Developing Global Collaboration Skills In the Era of Unlimited Learning

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Abstract

At this time, the world of education has entered an era of unlimited learning. In learning theory, the era of limitless learning is known as seamless learning. The era of limitless learning demands the renewal of strategies, methods, media, and learning models. The era of unlimited learning is a challenge for 21st-century education. This study aims to describe collaboration skills using a seamless learning model. The study method used was to collect, understand, analyze, then conclude as many as 28 international journal articles published from 2010 to 2021. The analysis used content analysis of journal articles and reference books. The data that has been collected is then searched for similarities and differences and then discussed to conclude. This study concludes that in an era of limitless learning, educators are not the only source of information, online learning resources greatly facilitate students and can be accessed quickly. The forms of learning resources vary from text-based ones packaged in e-journals, e-books to audio-visual-based ones such as YouTube and various other learning resources. In the "era of limitless learning," without being bound by sources, space, distance, and time which is different from the previous way of learning, which was limited by school or campus walls, using learning resources from books and educators. Educators are required to be able to adapt to technological advances and be able to provide innovations in the learning process. Learning in the era of borderless learning needs to apply learning technology innovations such as heutagogi, seamless learning, blended learning, online learning, and mobile learning.

Keywords – Collaboration; Learning; Unlimited Learning

1. Introduction

The world is currently in an era of disruption, multiliteracy, digital, and the industrial revolution 4.0. The era of disruption is an era of massive innovation and change that fundamentally changes all existing systems, orders, and landscapes in new ways. Disruption is innovation. This is an innovation that will replace the old system with new ways. Disruption has the potential to replace old players with new players. Disruption replaces old, all-physical technology with digital technology, which results in something completely new and more efficient, and more useful. A multiliteracy is an approach that can be used to understand various types of texts and various forms of media produced by various new technologies through pedagogical concepts that allow teachers to present information to students using various forms of text. The digital era is a condition of time or life in which all activities that support life can be facilitated by the presence of all-sophisticated technology. The digital era is also here to replace some past technologies so that they can be more modern and also more practical. The industrial revolution 4.0 is a comprehensive transformation that covers all production aspects of the industry through the fusion of digital & internet technology with conventional industries.

According to Syamsuar & Reflianto (2019) the 4.0 industrial revolution has had a broad influence on increasing global income and quality of life for people in the world, besides producing prices that are quite competitive and cheap, increasing productivity and efficiency, low transportation and communication costs, increasing effectiveness in the field of logistics and global supply chains, and no less important, opening new markets and economic growth. The Industrial Revolution 4.0 is an industry that combines automation technology with cyber technology. This revolution is becoming a trend toward automation and the exchange of information in manufacturing technology. In addition, this includes cyber-physical systems, the Internet of Things (IoT), Cloud Computing, and Cognitive Computing (Putriani & Hudaidah, 2021). According to Mubyarto & Sohibien (2019) the industrial revolution 4.0 is the era of the digital industry where all parts work together and communicate in real-time, wherever and whenever, using IT (information technology) in the form of the internet and the internet. CPS, IoT, and IoS to produce new innovations or other optimizations that are more effective and efficient.

The development of information and communication technology innovation cannot be denied that technology cannot be avoided, so adequate preparation of Human Resources (HR) is needed to be ready to adapt and compete globally. According to Lase (2019), improving the quality of human resources through education, starting from elementary, secondary to tertiary

education, is the key to following the development of the Industrial Revolution 4.0. The impact of the Industrial Revolution 4.0 is also determined by educators, for example, teachers are expected to master skills and be able to adapt to new technologies and global challenges. In this situation, every educational institution needs to prepare a reorientation in education and literacy. Old literacy that relies on reading, writing, and mathematics needs to be strengthened by preparing new literacy, namely data literacy, technology, and human resources (Hermann et al., 2016). Data literacy is the ability to read, analyze and use data in the digital world. The next technological competency is the ability to understand mechanical and technical systems in the world of work. At the same time, personal competence is the ability to interact well, not rigid, and with character. Welcoming the era of the Industrial Revolution 4.0 requires education that is creative, innovative, and competitive. One of them can be achieved by optimizing the use of technology as a teaching tool which is expected to produce a result that remains actual or changes it for the better. Indonesia must also always improve the quality of graduates in line with the demands of the world of work and digital technology. Education 4.0 is the answer to the needs of the Industrial Revolution 4.0, where humans and technology are aligned to create new opportunities and generate innovation.

