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Implementation Of Belended Learning And E-Learning In Indonesia

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ABSTRACT

Advances in technology, information and communication today have caused changes in various fields. These changes are related to the occurrence of new work patterns both in the economic, social, cultural, political and educational fields. Changes in work patterns have occurred because information technology provides hardware, software, and internet advancements. With changes in work patterns supported by information technology, new ways of working become faster and more efficient. This paper uses a literature review approach and data is collected from previous research results both from online and offline sources. The results of this study indicate that the world of education in Indonesia has implemented blended learning and e-learning models after the Indonesian government implemented various policies related to the development of information technology in the education sector such as issuing government regulations, building information technology infrastructure, and developing human resources to master information technology. . As a result, educational institutions in Indonesia have experienced a very real new pattern of work. Administrative services in educational institutions are currently almost one hundred percent carried out using information technology such as student data, educator data, correspondence, and finances which have also been carried out using information technology.

1. Introduction

Progress in the field of education is also determined by educators, both teachers and lecturers who manage the learning system. Quality learning will affect the process and results of education achieved by an educational institution and all students or students. With the promulgation of Law No. 14 of 2005 concerning Teachers and Lecturers, the consequence is that teachers must have an undergraduate qualification that is linear with their field of activity, while lecturers must have at least a Masters or Masters degree to be able to teach in higher education.

Personnel who have education in accordance with the law will be able to provide learning in accordance with their qualifications and by using learning media in accordance with the times. The era of information technology 4.0 has caused various educational institutions to apply information technology-based learning, especially in the form of e-learning and blended learning that combines online and offline. However, the application of information-based learning requires resources that are literate in information technology and also the availability of information technology infrastructure.

E-learning and blended are two types of information technology-based learning that have been widely implemented in Indonesia, especially when the COVID-19 pandemic arrived in Indonesia in early 2020. However, the trend of using e-learning and blended learning continues even though the COVID-19 pandemic has passed. . The continued use of blended and e-

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learning is due to the habits that have been embedded among educators and students. Then the continued use of blended and e-learning is also due to the existence of more and better information technology infrastructure at lower prices (N. Nurdin, Pettalongi, Askar, & Hamka, 2021). The phenomenon of the continued use of blende and e-learning is interesting to study in order to provide a better understanding in the future.

However, research related to the application of blended and e-learning in Indonesia has not been carried out much. Even though understanding the application of blended and e-learning is important in order to provide knowledge to academics and also to practitioners. Because of this, this research was carried out to contribute to the field of knowledge and also to contribute to the practical world so that it is beneficial for the development of blended and e-learning in Indonesia in the future. The results of this paper are expected to help solve problems in maintaining the continuity of the implementation of blended and e-learning in the world of education both at the elementary level and at the tertiary level.

2. Literature Review

2.1 The Concept Of Blended Learning

The concept of blended learning refers to learning that is conventionally carried out in classrooms combined with learning that is carried out online both independently and collaboratively, using information and communication technology infrastructure (Hrastinski, 2019). Blended learning combines different learning media (technology, activities) to create optimal learning programs for specific students. The word "blended" means conventional learning (face to face in class) supported by electronic learning formats.

Therefore blended learning is defined as a mixed system that combines two components or methods at once. The combination of these methods is e-learning and multimedia. Meanwhile, the applied learning is in the form of virtual classes, video streaming, online animated text, and others. Blended learning is also interpreted as a combination of two main elements. These two elements are learning in class and online, or learning by utilizing the internet network and website-based.

Blended learning emerges as a result of the different learning needs and interests of each student. Educational institutions should use a combination of several learning strategy approaches to get the ideal model so that the right content is achieved in the right format to be given to the right people at the right time. Blended learning combines several learning media designed to complement each other and enhance learner learning and behavior. A blended learning activity is designed as a student-centered learning process. It usually engages students in doing something more than just reading on a screen. The sequence of what students will do in blended learning activities has been mapped beforehand. Resources and other support equipment that students will need should also be explained beforehand. Resources and support include appropriate assignment guides, study guides and FAQs, web links, media files, etc.

