radio. If students write articles or do assignments in Microsoft Word and do not connect them to the internet network, then that is an example of offline activity and if students do offline conferences by meeting in person without using the internet, that is an example of offline activity.

For this reason, two learning models that can be applied in online learning are the Experiential Learning (EL) and Blended Learning (BL) learning models. The explanation regarding the meaning and steps of the EL and BL models is described as follows :

#### a. Experiential Learning (EL)

This model has been introduced since 1975 by David Kolb. According to (Kolb, 1984) EL is defined as "the process whereby knowledge is created through the transformation of experience." If interpreted, EL is a process where knowledge is created through the transformation of experience. So the role of students here are to manage learning activities that are built from past experiences and connect them with new experiences. So far, educators often apply it when giving apperception at the beginning of opening the lesson, but often they only do it at the beginning and do not fulfill the EL steps completely.

An expression from Confucius "I hear and I forget, I see and I remember, I do, and I understand" implies that a person will understand only when one does not only see and hear something, but must reach the stage of 'do' doing that thing. This is in line with what was conveyed by Albert Einstein that "information is not knowledge, the only source of knowledge is experience". This is how philosophers and scientists speak of the importance of experience in the learning process.

In general, this EL model is applied in face-to-face learning, because it emphasizes the physical experience that must be constructed by students. However, recently EL has also been developed in online learning such as distance training activities. There are at least four steps for implementing learning as recommended by Kolb in distance learning, namely :

#### 1) Experience (Pengalaman)

In this initial part, all or some of the students share their experiences about the material to be studied, then other students give their responses. It is recommended that educators before starting this step have made a Learning Implementation Plan (Rencana Pelaksanaan Pembelajaran) which is distributed to students including basic competencies, indicators, learning objectives, and learning activities, so that students are focused when sharing experiences that are in accordance with what is stated in the Learning Implementation Plan (Rencana Pelaksanaan Pembelajaran).

#### 2) Reflection (Refleksi)

In the reflection stage, ask some questions according to the learning indicators. This question aims to reflect on the extent to which students' initial knowledge of the material. Only allow them to answer questions based on what they already know. At this stage the educator should not make a process assessment.

#### 3) Conceptualization (Konseptualisasi)

After analyzing the results of the reflection, it is time for the educator to take the action of providing material and students are ready to abstract any new concepts they get. Present the material according to the learning indicators. This material can be in the form of word files, PDFs, power point slides, and can also be in the form of videos which can be accessed easily by students. One of them is learning materials in the form of videos which are quite effective in explaining, descriptions, stages, and subject procedures in more detail..

#### 4) Experimental (Percobaan)

At this stage, educators should facilitate students to apply the knowledge they have constructed. Give questions according to the indicators and based on the material presented. Give an assessment at this stage. Design the question creation with a time setting that matches the complexity of the question. Give the opportunity to repeat if there are still not finished.

Of the four steps recommended by Kolb, educators can add a discussion column to open interaction between students considering that they don't see each other, so that intimacy and warmth are maintained in the virtual classroom. The four steps can be presented in online learning through various commonly used

facilities such as WhatsApp Grup, Google form, Google Classroom, personal blogs or other e-learning facilities that are more complete such as Learning Management System (LMS) and Learning Content Management System (LCMS). The task of educators is to be creative so that the implementation of learning can be packaged properly, fun and gives meaning to students.

#### b. Blended Learning (BL)

This model is very suitable to be applied to educators who are in the green zone and still have the opportunity to meet face to face even if only briefly. Blended Learning is a mixed model which is a learning process that combines face-to-face and online learning. Learning designed to focus on combining synchronous (direct) learning activities and asynchronous (indirect) learning activities. Educators can just use the EL model with some of the steps above in online learning, then continue the steps when they are face to face. Educators may also use a combination of other learning models as they are already mastered.

Even though educators still have to teach from home (TFH), they can still present a learning by applying the Experiential Learning (EL) model, which are learning through experience, by carrying out stages such as experience, reflection, conceptualization and experimentation online or can also apply Blended Learning which is a combination of online and face-to-face learning with a variety of well-planned models.

#### 4. Influencing Factors for The Success of Technology-Based Learning during The Covid-19 Pandemic

With the online mode of Distance Learning still ongoing to this day, many efforts have been made by the central and local governments through relevant Ministries and educational institutions for the success of distance learning. The three main factors that support the successful implementation of online distance learning (PJJ) during the Covid-19 pandemic are educators, students and technology. In distance learning, educators must have the ability and skills in using learning support media, as well as creativity and experience in managing virtual interactions with students. Meanwhile, the student factors that will affect the implementation of distance learning include

culture, socio-economic background, interest, experience and level of education.