This change has accelerated since the Corona Virus-19 (covid-19) pandemic. The covid-19 pandemic has had a significant impact on the learning process around the world. Learning that was originally face-to-face became distance learning, especially learning that was done online. Distance learning is carried out as an effort to prevent the spread of Covid-19. In distance learning educators are not the only source of information, online learning resources greatly facilitate students and can be accessed quickly. The forms vary from text-based ones packaged in the form of e-journals, e-books, to audio-visual based ones such as YouTube and various other learning resources. In other words, we have now entered a new era of learning, namely the "era of learning without boundaries" without being bound by sources, space, distance and time that are different from previous ways of learning which were limited by school or campus walls, using learning resources from books and educators.

The presence of an era of limitless learning requires renewal of strategies, methods, media, and learning models that are more relevant to students' learning habits. The old learning model is no longer relevant to the ways and habits of student learning. This is the challenge of 21st century education which is the field of educational technology. The obvious challenge of 21st century education is the increasing need for education that is able to respond to global demands. Schools and colleges as educational institutions whose graduates are expected to have a

strategic role in social life. Education is expected to improve the ability to think creatively (creative thinking), think critically and solve problems (critical thinking and problem solving), communicate (communication), and collaborate (collaboration). Students are prepared to learn how to learn and are able to develop their potential to be able to adapt towards the development of civilization and collaborate globally.

2. Method

Literature research or literature review is research that examines or critically examines knowledge, ideas, or findings contained in an academically oriented body of literature and formulates its theoretical and methodological contributions to a particular topic. A literature review does not only mean reading literature but towards in-depth and critical evaluation of previous research on a topic. The method of writing this article is a literature review, which is studying by collecting, understanding, analyzing, and concluding as many as 28 international journal articles. In the process of collecting library study data, the researcher carried out three important processes, namely (1) editing: checking the data that had been obtained from the completeness, meaning, and harmony between one another; (2) organizing: organizing the data that has been obtained with the necessary framework; and (3) finding: conducting an analysis of the data that has been organized, and using the specified theory and methods so that conclusions can be drawn and answers from the problem formulation. Furthermore, to gain high credibility, the researcher believes that the literature being studied is authentic; 3 things are done, namely (1) data collection can be done without disturbing the object or research atmosphere, (2) data collection needs to be also supported by documentation, to check the data have been collected, and data collection is carried out in stages, and as many researchers as possible try to collect.

After all the data has been collected, the next step is to analyze the data to draw conclusions. Furthermore, to obtain correct and accurate data analysis results, the authors use content analysis techniques. Content analysis is research that is an in-depth discussion of the content of written information. Content analysis is used to analyze all types of literature, both in the form of books and journal articles. Its relation to the discussion is one of the author's efforts to facilitate understanding by analyzing the truth with the opinions of experts, which are then used as research references.

3. Result and Discussion

Now, learning is open to more than space, time, and resources. Learning can be done and take place anywhere, anytime, and with any learning resources. Nearly two years of learning worldwide previously conducted indoors has now turned into online learning through various applications, from WhatsApp, Google Meet, Zoom, and others. Learning can be anytime, with anything/anyone, and anywhere. Such an environment is called learning without boundaries or is popularly known as seamless learning. The term seamless learning was first not associated with the use of learning technology, as stated by Kuh (1996) stated that "the word "seamless" implies that what was once believed to be separate, distinct parts (e.g., in-class and out-of-class, academic and non-academic; curricular and co-curricular, or on-campus and off-campus experiences) are now of one piece, bound together to appear whole or continuous. In seamless learning environments, students are encouraged to take advantage of the learning resources that exist both inside and outside the classroom students are asked to use their life experiences to make meaning of materials introduced in classes". Seamless learning is a way of learning where students can learn in various scenarios, and they can easily switch between different learning scenarios or contexts (such as formal and informal learning, personal and social learning, etc.), with personal devices as mediators (Chan et al., 2006). The learning process moves beyond the acquisition of content knowledge to develop the capacity to learn smoothly, meaning that the learning environment is not only a formal environment but also an informal learning environment. The learning process is not only individual learning but also social learning. The word seamless indicates what was once believed to be separate between different parts (for example, in and outside the classroom, academic and non-academic; curricular and co-curricular, or on-campus and off-campus experience) is now one part, bound together together so that they appear intact (Kuh, 1996). Therefore, it is very important to link (bridge) the two learning settings (formal and informal), as well as individual and social learning, as well as physical and digital learning spaces (L.-H. H. Wong, 2013). Formal learning refers to learning in educational institutions, which is generally recognized in qualifications or certificates. Meanwhile, informal learning refers to learning resulting from daily activities related to work, family, or recreation. The implementation of these two learning strategies is carried out separately, even though the two learning strategies support each other to achieve learning objectives. There are several institutions that have tried to combine the two strategies. However, there is still a blurring of the boundaries between formal and informal learning (Kukulska-Hulme et al., 2009).