Blended learning strategies vary according to discipline, year level, student characteristics and learning outcomes, and have a student-centred approach to instructional design. Blended learning can increase access and flexibility for learners, increase the level of active learning, and achieve better student learning experiences and outcomes. For teaching staff, blended learning can improve teaching practice and classroom management. Blended in question can be in the form of the following:

a. face-to-face and online learning activities
b. Conventional face-to-face classes with different models, such as the end week, intensive, external, trimester
c. Technology such as capture lectures, and/or with social media and technology
d. Simulations, group activities, web-based learning, practices.

In blended learning, the most frequently used model involves a combination of online and face-to-face learning. However, this combination depends on technology, pedagogy and learning context which involves a number of elements involved in it, which include the following figure:

Picture 1. Elements of blended learning

Then learning with the blended learning model also involves several aspects so that the learning process with blended learning can be carried out. These aspects include the delivery model, technology, pedagogic, and chronology as described in table 1 below:

Table 1. Elements of blended learning

No	Elements	Explanation
1	Delivery model	Kombinasi tradisional learning dengan pendekatan web based online
2	Technology	Penerapan kombinasi dari media dan teknologi
3	Pedagogic	Kombinasi beberapa pendekatan pedagogi
4	Crhonologies	Pendekatan synchronous (real-time) dan asynchronous

Source : (Dewi, Ciptayani, Surjono, & Priyanto, 2019)

The success of blended learning is defined by Stacey and Gerbic (2008) as a learning practice that provides quality learning outcomes and generates positive learning experiences with teacher satisfaction and a balanced teaching and research workload. Just as blended learning provides advantages and challenges for students and institutions, as long as students and institutions pass the challenges, success will be obtained.

Student and institutional factors are very influential in the success of blended learning. From the student's point of view, blended learning can only be successfully applied if students have sufficient knowledge in how to use the introduced technology. Students must be trained to explore the data and information provided by blended learning. From the institutional side, the first institutional factor needed for successful blended learning is the allocation of services dedicated to supporting and assisting learners and facilitators throughout the development and use of modules. This includes spending resources on communications to encourage instructors and potential end users to become actively engaged and fully aware of the benefits of blended learning.

Benefits of Blended Learning

Learning with a blended learning model provides a number of benefits for educators and also students (Graham, Allen, & Ure, 2005). The benefits of implementing blended learning include the following:

1. Increase flexibility

The purpose of applying the blended learning method is to make learning more flexible. Of course this is different if you compare it to traditional learning. This method allows students to learn at their own pace.

2. Increase learning outcome

Combining various teaching methods from blended learning has been proven to be able to improve student learning outcomes. For example, based on a study, students who are in elementary school and apply blended learning Core5 to learning English show positive results. There is an increase in the reading achievement of students up to 20%.

3. Increase Students Interaction and Involvement

Now many students are familiar with technology. They use the technology every day. Therefore, using technology when studying will make it easier for them to be involved in learning activities. In offline or traditional based learning, students tend to be passive when participating in learning. One of the reasons is because the learning that takes place in the classroom is teacher-centered or teacher-centered. On the other hand, you rarely find this passivity in blended learning. Learners tend to be active in participating and participating in learning activities.

4. Increase Students Learning Satisfaction

The combined learning method has also been proven to be able to increase student satisfaction regarding learning and the learning outcomes they get. This is because from the beginning they already understand what the learning flow is like. These students understand what is expected of them to the conditions to be able to achieve the goals and the final assignment.

5. Reduce Cost and Time

The mixed learning model allows teachers and students to save more time and money. That is, teachers can save paper use because learning activities can be carried out paperless. Teachers can use handouts, worksheets, or other supports without having to print or duplicate them. Files related to the material just need to be uploaded, then students can just download it via a computer, laptop or cell phone. Teachers and students can also save more time because they don't have to travel to school, especially when the location of their home to school is very far away.

With Blended Learning, learning can be done anywhere and anytime using the internet. Students can access material freely and are required to be able to study independently because teaching materials are stored online. Between the teacher and those being taught can provide feedback in the form of questions and suggestions in real time. So that discussions and questions and answers between lecturers and students do not only take place during class hours but can also take place outside of class hours. Lecturers can also control student lessons, students can also explore the material to be delivered and the process of giving supporting assignments can be informed more easily. Of course the teaching and learning process becomes more efficient and more effective because communication and interaction between lecturers and students can continue to occur not only during class hours.

