Reviewing Online Learning Facing the Covid-19 Outbreak

Unung Verawardina¹, Lise Asnur², Arina Luthfini Lubis³, Yeka Hendriyani⁴, Dochi Ramadhani⁵, Ika Parma Dewi⁶, Resmi Darni⁷, Tiges Juni Betri⁸, Wilda Susanti⁹, Titi Sriwahyuni¹⁰

² Email: unungverawardina@gmail.com
³ Jurusan Pariwisata, Fakultas Pariwisata dan Perhotelan, Universitas Negeri Padang, Padang, Indonesia
⁴ Universitas Ibnu Sina Batam, Batam, Indonesia
⁵ Jurusan Teknik Elektronika, Fakultas Teknik, Universitas Negeri Padang
⁶ Prodi Pendidikan Teknologi Informasi dan Komputer, Fakultas Pendidikan Matematika, Ilmu Pengetahuan Alam dan Teknologi, IKIP PGRI Pontianak, Pontianak, Indonesia
⁷ Jurusan Teknik Elektronika, Fakultas Teknik, Universitas Negeri Padang
⁸ Jurusan Teknik Elektronika, Fakultas Teknik, Universitas Negeri Padang
⁹ Prodi Pendidikan Teknologi Informasi, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Slamet Riyadi Surakarta
¹⁰ Sekolah Tinggi Ilmu Komputer Pelita Indonesia, Institut Bisnis dan Teknologi Pelita Indonesia, Pekan Baru, Indonesia

Abstract: Online learning is urgently needed to keep up with the development of the world of education which is supported by information technology that leads to the digital era both process and content in the era of the industrial revolution 4.0. With online learning, learning process can happen anywhere and anytime flexibly. Referred to as the emergence of the covid-19 outbreak that threw the world away, so it is necessary to maintain vigilance, which is through the interaction of direct contact with other humans, so that the impact on learning disrupted at school can therefore be overcome by implementing online learning. This article discusses online learning to deal with the covid-19 outbreak. The results of the study found that the need for preparation, clear steps in applying online learning, the role of the teacher, the role of the students, the benefits of online learning and overcoming the limitations of online learning.

Keywords: Online Learning, Revolution industry 4.0, COVID-19.

I. INTRODUCTION

Now, the world is undergoing a new era, namely the Industrial Revolution 4.0. Along with the times, technology has entered the world of education. Schools now facilitate various technologies, such as computer laboratories (Dony et al, 2015). This shows that the world of education does not escape to the changes in the 4.0 revolution era. (Rojko, 2017, Asnur at al, 2020). According to Xing & Marwala (2017), in the era of the industrial revolution requires special competencies namely information technology (IT) is the main driver. In the era of the industrial revolution 4.0 can encourage motivation and enthusiasm of students to learn new things or application of new
technologies to learn so that they can change their learning into the latest technology. Teaching and learning processes supported by technology are the core concepts of the industrial revolution education 4.0, and types of technology-based learning provide opportunities for independent learning according to the acceleration and intentions of students (Kayımbaşıoğlu, Oktekin, & Haci, 2016). According to Dunwill (2016). Technological advances continue to change and change teaching methods and the regulation of the learning process. Some common changes such as in teacher learning post student grades and assignments online, students use collaborative software or applications to complete group assignments, students’ complete assignments online and upload them on the online classroom portal. Educational institutions can transform into new learning that adapts to the era of the industrial revolution 4.0, which is currently developing. It is due to the preparations for students for the industrial revolution 4.0. The latest industrial revolution or fourth generation is driving the automation system in all process activities, so that it has changed the way of life, learning, and interacting with each other. (Schwab, 2016). Educational institutions must create innovative and flexible learning, which can be accessed anytime and anywhere. The transformation of education from online learning can be done to facilitate the learning process that can cross national and time boundaries.

Online learning is learning that uses internet technology that allows teachers and students to carry out learning wherever and whenever outside the classroom (Verawadina et al., 2020). So that online learning can create learning flexibility without being limited by distance, space and time. In online learning, the latest technology must be available that can improve the learning process and interactions between teachers, students, and technicians. Besides online learning also reduces cost efficiency without reducing the quality of learning. Therefore, this learning will be run using flexible technology such as smartphones. For this reason, teachers in the online learning process are expected to be able to facilitate as facilitators, collaborators, mentors, trainers, directors and study partners and can provide choices and great accountability to students to learn. Teachers to convey learning to students must be able to bring innovation for students to make material more interesting and innovative. Besides that, online learning can change the conditions of the teaching environment and provide new perspectives for students. The teacher can deliver teaching based on students 'preferences and choices and provide a quick response to students' problems during the teaching process. For the application of online learning requires technology such as computer devices, applications and the internet, as well as requiring appropriate steps in carrying out online learning.