Wong (2013) said that it is not feasible to equip students with all the skills and knowledge to only rely on formal learning. Also emphasizing the importance of connecting the experiences of students in the classroom and outside the classroom to create smooth learning and academic success. Integrating formal and informal learning is one dimension of seamless learning.

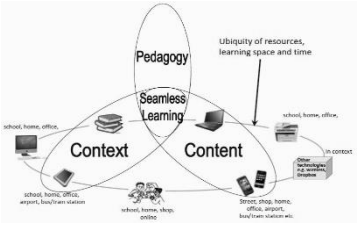

Figure 1. Pedagogical visualization of borderless learning: ubiquitous contexts, content and resources, space and time of learning

Source: Wong et al., (2015)

According to Wong et al., (2015), seamless learning is a learning model that contains the concept of continuity and continuity in the learning process that occurs without time and space limits. In learning practice, several writings use the term Mobile Seamless Learning (MSL). MSL is a learning model that contains the concept of continuity and continuity in the learning process that occurs without time and space limits. MSL physical-digital world. According to Wong & Looi (2011) there are ten dimensions of MSL, namely: (1) MSL1, which includes formal and informal learning (2) MSL2, which includes learning that is personal/personal and social, (3) MSL3, learning that occurs over time, (4) MSL4, learning that occurs across locations, (5) MSL5, access to ubiquitous-based knowledge (a combination of context-aware learning, augmented reality learning, and ubiquitous access to online-based learning resources), (6) MSL6, covering digital and non-digital worlds, (7) MSL7, Combining the use of various types of devices (8) MSL8, Seamless and fast switching between several learning tasks (such as data collection + analysis + communication), (9) MSL9, synthetic knowledge (prior and present knowledge and multiple levels of thinking skills or multidisciplinary learning) (10) MSL10, includes multiple pedagogical or learning activity models (facilitated by educators).

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The MSL visualization in Figure 2 is an ecological description of MSL, which places students as learning centers or learner-centric. The placement of students

as learner-centric does not mean that they are the center of attention of educators but are centers for producing knowledge that occurs in various contexts in multidimensional learning spaces. In this case, MSL is not only about learning anywhere and anytime, but learning happens continuously across contexts. Facilitated seamless learning (FSL) bridges two learning settings to be interrelated. Bridging between formal and informal learning (MSL1), individual and social learning (MSL2), and physical and digital learning spaces (MSL6). The following is a design framework for the FSL process.

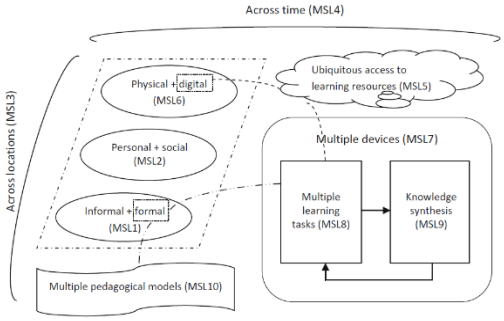

Figure 2. Visualization of Mobile Seamless Learning (MSL) Dimensions

Source: (L.-H. H. Wong et al., 2015)

In the MSL environment, students are encouraged to use existing learning resources inside and outside the classroom. Students are asked to use their life experiences to interpret the material introduced in class. According to Chiu et al. (2008), a ubiquitous learning environment allows smooth learning anywhere and anytime. Students can study without being distracted when moving from one place to another. Druin (2009) in Rogers & Price (2009), MSL mobile technology can be designed to enable children to move in and out of overlapping physical, digital, and communicative spaces. Mobility can be achieved individually, in pairs, in small groups, or as a whole". Modern e-learning systems are capable of offering real-time personalized learning support and solutions. Such an approach combines real-time assessment, learning, and pedagogical considerations into a good learning activity.

Rogers & Price (2009) put forward several advantages of using mobile technology in the implementation of seamless learning; namely: it can increase student motivation, increase student participation in learning activities, and develop social and cognitive processes, opening insight into various forms of information. They concluded that there are three challenges in designing seamless learning using mobile technology, namely (1) avoiding excess information, (2) avoiding aspects that can cause the focus of students' attention to be distracted by these devices, (3) understanding the constraints in supporting student collaboration that occurs naturally within a social context. The

importance of understanding how the process of social interaction can impact collaboration-based learning situations that occur in seamless learning scenarios. This socio-affective process becomes even more important when different physical and social learning environment constraints occur in different contexts, places, and times. In essence, how can educators increase student involvement in complex social interactions by using various types of equipment, including digital and non-digital, to enhance learning activities (Otero et al., 2011).