With a lecture program with Blended Learning, the class schedule will also be flexible so that students can balance academic and non-academic activities. Blended Learning can also reduce education costs and improve learning outcomes. So that the learning process does not only take place in the classroom but also takes advantage of the virtual world. So that Blended Learning can be applied to universities providing distance education and open education. Besides that, it can also be used in non-formal education places such as course places. Because Blended Learning does not replace conventional teaching and learning processes but complements conventional systems.

The Industrial Age 4.0, which breathes an information society, makes higher education institutions to a certain extent obliged to provide learning that makes students oriented by forming a more interactive, interesting and varied learning system. This is because students need to have competencies that they can use in the future. Improving and developing the quality of learning can be done by utilizing technology to combine face-to-face meetings with online meetings as well as practical activities with a system known as blended learning.

Blended learning is a system that can facilitate student learning to be more flexible, varied, and produce high understanding. Students can study anywhere and anytime without being limited by distance, space and time. Lecture material becomes more varied, not only in verbal form, but in other formats, such as visual, audio and motion.

According to experts, the characteristics of blended learning itself must meet a number of criteria, including: (1) integrated learning material, (2) scheduled/fixed learning time, (3) teacher supervision, (4) unidirectional/linear learning, (5) teaching materials have been sorted and edited (6) there are references to teaching materials, (7) and learning hardware is commonly used.

A number of early studies found that in practice, this system was not used properly due to a lack of encouragement for students and lecturers to use this facility. The reality of practice in the field varies greatly. Facilities such as Edlink and Google Classroom, for example, often only become platforms for lecturers to give assignments to students so that, instead of online lectures, what happens is online assignments. Many students complain and regret this. The reason is that they encounter many obstacles when using this online lecture system. One of the things that is the main problem is the network constraints experienced by students and the lack of material obtained from the system that has been provided.

2.2 The Concept Of E-Learning

E-Learning based learning or using this network began in the 1970s (Harasim, 2006). This learning utilizes web technology and internet connection. Many terms are used in electronic learning/through this network, namely On-Line Learning, Internet-Enabled Learning, Virtual Learning, Web-Based Learning, Web Based Distance Education, E-Learning, Web Based Teaching And Learning. Regarding the implementation of e-learning, there are at least seven important things as requirements for electronic learning activities (e-Learning), namely:

1. Learning activities are carried out through the use of networks ("network" in this description is limited to the use of the internet. Networks can include LANs or WANs - in the form of the eLearners.com Website).
2. Availability of learning service support such as CD-ROM.
3. Availability of tutorials for participants when experiencing difficulties.
4. There are institutions that organize E-learning activities.
5. Learning plans that are known to students.
6. Evaluation system for good student learning outcomes.
7. There is feedback developed by the implementing agency.

Thus we can see that electronic learning (E-learning) is a learning activity carried out in schools or other educational institutions that utilize the internet network to convey learning material indirectly to students.

Benefits of E-learning
Technology has a huge effect on almost all aspects of our lives, one of which is in the field of education. Over the last few years, E-Learning has grown rapidly thanks to its tremendous benefits for both students and educators. E-Learning gives students easy access to education wherever they are. In addition, E-Learning also offers an optimal learning process that suits every student's needs. The following are some of the benefits of implementing E-Learning in learning (Concannon, Flynn, & Campbell, 2005), which include:

1. More Practical Learning Experience
Studying in class can sometimes be boring and stress students so that the learning material provided by the teacher becomes ineffective. However, through E-Learning, the learning process becomes more flexible and comfortable thereby increasing students' motivation to learn. Students can access their E-Learning materials anytime and anywhere using the various types of gadgets they have. They can repeat any material at will if they don't really understand it yet. Students can also choose material according to their interests and needs.

2. More Personal Larning Approach

We all know that it is difficult for a teacher to meet the unique needs of each student, especially when there are many students in a class. E-Learning enables teachers to move from a "one size fits all" learning model to a learning model that focuses on the needs of each student. With a gradual learning system and various content formats, teachers can provide a unique and personal learning experience, which cannot be done in a traditional classroom.