Another determining factor for the success of distance learning is technology, technology is a medium, tools and means of supporting the interaction process between educators and students. Another opinion states that there are five crucial factors that can encourage the success of distance learning, namely : (1) Institutional management; (2) Learning environment; (3) Learning design; (4) Support services; and (5) Learning evaluation. In the context of distance learning during the Covid-19 pandemic, these five factors are factors that can support the implementation of distance learning. The institutional management factor is related to the design of the distance learning implementation plan during the Covid-19 pandemic which was designed by central educational institutions to schools as implementation in the field. Directing the right and planned curriculum will make the implementation of distance learning go according to expectations. In line with this, it is stated that the support of the management of the education center is one of the determinants of the success of distance learning (E-learning).

Learning environment factors in distance learning during the Covid-19 pandemic are related to the location of educators and students when carrying out distance learning, the ability of educators and students to access the internet, and the existence of an online system that supports learning. This learning environment factor is a crucial factor in the implementation of distance learning in Indonesia, this is due to the uneven availability of internet access in Indonesia so that there are still many educators and students who cannot carry out distance learning. Based on the analysis of data from International telecommunication data and the Central Bureau of Statistics, it is illustrated that the number of Indonesians who use the internet is below 40% and only 3% regularly gets fast broadband internet access. With these facts, it means that the Indonesian government must continue to strive so that there is a guarantee of internet network availability to the 3T areas (outermost, farthest and isolated).

The next factor that will support the successful implementation of distance learning during the Covid-19 pandemic is the learning model used. The learning model is an important part that

needs to be considered and developed by educators. The distance learning model is a new thing for most educators and students, so that if the learning model used is not well designed, the learning that is carried out will not be successful. The learning model includes several components, which are the clarity of learning objectives, quality of content, learning strategies, learning psychology, and learning assessment. For the success of implementing distance learning during the Covid-19 pandemic, educators need to determine a learning model by paying attention to these components. For example, a learning model that is associated with actual issues that arise during the Covid-19 pandemic.

Another supporting factor that drives the successful implementation of distance learning during the Covid-19 pandemic is support services. Support services in the implementation of distance learning consist of training and communication tools. In the context of learning during the Covid-19 pandemic, only a small proportion of educational institutions held planned training for educators and students regarding the implementation of distance learning. Most educational institutions only simulate the implementation of distance learning using technology tools and applications that are easily accessible. The implementation of training services is very important for the continuity of distance learning, this is because training can improve the ability of educators and students in managing technology which is a medium in distance learning.

The last factor that supports the successful implementation of distance learning during the Covid-19 period is learning evaluation. Learning evaluation is an important part of a learning process that has been implemented. In implementing distance learning, it is still necessary to evaluate learning both formative and summative. However, the evaluation system implemented during this pandemic must be more flexible. The flexibility of the assessment includes the assessment methods, such as presentations, and peer assessments related to the issues being discussed, such as the impact of Covid-19 on various sectors and other issues. One of the flexible assessment methods is the E-portfolio, this E-portfolio offers a very flexible method for students to report every activity carried out during the Covid-19 pandemic. [13].

Other online-based assessment methods that are commonly implemented, including online tests using various test platforms / applications, such as quizziz, kahoot, or google form.

## CONCLUSION

The success of educators in managing distance learning using online modes in this Covid-19 pandemic situation is optimizing their pedagogical and professional competencies to innovate, create, design, concoct materials, learning methods, and use of appropriate media applications, utilizing technology in the learning process so that it can be implemented where it is assigned. Creativity is the key to the success of an educator and is expected to sustainably accompany and motivate students so that they are enthusiastic in participating in learning, build effective communication with students without face to face, and make simple instruments to support the success of learning and assessment.

The learning model that has been designed in the Learning Implementation Plan by educators must be adapted to the needs and situations of everyday conditions. For educators who master technology with adequate facilities and infrastructure, the obstacles experienced are certainly not too hard when compared to educators who work in remote villages without the support of adequate media and facilities, but must deliver learning with an online system that relies heavily on signal strength and sophistication of the media.

Technology is the application of knowledge for a practical purpose. Technology is also interpreted as practical and systematic knowledge, based on experiments and / or scientific theory, which increases the capacity of society to produce goods and services, which are manifested in productive, organizational, or machine skills. In the beginning, learning technology was understood as a learning medium whose object of study was visual aids consisting of images, models, objects, or tools used to present concrete experiences by means of visualization.

Online Distance Learning by relying on technological facilities certainly has its own challenges, students not only need an atmosphere at home that supports learning, but

also an adequate internet connection. An effective learning process is equally important. Efforts that can be made by educators so that students can participate in online mode distance learning effectively are: a) Good communication between educators and students during virtual learning; b) Time management for students is very important, even though it is only studying at home, make sure students make notes related to tasks that must be done; c) Actively discussing with fellow educators, students, educational institutions, and parents of students; d) take into account the allocation of time to use technology-based learning media (PCs, Laptops, and Gadgets).

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