In the context of seamless learning, several researchers direct research on the use of seamless learning to improve academic abilities. However, the results of this study have yet to touch on the development of global collaboration skills specifically. Research on the effect of the seamless learning strategy in increasing student learning outcomes, one of which was conducted by Koutromanos & Avraamidou (2014). In this study, Koutromanos & Avraamidou (2014) used mobile games as a learning tool in formal and informal learning environments. The results showed that the experimental group achieved better learning outcomes than the control group. Likewise, the motivation of students is better than the control group. Hung et al., (2013) researched mobile learning. Cellular use can be recommended to motivate students in field observations. This research develops a series of tasks as scaffolding to support inquiry-based ecological observations in a mobile learning environment. This study states that the approach used can improve the performance of field observations. In addition, nearly 70% of learners can answer their own questions in the mobile learning environment.

Wong (2013) developed systematic, seamless learning by designing a facilitated seamless learning (FSL) learning environment. This study proposes a design framework for the FSL process, including MSL1, MSL2, and MSL6. Then the activity process cycle consists of learning engagement, personal learning, online social learning, and consolidation in the classroom. The results showed that the post-test scores significantly differed (increased) from the pre-test scores. Furthermore, research on the seamless project (Zhang et al., 2010), in this study developed educational ecology for continuous learning in elementary schools. Part of this project was to mobilize the two-year formal science curriculum and transform subject learning into a continuous learning experience.

Song (2014) conducted research on Bring Your Own Device (BYOD) in seamless learning, referring to technological devices where students carry mobile devices that are personally owned with various embedded applications and features to be used anywhere and anytime for learning purposes. Through the seamless learning inquiry strategy, the ability to analyze students can increase. Research on the effect of seamless learning on critical thinking skills was carried

out by L.H. Wong et al., (2012) explaining that the learning process with the help of mobile phones accentuates students' thinking habits and skills in interpreting daily activities and linking them with information obtained in formal learning. Learning designs that emphasize the diversity of contexts and the resulting artifacts. This research proves that seamless learning can train students' thinking and problem-solving skills.

Collaboration Skills

Collaboration is working with one or more people to complete a project or task or develop a particular idea or process. In the workplace, collaboration occurs when two or more people work together towards a common goal that benefits the team or company. Collaboration in the workplace requires interpersonal skills, communication skills, and sharing of knowledge and strategies, and it can occur in an offline office or between virtual team members. Indicators that show collaboration skills are actively contributing, working productively, showing flexibility and compromise, showing responsibility, and showing respect.

Working together as a team promotes greater productivity and fosters healthy relationships between work teams. There are at least four other benefits of collaboration. First, collaboration helps solve problems, which enables maximum results because it involves various professionals with diverse skills and knowledge. This allows team members to see from multiple perspectives. When team members can draw on the expertise of many people, they are also more likely to solve problems faster and drive better results in the long term. Second, knowing and analyzing self-potential. Working collaboratively can help you become more aware of your strengths and weaknesses. The collaboration will help you leverage your best skills and identify areas where you need help from people with different skills. As a result, you and your teammates can work better together to fill competency gaps. Third, sharing knowledge. Team members can learn a lot from other team members whenever they collaborate. A company that values collaboration will openly encourage its employees to share knowledge. Employees feel secure knowing the workplace values opportunities for growth and development, and they'll also feel motivated to expand their skills beyond their current job duties. Fourth, improve work efficiency. It's easier to work together to complete projects and meet deadlines when you have the support of your team. Several people working together can divide tasks to take advantage of each individual's greatest strengths. Instead of struggling to complete tasks you're uncomfortable doing, you can focus on areas you are good at and get immediate feedback from other team members.

For students to adapt to the global era, there are at least four domains of collaborating skills that are needed in solving a problem in the present and the future, namely (1) the ability to form teams, (2) study and work collaboratively, (3) implement solutions collaborative issues, and (4) managing differences within teams (Hill & Hill, 1990). The following describes the four capabilities:

a. Ability to form a team

Students generally find it very easy to work in teams, especially if the team members are close friends. However, sometimes there is often a prolonged conflict between them in forming a team. Conflicts occur because of different views, mindsets, backgrounds, statuses, goals, etc. These differences need to be accommodated in learning because they are very important in building peace in life.