3. Students Performance can be Monitored Easily

E-Learning provides the ability for educators to track students' progress and ensure that they meet their performance milestones (Aratusa et al., 2022). For example, if students fail to pass their online exams, then teachers can offer them learning methods that are more suited to their personalities so that they will more easily absorb learning material and ultimately improve their learning performance. Sophisticated E-Learning systems provide reporting and analysis tools that also allow teachers to determine which areas of E-Learning are lacking and which are excellent. If, for example, there are many of your students who have difficulty mastering certain learning materials, for example, the teacher can evaluate them and make improvements if needed.

4. Cost Efficiency

E-Learning enables educational institutions to reduce costs for teaching staff, classroom equipment, renting online training sites, and printing books (Alkhalaf, Drew, AlGhamdi, & Alfarraj, 2012). Educational institutions do not need to present different teaching staff for each class, print hundreds of books, and renovate classrooms.

5. Centralized Students Databased

All detailed information about students is securely stored in a centralized system (Mishra, Kalla, Braeken, & Liyanage, 2021). Schools can determine who can access student data. Their bio, classes attended, assignments and exams completed, their payment status, and various learning activities, all of which can be easily monitored on one screen. Another research has also found the benefits of e-learning as follows:

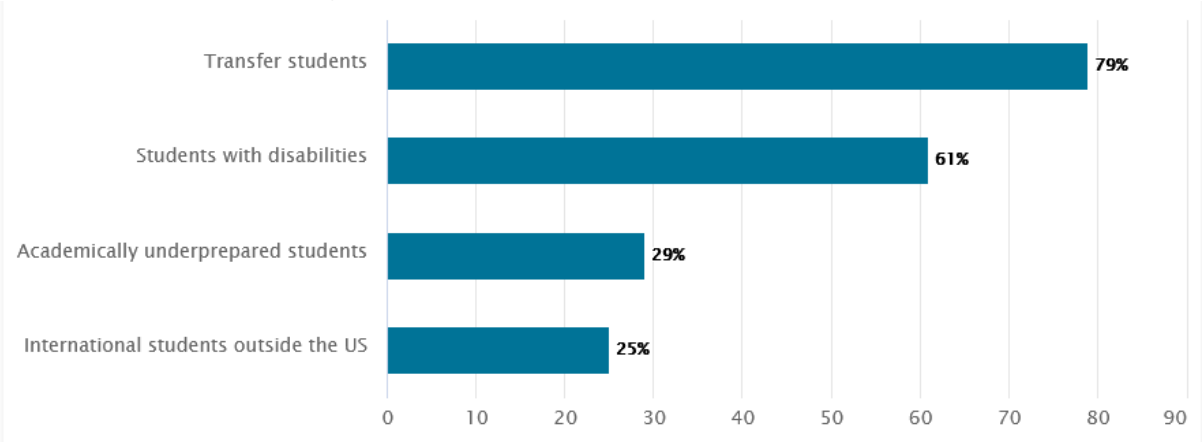


Figure 2. Benefits of E-learning, Source: (Bouchrik, 2023)

However, each level of educational institutions gets different benefits from using the e-learning model within their education system. Froms three school levels, high school students get more benefits from using e-learning system as depicted in figure 3 below:

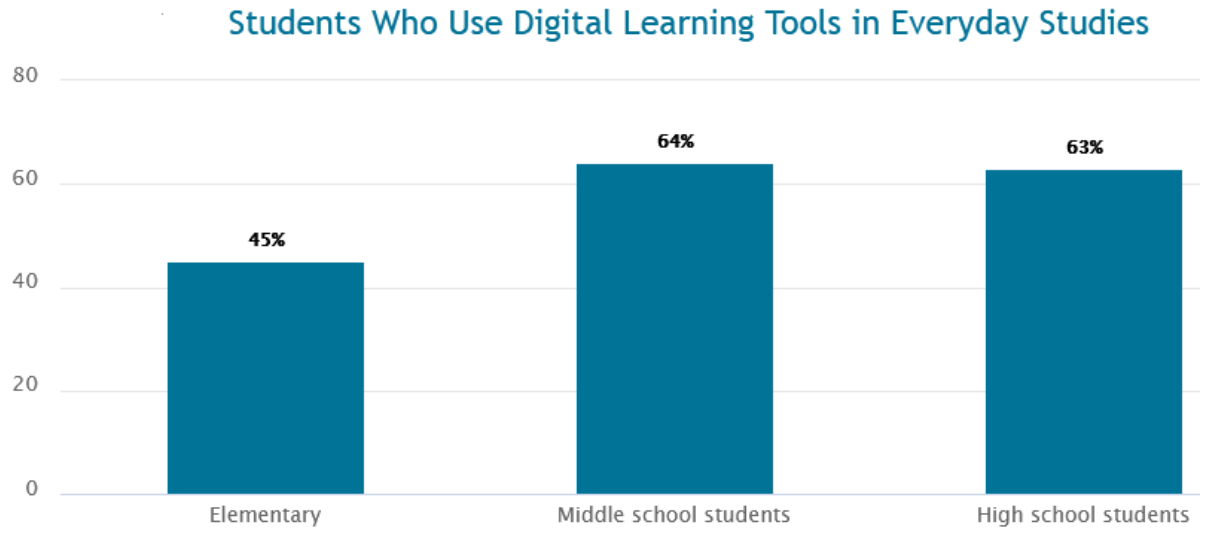


Figure 3. Students' bennefits of Using E-learning System, Source: (Bouchrik, 2023)

2.3 Timeline Of Digital Education Program In Indonesia

E-learning or electronic learning was first introduced by the University of Illinois at Urbana-Champaign using a computer-assisted instruction system and a computer called PLATO. Since then, the development of E-learning from time to time began in 1990 in the era of Computer-Based Training (CBT) where e-learning applications began to appear that ran on standalone PCs or in the form of CD-ROM packaging. Content in written and multimedia form (Video and AUDIO) IN mov, mpeg-1, or avi format. Then in 1994 after the acceptance of CBT by the community, since 1994 CBT appeared in more attractive packages and was mass produced.

Then in 1997 the Learning Management System (LMS) appeared. Along with the development of internet technology, people in the world are starting to be connected to the internet. The need for information that can be obtained quickly begins to be felt as an absolute necessity, and distance and location are no longer obstacles. This is where the LMS came from. The rapid development of LMS creates new ideas for overcoming interoperability problems between LMSs with one another in a standard way. Forms of standards that appear are for example standards issued by AICC (Airline Industry CBT Committee), IMS, SCORM, IEEE LOM, ARIADNE, etc.

Then 1999 became the year of Web-based E-learning Applications. The development of LMS towards Web-based e-learning applications is totally developed, both for students (learners) and teaching and learning administration. LMS began to be combined with information websites, magazines and newspapers. The content is also getting richer with a combination of multimedia, video streaming, and interactive appearance in a variety of data format options that are more standard, and small in size (Purnomo, 2009).

The Era of E-Learning 2.0
The term e-Learning 2.0 is used to refer to a new way of looking at e-learning inspired by the emergence of Web 2.0 technologies. Web 2.0, is a term that was first coined by O'Reilly Media in 2003, and popularized at the first Web 2.0 conference in 2004 (N. Nurdin, Stockdale, & Scheepers, 2013; O'Reilly, 2006).

Conventional e-learning systems are usually based on lesson packages delivered to students using Internet technology (usually via LMS). The role of students in learning consists of reading and preparing assignments. Then the task is evaluated

by the teacher. In contrast, e-learning 2.0 has an emphasis on social learning and the use of social networking software such as blogs, wikis, podcasts and Second Life. This phenomenon has also been referred to as Long Tail learning (Purnomo, 2009).