Currently, various countries are affected by the outbreak of Coronavirus disease 2019 (COVID-19) which is an infectious disease caused by SARS-CoV-2. In various countries such as China, Italy, Korea, Japan, Indonesia and others, Covid 19 has spread (WHO, 2019). So the government took various steps to deal with this outbreak. One of them is from an education standpoint. Ministry of Education in various countries has taken steps at each school to conduct learning via the internet, as one way to stop the spread of the corona virus. One of the impacts of Covid-19 a number of institutions both tertiary institutions, schools in various countries and Indonesia at the level of high school, vocational school, junior high school, Mts, elementary school, kindergarten, PAUD diverted learning carried out online or online (Kemdikbud, 2020). UNESCO (2020) also supports learning done by online because of the outbreak. It aims to increase alertness and the process of stopping the spread of the virus through direct interaction in the crowd. So the learning process is done online learning. Of course by implementing online learning the institution must implement it with appropriate steps so that the application is directed and appropriate.

Responding to these problems, efforts are needed to provide solutions so that learning activities

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remain carried out despite the covid-19 outbreak, one of the ways with online learning. Therefore, this article aims to examine online learning to face the covid-19 outbreak, so that it can be used as a reference in the application of online learning.

II. METHOD

In this study using the method of analysis of literature (library research) that is conducting a review of various scientific sources such as international journals, books, and other literature in accordance with the studies discussed.

III. RESULTS AND DISCUSSION

Online Learning

In the era of revolution 4.0 the rapid development of technology, there was a transformation of learning that had traditionally only been studied in the classroom and turned into technology-based online that can be implemented outside the classroom. According to Aziz Hussin (2018), there are nine types of learning related to Education 4.0. (1) Learning can be done anytime, anywhere. Online learning offers great opportunities for distance and independent learning. (2) Learning will be adjusted for each student. (3) Students have choices in determining how they want to learn. (4) Students will learn more based on projects. Through project, students will work in teams. (Indrawan, E., Jalinus, N., Syahril, 2020) (5) Students will learn more directly through field experiences such as internships, mentoring projects, and collaborative projects. (6) Students will be faced with data interpretations where they are asked to apply their theoretical knowledge to numbers and use their reasoning skills to make conclusions based on the logic and trends of the given data set. (7) Students will be assessed differently, (8) Student opinions will be considered in designing and updating the curriculum. (9) Students will become more independent in learning and the teacher as a facilitator who will guide students. From these characteristics the government and educational institutions and teachers must be able to conceptualize learning activities that are in accordance with the current era.

Online learning has advantages as explained (Rohmah, 2016), there are four kinds of uses of online learning, namely: (1) the presence of online learning can shorten learning time and make study costs more economical (2) facilitate interaction between students and material, (3) Students can share information and can access learning materials at any time and repeatedly, with such conditions students can strengthen their mastery of learning materials, (4) With online learning the process of developing knowledge does not only occur in the classroom alone, but with the help of computer equipment and networks, students can be actively involved in the teaching and learning process online.

Online learning can use e-learning websites that can function as supplements, supplements and substitutes. According to Siahaan in Wena (2010), e-learning has functions, namely 1) as an E-learning Supplement (additional) and students have the freedom to learn to use e-learning and not. Certainly for students who use e-learning then get additional knowledge. 2). Complement (supplementary) that is complementing the material in learning in class. 3). Substitution is a substitute for learning in the classroom, so it can be done online outside the classroom, the goal is to create flexible learning that is able to adjust the time, place and other daily activities.

Online learning is also supported by learning theories such as constructivism learning theory, according to Driver and Bell (Susan, Marilyn and Tony: 1995) their views on constructivism in
which students have goals, are involved in learning, are able to construct knowledge individually, learning not only as knowledge but also involves setting the classroom situation, in addition to that the curriculum contains learning tools, materials, and resources. In the theory of learning behaviorism, where in learning there is a change in behavior (Farooq and Javid: 2012). Online learning provides the stimulus and response to students to engage in learning both online. The Connectivism learning theory provides a new perspective on how learning takes place in the digital learning space (Dunaway, 2011: 684). This is in line with online learning which digital is learning so that all can be connected to each other digitally.