There are several advantages to a diverse team. These advantages include that they will get more than other students with different genders, backgrounds, and abilities. Each student has certain advantages which other students may not have. According to Hill & Hill (1990) there are several abilities of students that may be needed at the team formation stage, namely (1) giving space for others, (2) making pairs/circles, (3) making eye contact, (4) staying in his team, (5) using a soft/slow voice, (6) using other people's names, (7) not giving up/giving up quickly, (8) taking turns, (9) using his mind/not using other people's hands, (10) forming team without disturbing others, (11) allowing other friends to talk, and (12) listening actively.

b. Ability to Work in a Team

After forming a team, there are several ways to improve team performance, namely creating tasks and forming a team organization, for example, a chairman, and secretary, who does task 1, task 2, and so on. That's the right way to make the team more optimal. The existence of a leader or spokesperson in a team will provide an advantage in completing tasks. Every role in the team spurs performance to be more effective and efficient Hill & Hill (1990). These roles include (1) observing (2) taking notes, (3) asking questions, (4) summarizing, (5) encouraging contributions, (6) providing a further explanation, (7) organizing completion, and (8) timing.

c. Problem-Solving Ability

There are several abilities that students need to have to work effectively in teams to solve problems. The ability to register ideas/ideas and alternative solutions to problems can be applied in starting

discussions. They can write it based on the agreement between them, and it can be repeated continuously until the final stage. The ability to build debates about alternative solutions, then agree on a solution to the problem is the most important part of the problem-solving team. When busy solving problems, students can explain their ideas or ideas or their positions. These discussions stimulate thinking and enhance the quality of learning Hill & Hill (1990).

d. Ability to Manage Differences

Each individual is essentially different. These differences, for example, intellectual development, language skills, experiential background, ways and styles of learning, talents and interests, and personality. To manage these differences, certain abilities are needed, which are very important both when participating in learning activities and for the future. Seeing problems from different angles, learning to organize, and mediating when conflicts escalate are invaluable skills for everyday and future life (Hill & Hill, 1990). The abilities needed to manage these differences include: (1) setting positions, (2) seeing problems from other points of view, (3) negotiating, (4) mediating, and (5) determining agreements

Developing Collaborative Skills in an Age of Limitless Learning

One of the learning models that can be chosen to develop collaboration skills in the era of limitless learning is seamless learning or learning without boundaries. The syntax of the learning process without boundaries can be carried out through 4 stages, namely: (1) contextual idiom learning in the classroom/campus/school or online in a virtual syncronous manner (virtual learning), (2) out-of-class, contextual, (3) online collaborative learning, and (4) consolidation in class. Visualization of infinite learning syntax is visualized in Figure 2. The process of the four activities is described below;

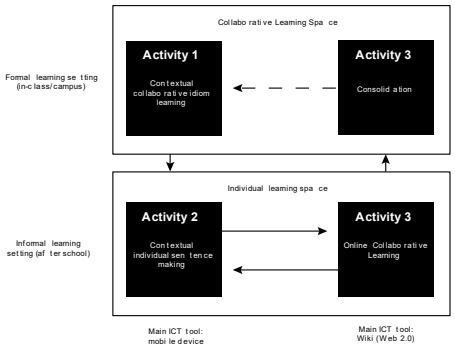

Figure 3. The Facilitated Seamless Learning (FSL) Framework

Source: (Wong, 2015)

Activity 1-Learning contextual idioms in class/campus/school or online in a virtual synchronous manner (virtual learning).

This activity is carried out to convey learning objectives, material that students need to master, activities that students need to do, and learning assessments that educators will carry out. At this stage, educators can use presentations via multimedia. Learning begins with essential questions, namely questions that can give assignments to students in carrying out an activity. Assignment topics follow the real world that is relevant to students. Furthermore, educators motivate and prepare students to be involved in further activities independently or in collaborative teams. Mann (2013) recommends a collaboration team with criteria namely (1) a learning team consisting of 3-5 people, (2) a learning team starting work with activities to match perceptions of the learning process to be carried out, (3) a team consisting of those who have a certain level of knowledge different backgrounds, and different experiences. These differences will have a positive impact on learning; for example, each individual brings strength to the team, each team member is responsible for their strengths, team members who are uncomfortable with the majority must be supported and proactively empowered to provide input, and (4) commit members to achieve a goal. Each collaboration team can carry out simple research, evaluate it, and discuss it in class. In this context, everyone in the team is a collaborative and productive player toward achieving the desired result.

Students must truly understand the concept of "team" with all its aspects. Lack of understanding of this concept can result in a lack of awareness of the importance of collaboration, unable to prioritize team goals over individual goals, and in turn can result in making mistakes in organizing meetings, ignoring deadlines for completing teamwork, not being fully responsible, and lacking can work efficiently. Each team must have a leader to lead meetings or meetings, be a liaison between the team and educators, and carry out other leadership functions. The team leader must also work with educators to deal with any problems that arise and require educator assistance. A team may face a conflict or problem that the team members cannot solve independently, so they must involve students in solving it. It could be that team members need to remember the important details of the work they have to handle. Therefore, it is very useful if educators provide it in written form, such as handouts, to guide students to carry out team activities collaboratively. Following are many strategies proposed by Howard (1999) to help teams focus on the main tasks they must do: (1) Distribute in writing instructions for implementing activities carried out by the team. The instructions are detailed so that students experience clarity in implementing them. In this way, students rely on more than mere memories or