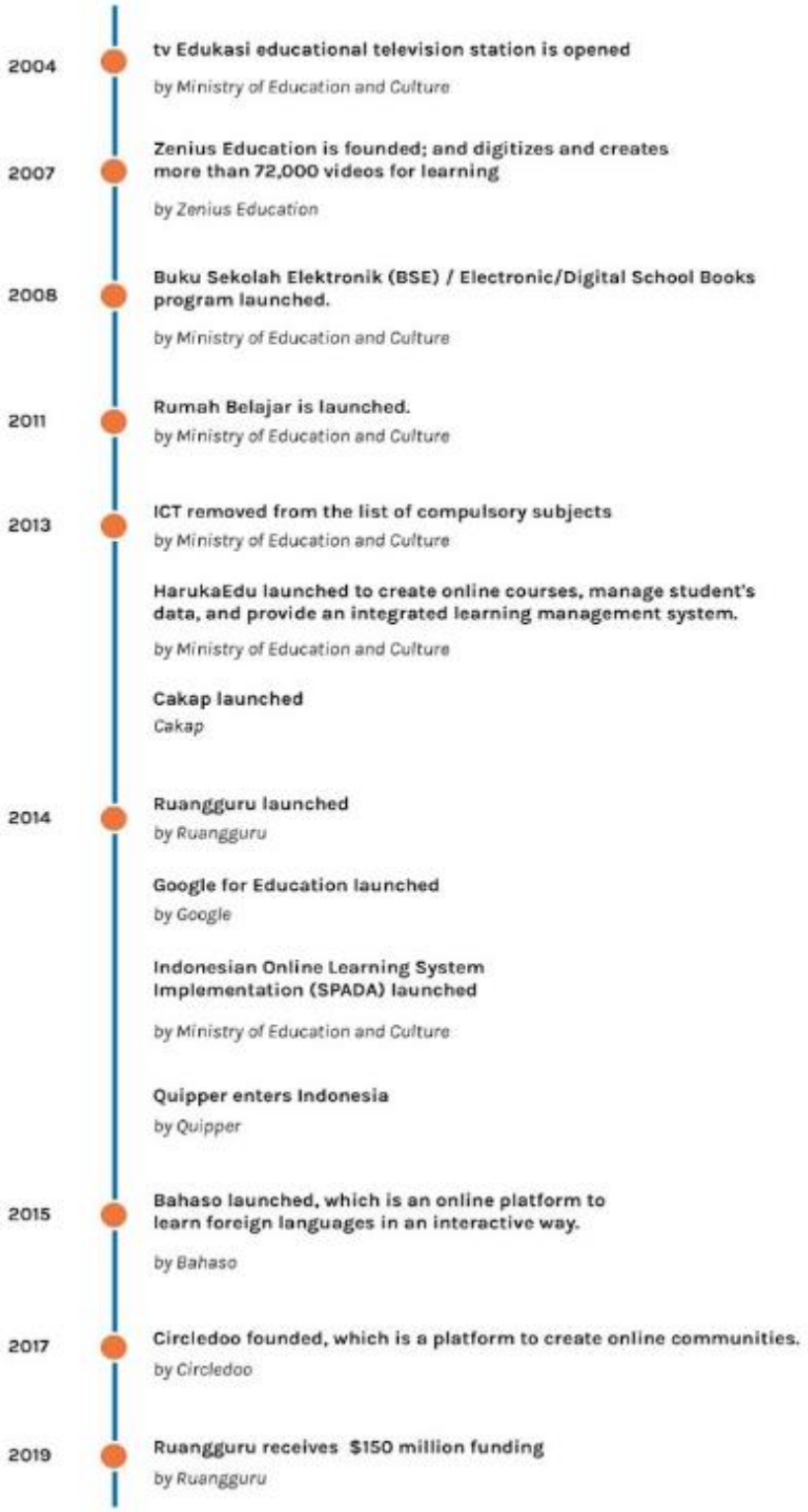
Besides that, E-learning 2.0 is closely related to Web 2.0, social networking (Social Network) and Personal Learning Environments (PLE). The development of e-learning in Indonesia is in line with the development of information technology infrastructure. Several Information and Communication Technology development programs, especially Infrastructure, are:

- 1999-2000 Internet Networking
- 2000-2001 Schools Information Networks
- 2002-2003 City Wide Area Network Kota (City WAN)
- 2004-2005 Information and Communication Technology Center (ICT Center)
- 2006-2007 Indonesia Higher Education Network (Inherent)
- 2007-Now Jejaring Pendidikan Nasional (Jardiknas)
- 2008-Now Southeast Asian Education Network (SEA EduNet)

Then the Republic of Indonesia Law no. 20 of 2003 concerning the National Education System, in article 31 states:

1. Distance education functions to provide educational services to groups of people who cannot attend face-to-face or regular education.
2. Distance education is held in all channels, levels and types of education.
3. Distance education is carried out in various forms, modes and scopes supported by learning facilities and services as well as an assessment system that guarantees the quality of graduates according to national education standards .
4. Forms of distance education include written education programs (correspondence), radio, audio/video, TV and/or computer network-based

Thus, actually eLearning is possible for the use of distance learning in all paths, levels and types of education. Furthermore, in 2006, there were around 69 Providers (Higher Education), which held distance learning for Diploma three programs in the Computer and Network Engineering major. In practice, students attend face-to-face lectures for 1 week each month, while the other 3 weeks use eLearning at each student's internship/work place. In 2007, distance learning (PJJ) was held for Bachelor of Elementary School Teacher Education (PGSD). In detail, the stages of implementing the digitalization program in the world of education in Indonesia can be seen in Figure 4 below:



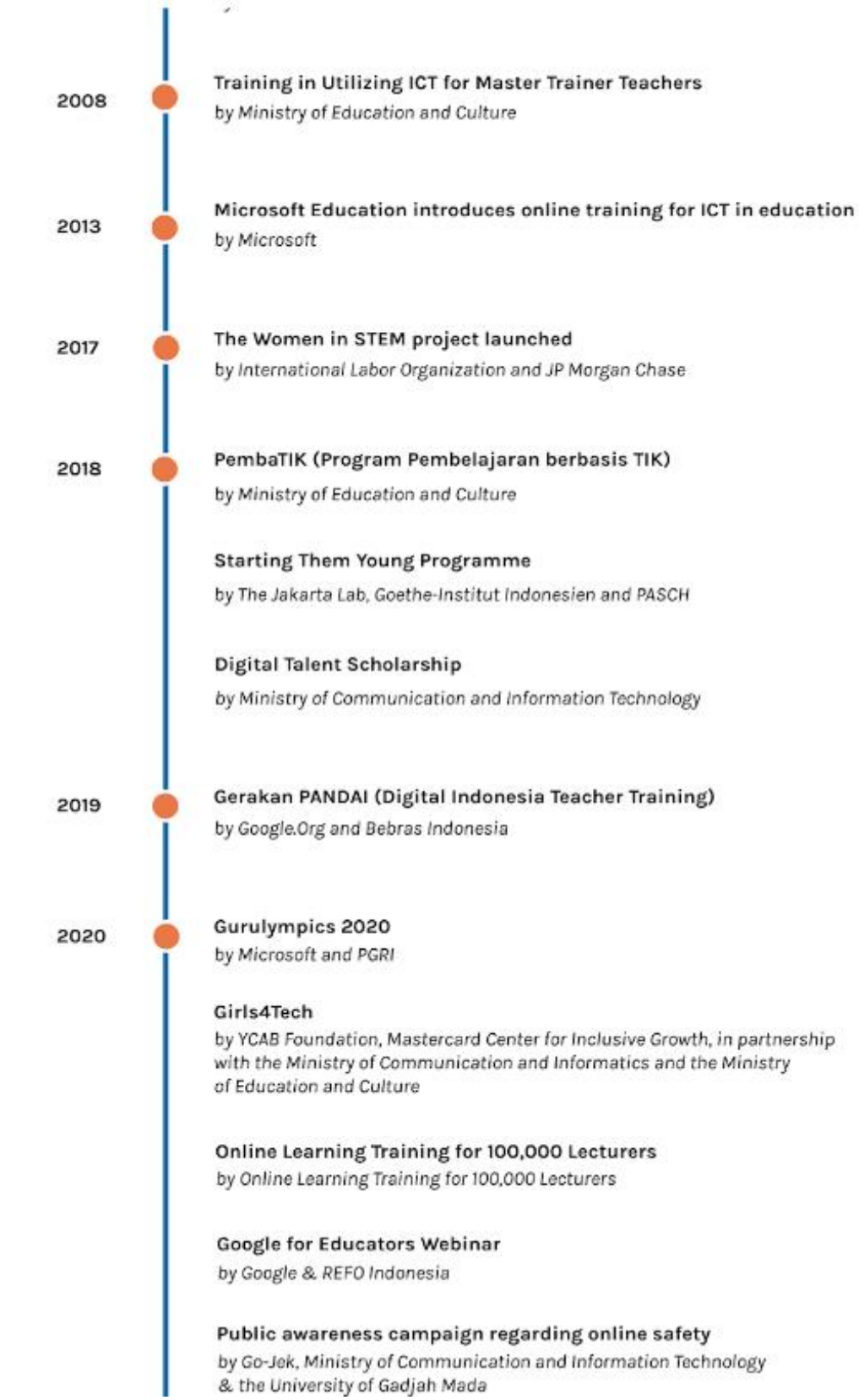
Picture 4: Timeline Digital Education in Indonesia, Source: (UNICEF, 2021)