IV. COVID-19

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by SARS-CoV-2, a type of coronavirus. For patients who are infected experience fever, dry cough, and difficulty breathing. WHO said that a new coronavirus is endemic in Hubei Province, China. WHO states there is a high risk of COVID-19 disease spreading to various other countries. Then WHO also said Covid-19 can spread globally, it is very important to determine the severity of viral infections and mild or asymptomatic cases and the possibility of transmission (WHO, 2019). So as to overcome the spread of COVID-19 there needs to be an effort to handle it, one of which is highlighted in the field of education.

Covid-19 handling of educational institutions to anticipate the spread of the Coronavirus by encouraging student learning online, in online learning where learning continues to occur between teachers and students but in different places. (Source: COVID-19 Handling Protocol in the Institution Area: 2020). Online learning is a solution when educational institutions are closed because of the COVID-19 outbreak. (Jhon Kline, 2020). UNESCO (2020) said that despite the covid-19 outbreak the students must continue to get their rights by continuing to carry out education, even though it is done remotely. Therefore, the online learning is needed so that teaching and learning activities continue to run.

Further to support online learning due to the Covid-19 outbreak where a number of schools were closed and impacted on students in the world. UNESCO submitted a list of applications and educational platforms that can be used such as Digital learning management systems which means digital learning systems that can be used free of charge for example edmodo, google classroom, schoology, and others. It also can use purpose-built systems for mobile phones to support mobile learning such as Cell-ed, Eneza education, funzi and others. It also can use Systems with strong offline functionality such as Hummingbirds, Rumies and others. Massive Open Online Course (MOOC) Platforms such as EdX, University of the People, Icourses and others are the other applications. It can be self-directed learning content such as YouTube, Discovery Education and others. Mobile reading applications can be used such as African Storybook, Global Digital Library and others. For collaboration platforms that support live-video communication such as Skype, Zoom and others. Tools to create digital learning content such as Thinglink, Buncee and others, (UNESCO, 2020). The application and platform are delivered to facilitate educational institutions and teachers in carrying out online learning, many choices can be used according to the needs of each educational institution.

Hence, to carry out online learning, educational institutions, teachers and students must know the appropriate online learning process, starting from the preparation of equipment and applications, learning steps, the role of teachers and students, the activities required in learning must be clear, so
that it is expected to creating the effectiveness of online learning.

Implementation of Online Learning Facing the COVID-19 Outbreak

Facing the outbreak of covid-19 virus spread widely and increasing public awareness to avoid covid-19, so that one problem that arises is reducing direct interaction contact at school, and learning is diverted online. In this case, the teacher must be able to position in utilizing e-learning. The following authors describe what should be considered in the application of online learning:

1. Prepare the facilities to run online learning such as web-based online learning portals, can use learning management systems (LMS) such as moodle, dokeos, or platforms that have been available such as edmodo, classrooms, learning houses of the Ministry of Education and Culture, teacher rooms and others that can be used open source. Requires a computer, laptop or cellphone and internet network. As a supporter can use a webcam (camera) for visual interaction, a microphone to talk using audio. Then adjust the needs of the components contained in e-learning such as instructional, chat, forums, video conferencing, links, devices (Verawadina et al., 2020). To compile online learning curricula in the era of the Industrial Revolution 4.0 needed synergies involving governments, educational institutions, and industries to revitalize relevant curriculum especially in the era of the industrial revolution 40. Relevant curriculum must also be considered in the application of learning using technology. (Hendriyani et al., 2020). Therefore, in online learning the application is in line with the current curriculum. In addition, there is also a need for guidelines for online learning to make it easier for teachers and students about what needs to be done and what should be accessed. Online learning requires participants to be fully trained with current technology. This is because online learning uses the development of sophisticated and contemporary technology. For example, requiring participants to be familiar with learning tools, conference tools, and discussion tools available in the online learning system. Hardware and software installed on a computer system for participants must be compatible with the system and software used by teachers from a distance (Kayimbaşioglu, Oktekin, & Haci, 2016).