notes made by each team member, (2) Make a schedule for the completion of temporary tasks, including the completion date of activities, note cards, and an outline for preparing reports. If a schedule has been prepared, for example, to carry out library and field research, carry out various skills in different classes with educators from different disciplines, or conduct meetings in other places outside the classroom, all of this must be included in the schedule, (3) Discuss with students and provide photocopies of evaluation sheets that can be used to assess aspects of team activities. This is useful for helping students understand how to complete their activities properly and optimally, (4) Ensuring that each team member has a record of activities that are divided into sections in order to organize the activities that must be completed. Assignment sheets, activity implementation instructions, and activity schedules must be attached to the front of the student notebook.

The division of responsibilities carried out by educators unwisely can reduce the success of collaborative work patterns. Often people argue that the division of labor for team members should be based on the mastery of skills they have previously possessed. For example, in a team of three people, one person is proficient in operating computers, another has an advantage in conducting research, and another has an advantage in compiling activity reports. It sounds ideal if the division of tasks is adjusted to each team member's mastery. Such division of tasks contains serious weaknesses because students are not trained to master and complete work in a wider scope which is demanded competitively when they enter the world of work later. As a result, students have weaknesses and limited opportunities to acquire or improve other important competencies. On that basis, he suggests that to achieve maximum results in working collaboratively, each team member accepts responsibility not only for tasks for which they already have skills or mastery but also for tasks they have not mastered while learning and improving their skills over the years. Complete activities with their team members. The modern working environment requires people who are able to appreciate the importance of responsibility, not only from the team as a whole but also from every member of the team. Therefore, it is very important that respect for this responsibility is developed optimally for students as preparation before entering the world of work.

Activity 2 - Out-of-class, contextual.

There are two learning activities at the out-of-class, contextual stage: learning/working collaboratively and presenting learning/work results.

a. Study/work collaboratively

At this stage of learning/collaborative work, students bring technological tools, for example, mobile phones, assigned to identify or

create contexts in their daily lives. Each team member independently or collaboratively seeks various sources to clarify the problem being investigated. It can also be student activities in designing and developing a project that needs to be done collaboratively. The source in question can be written articles, images, videos, or hypermedia stored in libraries, web pages, or even experts in relevant fields. Investigative activities have two objectives, namely (1) for students to seek information and develop an understanding relevant to the issues discussed in class, and (2) information is collected with one goal, namely to be presented in class, and the information must be relevant and accessible. Each student can deepen the material according to the division of tasks in their respective teams. Material deepening can be done through references (books, journals, magazines, internet browsing, and expert information). Outside of meetings with educators, students are free to hold meetings and carry out various activities. In these meetings, students exchange the information they have collected and the knowledge they have built. Students must also organize the information discussed so that other team members can understand the relevance of the problem at hand.

To develop collaboration skills, educators "transfer" all authority to the team through collaborative learning, while cooperative learning does nothing like this. Collaborative work gives students power, and they must be brave to take all the risks according to what has been agreed upon. It could be the results of the team's work are not approved, in an unconvincing position, or too simple, or produce a solution that is not in accordance with the educator's. This is based on the view that each person has a handle and contributes interpretative vocabulary, history, values, conventions, and interests. Educators may "not have the same perception" as students, so they cannot help students negotiate the limits of knowledge the community already has, even though they may master it academically. Each community's knowledge has a core of knowledge that he is a member of society who needs to get a role (but not necessarily absolute). To function freely in society, students must master enough material to become familiar with the community.

McCahon & Lavelle (1998) view collaborative learning as "transaction" oriented. This orientation views learning as a dialogue between students and other students, students and educators, and students and the community and their environment. Students are seen as problem solvers. This perspective views teaching as a "conversation" in which educators and students learn together through negotiation. The

negotiation process in collaborative learning has six characteristics, namely (1) the team shares tasks to achieve learning objectives, (2) team members give input to each other to better understand the problems faced, (3) team members ask each other to understand more deeply, (4) each team member empowers other members to speak and provide input, (5) teamwork is accountable to other (persons), and accountable to himself, and (6) there is interdependence between team members.

b. Presenting the results of collaborative teamwork/learning

In the current digital era, virtual exhibitions are more popular media presenting the results of student collaboration learning/work. Creating a virtual exhibition is the same as creating an offline exhibition. Making a virtual exhibition certainly makes a plan in advance so that the virtual exhibition is as expected. Several main stages must be fulfilled, one of which is the exhibition's theme. The theme of the exhibition can be agreed upon by educators and students, as well as the concept of the work of art that is carried. Because it will present the results of the study/work, the first step is to have the results of the study/work to be exhibited. Learning outcomes can be categorized into written, visual, audio, audiovisual, or multimedia. Exhibitions can be grouped into two: (1) solo exhibitions, namely exhibitions held individually with only one person presenting their work, and exhibitions of group work, namely presenting the results of learning from a collaborative study/work team. The next stage is the arrangement or decoration of the virtual room, and the virtual arrangement must also be supported by the works that will be exhibited. Work must have been collected in advance that students have done. The results of the work must be by agreement and based on the understanding of the learning material.