Furthermore, the stages of implementing infrastructure related to digital education in Indonesia can be seen in Figure 5 below:

Picture 5: Timeline for digital education infrastructure development in Indonesia, Source: (UNICEF, 2021)

In this paper, we also present the timeline for digital skills development in Indonesia. Digital skill is an imprtant aspect of human resource development to support the success of digital education development in Indonesia. The timeline of digital skill development is presented in picture 6 below:

Timeline of Digital Education Initiatives - Digital skills



Picture 6: Timeline of digital skills development in Indonesia, Source: (UNICEF, 2021)

The development of information technology and the implementation of a number of government programs that support the development of information technology-based education have made Indonesia's education system more advanced today. The developing education system has become a partially digital and fully digital system, which does not only use the traditional one. At first the education and learning process was only carried out in the classroom, but now the education and learning process is not bound by space and time. The current digital education system creates.

Blended learning methods and full electronic learning or so-called. e-learning and Blended-learning methods have become popular for Indonesian students. e-learning or blended learning is a learning method from education and the process of learning activities using online media and accessing material with the internet in the process of education and learning. B-learning is now a method of teaching and learning process that blends, blends and integrates traditional education systems with pure digital systems.

E-Learning and B-learning have similarities in the teaching and learning process because they use computers and the internet as intermediaries. However, e-learning is a different learning method. When using e-learning techniques do not interact in the learning process. By using the blended learning method, direct dialogue is possible in the form of direct conversation in the education and learning process. Before the blended learning method, there was already a very well-known method, namely e-learning.

However, there are still many obstacles to the implementation of e-learning in Indonesia. In e-learning, there is no interaction in the learning process. The process of education and learning certainly requires a system that can carry out the process in two directions. We certainly need feedback to improve and refine our learning outcomes. While e-learning provides a lot of material, it reduces the effectiveness and efficiency of the learning process anytime, anywhere. B-learning is designed to enhance the way e-learning is done. E-learning and Blended learning can be a solution to address Indonesia's education problems in terms of equity in Indonesian education. The learning process using e-learning has been recognized and introduced into the education system in Indonesia and upgraded to blended learning.

3. Methodology

This study is based on leterature review conducted intensively by reviewing various relevant literatue from online and offline sources (N. Nurdin, 2017a, 2017b). Online data was gathered from relevan online journal such as Education and Information Technology journals, Educational journal, information technology journals, etc. We also gathered data from reports released by organiations such as UNICEF. Meanwhile, off line data was obtained from books and university reports. The data, then, was analysed using a matrix (Popenoe, Langius-Eklöf, Stenwall, & Jervaeus, 2021). We begin with serching available published research and reports (Nurdin, 2014; N. Nurdin & Pettalongi, 2022). Once we have completed searches of the databases and identified all studies that answer our research question and fit within the inclusion and exclusion criteria of our construct, it is time to get started on the data analysis. The first step is to get an overview of all identified studies by making an article matrix where we describe each construct of of our study, especially those results that are relevant to our study of blended and e-learning implementation phenomenon in Indonesia. The results of the analysis were chategorized based on themes found in the study (N. Nurdin, Scheepers, & Stockdale, 2022).

4. Conclusion

With the development of information technology and the implementation of a number of government programs that support the development of information technology-based education, the Indonesian education system has become more advanced than a few years ago before there were government programs related to the use of information technology in education. There are already many schools and almost all tertiary institutions that have implemented information technology both in administrative processes and in the field of learning. Thus learning by using information technology has improved the quality of education in Indonesia.

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