2. Teachers in online learning can choose to use a variety of models, methods, strategies, techniques as a designer and implementer of learning. In addition, it can also be arranged synchronous and asynchronous learning settings as needed. Online learning can also be packaged according to student learning styles (Verawardina, 2017). In online learning, the teacher also acts as a facilitator and motivator so that students are active in an effective and optimal learning process. Teachers must have skills in using technology (Feladi et al., 2020; Bandri at al, 2020, Ahmad & Ahmad, 2019). Five competencies that must be prepared by teachers to enter the 4.0 Industrial Revolution, such as educational competence, competency for technology commercialization, competence in globalization, competence in future strategies, and competency of counselors (Wahyuni, 2018). From these competencies, teachers must be able to equip themselves to increase their competencies, intended in the face of online learning which must have competencies in technology.

3. Making learning instructions clear, especially regarding their online learning schedule, explains the scope of learning such as competency standards, basic competencies, objectives and achievements. In this section, instructions should be clear to students how long and what should be done in online learning.
4. Preparing teaching materials by presenting material content, especially theoretical and practical learning for teacher theory learning, can make teaching materials that are easily understood in the form of images, animations, power point percentages, interactive multimedia, in the form of e-books, pdf, doc and other material formats. Whereas for practical learning, material content can be made through video tutorials, interactive simulations, Virtual Laboratories, and directly practiced through video conferencing.

5. Activities through interaction facilities can occur through chat facilities, discussion forums, and video conferencing for audio visual interaction in the presence of directly relevant images and audio. Other activities through other learning resources, for example, link to relevant learning sites such as digital libraries. It can also make use of portfolio activities, glossary, and others as a support.

6. Evaluation system, in online learning the availability of a question bank that can be used by teachers to evaluate students. Also provided is a collection of exercises to measure students’ abilities. In the online learning evaluation system, it must be clear whether the online test, for example, can use multiple choice cognitive tests, essays, matching, through the Quiz facility contained in the e-learning system. As well as evaluating through projects, which are then made to send projects through the assignment facility both in the form of documents and videos, here the teacher can provide an immediate assessment of the results of the assignments.

7. The application of online learning where institutions and teachers must be able to provide socialization to use e-learning for teachers and other students. It is important to motivate students to be able to learn independently through online learning, teachers must be extra hard to emphasize repetition of socialization and motivation in the initial implementation of online learning. The role of the teacher must also be able to do the facilitator and monitor students.

The benefits of online learning are as follows:

1. For students, the flexibility of student learning can occur freely and broadly without being limited by space, distance and time, including spread of corona virus or covid-19 that deal which directly confronts interaction. But, by using online learning, teachers and students can still interact online through discussions, questions and answers and other through chat, forum, activities and assignments. Students can experience learning in the era of the industrial revolution 4.0.

2. For Teachers, they can create effectiveness, flexibility of teaching and learning activities even when there is a vigilance corona virus outbreak or covid-19. Make it easy for lecturers to update teaching materials. The teacher is as a facilitator, and mentor in learning. Teachers can control student learning activities in e-learning so that teachers can find out what is done by students regarding the time of e-learning use, topics or materials learned, know what activities are carried out.

3. Online learning can occur at any time despite the covid-19 outbreak so learning is more flexible.

The limitations of online learning are as follows:

1. Requires a fast internet connection, so the need for an adequate internet network, especially in remote areas, therefore the government can add internet network services to the society.

2. Some educational institutions may be ready to carry out online learning, but it should be noted
that there is a digital divide when students learn at home because of the limitations of having internet access or devices that support online learning.

3. Online learning focuses learners on independent learning so that it is necessary to motivate students to learn independently online.

4. Information technology and computer skills are needed, especially for teachers who are technology-savvy, old teachers, and students must also be able to use technology.

5. Fostering a culture of learning that was conventional to be online, as well as repetition of emphases for the socialization of online learning.

V. CONCLUSION

The development of the industrial revolution 4.0 made it possible to innovate learning one of them with online learning to facilitate learning activities. Through online learning, students can continue to carry out education that can be accessed anywhere and anytime despite the Covid-19 outbreaks that must avoid direct contact. The results of the study found that the need for preparation is important and also clear steps in applying online learning. It should be noted also the role of the teacher, the role of students and learning activities. As well as, it is important to maximize the use of online learning to increase learning effectiveness. While from the limitations of online learning, it is recommended that the government support the infrastructure such as technological devices and the internet, educational institutions make clear socialization in the application of online learning, teachers also motivate and stimulate students to learn independently and civilize to want to learn online.

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