Various websites can be used to create virtual exhibitions for free or at no cost. One of these websites is artsteps.com. This site specifically covers works of art, photography, and painting, which professionals and the community widely used. This exhibition site not only exhibits works of art in the form of photos, but students can also interact with these photos to see the details of the works. The work is also given a description, how to make the artwork in video form, and so on, depending on the creator or developer of the virtual exhibition. So that with the interaction in the exhibition, students are expected to learn through this technology.

Exhibition execution is launched when virtual exhibition arrangements have been made. Students must prepare in advance so that the virtual exhibition (online) can be visited. Educators provide

understanding to students with technical material so that students can access the exhibition. The stages of preparation for the exhibition namely; (1) The teacher publishes through online media so that the exhibition can be visited by many public, (2) prepares electronic devices (devices) such as smartphones and laptops, (3) there is an internet quota/internet access so you can access online (4) mouse and keyboard, which function as student interaction with learning media in the form of virtual exhibitions.

Learner-centered learning can be achieved by building a learning system. As stated by Munir (2017) in his book "digital learning", this allows students to acquire a variety of learning skills that are more interesting and interactive, which is an understanding of mobile learning. According to Traxler in Munir (2017) mobile learning is learning delivered through technology. Mobile learning is considered part of improving the quality of learning by utilizing technology in a system called digital learning. In carrying out virtual exhibition activities, students are expected to be able to understand the material in the virtual exhibition. Virtual exhibitions not only display students' work, but virtual exhibitions are also considered a medium for learning fine arts.

To maximize learning output, work can also be presented via social media. Social media has many benefits for its users, especially because it is faster than conventional media, such as print media, advertisements, TV, brochures, and flyers. What's more, the sophistication of social media can reach its users over unlimited distances. With the rapid development of technology, many kinds of social media are now frequently used by Indonesians. Social media such as YouTube, WhatsApp, Facebook, Instagram, etc.

Activity 3 - Online collaborative learning

Online collaborative learning or Online Collaborative Learning (OCL) is an approach that goes beyond the boundaries of ordinary interaction. Collaboration leads students to shared experiences, the purpose of which is knowledge construction. Everett and Drapeau, cited by Stoytcheva (2018), argue that collaborative learning involves joint work where various knowledge and experiences are used to gain quality through clashes of different points of view and interactions where common ideas are brought up for discussion and developed through their participants. Take on different roles and responsibilities. Collaborative focuses on approaches and techniques that use the internet to facilitate collaboration and knowledge-building to reshape formal and informal education for the knowledge age and do so in ways proven to enhance learning (Harasim, 2017).

OCL is the development of a collaborative learning model carried out online. Collaborative learning is a learning ideology in which students are taught to collaborate, learn and grow together. If someone can cooperate in the learning process, it is hoped that in the future, they can become better citizens. Collaboration in online learning is described by Harasim (2017) in the form of a collaborative circle as follows:

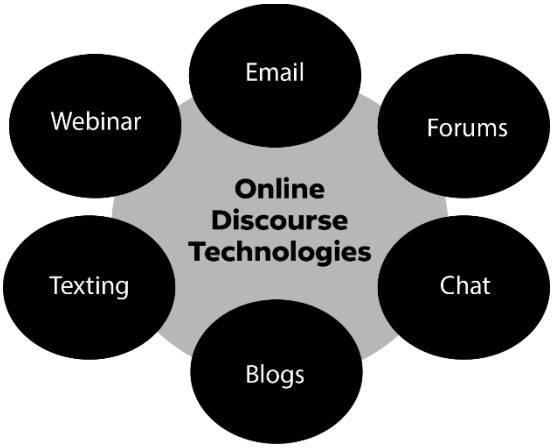

Figure 3. Examples of Using Online Collaborative Learning

Through OCL, students conduct peer assessments by commenting (with the comment tool) and correcting or enhancing their colleagues' sentences.

Activity 4 - Consolidation in class

Each study group or team presents the learning outcomes at this stage, as was done in the third stage. Students exchange knowledge by discussing in their teams to clarify their achievements and formulate solutions to team problems. This knowledge exchange can be done by means of students gathering according to the team and students or student assistants. Each team determines a discussion leader, and each member presents their work/learning results by integrating their learning outcomes to conclude. The next step is to present the results in a plenary (large class) by accommodating input from the plenary, determining the conclusions, and final documentation.

In the context of consolidation in the classroom, educators can use the recitation method, an assignment method that emphasizes delivery, repetition, testing, and self-examination through several assignments given by educators to students both during and outside school hours within a certain period of time. Certain conditions and results are accountable to educators to stimulate students to actively learn individually and in groups. Recitation has several objectives, including the following, namely (1) deepen student's understanding of the lessons that have been received, (2) train students towards independent learning, (3) students can share free time to complete assignments, (4) train students to find the right ways to complete assignments themselves, and (5) enrich experiences

at school through activities outside the classroom (Hamdayama, 2022). Stage four activities can be carried out offline, online, or blended. If done virtually, you can use virtual collaboration. Since the Covid-19 pandemic, virtual collaboration has been frequently used in business, industry, and higher education. The emergence of work-from-home, virtual collaboration, and various online-based jobs raises the possibility that, in the future, work can be done virtually. However, not all work can be done virtually. Carrying out virtual collaboration currently, many applications are available to support virtual work, commonly referred to as virtual collaboration tools, some of which can be used in virtual work, including Video Conference Software and File Sharing Software. Through Video Conferencing Software, a lot of communication occurs in non-verbal forms, such as seeing other people's expressions, movements, and postures. Seeing each other and interacting in person adds to the intimacy and trust in that communication, whether in the written word or through a voice call, can never really get across. So in virtual collaboration, you need video conferencing software such as Zoom, Google Meet, Skype, and virtual communication media. Video conferencing in virtual work is very important for collaborative work. Routine meetings can be held even though working remotely. In video conferencing, you can still "share screen" to present what will be conveyed while the meeting progresses. In virtual collaboration, apart from the important communication between colleagues, there is a need to share documents between colleagues. Certainly, at work, you must provide reports to your superiors or supporting documents other teams need. File-sharing software can share documents in virtual collaborations such as Google Drive, Dropbox, and Microsoft 365. Storing documents in soft files and storing them in the cloud was done before the Covid-19 pandemic hit. This is very effective and efficient because it is paperless, making it easy to search, so you can store many documents without taking up too much space. As a visualization, see figure 4: "The video conferencing tool 'Adobe Connect' is the setting of the online classroom. Here we can work in bigger and smaller groups through breakout rooms. See here a screenshot of our latest kick-off meeting."

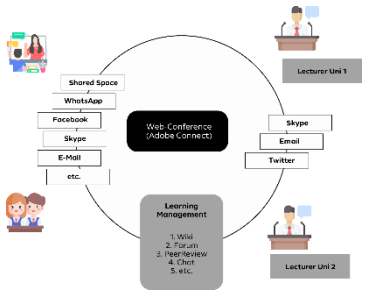

Figure 4. Virtual Collaborative Learning – cross teaching
Source: https://crossteaching.org/research/virtual-collaborative-learning/

The assessment is carried out by combining three aspects, namely: knowledge, skills, and attitudes. Assessment of the results of knowledge construction can be done with tests, documents, or reports. Skills assessment can be measured from the mastery of learning aids, both software, and hardware, as well as the ability to design and test. In comparison, the assessment of attitudes is focused on mastery of soft skills, namely activeness and participation in teams, collaborative work skills, and attendance in learning. The teacher determines the weight of the three aspects.

4. Conclusion

Education is undergoing significant changes; schools are moving from offline to online, and blended learning is used as one of the learning innovation efforts. Educators are one of many sources of information; online learning resources greatly facilitate students and can be accessed quickly. The forms vary from text-based ones packaged in e-journals and e-books to audio-visual-based ones such as YouTube and various other learning resources. This is a new era, namely the "era of learning without boundaries" without being bound by sources, space, distance, and time which is different from the previous way of learning, which was limited by the school or campus walls, using learning resources from books and educators. This has the opportunity to create learning that occurs naturally. Students can be accommodated to be able to study anytime and anywhere according to their wishes or learning mood of students. Educators are required to be able to adapt to technological advances and be able to provide innovations in the overall learning process. This implies that various challenges in the future will be in the form of how new technology can be used wisely and appropriately to respond to global needs. Future learning in the digital era applies learning technology innovations such as heutagogyi, seamless learning, blended learning, online learning, and mobile learning. With the development and progress of learning technology in the future, teaching staff (teachers, lecturers, and lecturers) must be more creative, innovative, and proficient in using digital technology. Students are prepared to learn how to learn and be able to develop their potential to be able to adapt to the development of civilization and collaborate globally.

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