How to Improve the Quality of Learning for Early Childhood? An Implementation of Education Management in the Industrial Revolution Era 4.0

Sri Supiah Cahyati[1], Tukiyo[2], Nanda Saputra[3], Julyanthry[4⊠], Herman[5]

Pendidikan Bahasa Inggris, Institut Keguruan dan Ilmu Pendidikan Siliwangi, Indonesia(1);
Pendidikan Profesi Guru, Universitas Widya Dharma Klaten, Indonesia(2)
Pendidikan Bahasa Indonesia, Sekolah Tinggi Ilmu Tarniyah Al-Hilal Sigli, Indonesia(3);
Manajemen, Sekolah Tinggi Ilmu Ekonomi Sultan Agung, Indonesia(4); Pendidikan Bahasa Inggris, Universitas HKBP Nommensen, Indonesia(5)
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Abstract

This study aims to analyze the planning, implementation, and supervision of learning in the 4.0 industrial revolution era at one kindergarten school located in Pematangsiantar since early childhood education is expected to produce creative, character, competent and innovative graduates which can only be done through the creation of conducive learning conditions supported by learning management. The research method used is a qualitative approach with descriptive research. The research was carried out at one kindergarten school located in Pematangsiantar with data collection techniques through interviews and observations. The results showed that based on existing competencies in the 4.0 industrial revolution era, there were innovations and a number of breakthroughs produced by teachers in improving the quality of learning in the form of curriculum development and the use of information and communication technology in carrying out several approaches and learning strategies. One of the breakthroughs that has been made is video learning for early childhood. All processes of innovation and breakthroughs in the learning process are supported by the ability of teachers to implement good learning management principles.

Keywords: *implementation, education management; quality of learning; early childhood; industrial revolution era 4.0*

Abstrak

Penelitian ini bertujuan untuk menganalisis perencanaan, pelaksanaan, dan pengawasan pembelajaran di era revolusi industri 4.0 di salah satu sekolah Taman Kanak-kanak (TK) terletak di Pematangsiantar sejak pendidikan anak usia dini diharapkan dapat menghasilkan lulusan yang kreatif, berkarakter, kompeten dan inovatif yang hanya dapat dilakukan melalui penciptaan lingkungan yang kondusif. kondisi belajar yang didukung oleh manajemen pembelajaran. Metode penelitian yang digunakan adalah pendekatan kualitatif dengan penelitian deskriptif. Penelitian dilaksanakan di salah satu TK di kota Pematangsiantar dengan teknik pengumpulan data melalui wawancara dan observasi. Hasil penelitian menunjukkan bahwa berdasarkan kompetensi yang ada di era revolusi industri 4.0, terdapat inovasi dan sejumlah terobosan yang dihasilkan guru dalam meningkatkan kualitas pembelajaran berupa pengembangan kurikulum dan pemanfaatan teknologi informasi dan komunikasi dalam melaksanakan beberapa pendekatan dan strategi pembelajaran. Salah satu terobosan yang telah dilakukan adalah *video learning* untuk anak usia dini. Semua proses inovasi dan terobosan dalam proses pembelajaran didukung oleh kemampuan guru dalam menerapkan prinsip-prinsip manajemen pembelajaran yang baik.

Kata Kunci: *implementasi; manajemen pendidikan; kualitas pembelajaran; paud; era revolusi industri 4.0.*

⊠ Corresponding author :
Email Address : yoe.lianthry@gmail.com (Pematangsiantar, Indonesia)
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Introduction

The industrial revolution is a rapid change in the economy from an agrarian economy to an industrial economy that has changed the way humans work from using hands to using machines in processing raw materials into ready-to-use materials and making fundamental changes in mindset, way of life, culture and way of working (Ningsih, 2018). Based on this theory, it shows that the industrial revolution changed the way people work and the perspective of humans following technological developments. However, based on the results of Qin, Liu, & Grosvenor (Qin, Liu, & Grosvenor, 2016) research, there is a gap in terms of technology utilization between the current conditions of the industrial world and the conditions expected from Industry 4.0, this is due to the company's reluctance to implement Industry 4.0 due to concerns about uncertainty of the benefits (Prasetyo & Sutopo, 2018).

The industrial revolution 1.0 began in the 17th century, where the steam engine was invented, which made humans switch from relying on muscle power to mechanical production machines that use steam power (Prasetyo & Sutopo, 2018). The 2.0 industrial revolution took place around the 18th century when industry switched to electric power by creating a walking wheel work system (Syamsuar and Reflianto, 2018). The industrial revolution 3.0 occurred in the 19th century, beginning with the use of information technology to support production automation systems in industry (Ningsih, 2018).

The industrial revolution 4.0 began in the 2000s which was marked by the presence of a virtual world that touched industry, in the form of connectivity between machines, data and humans into one (internet of things) (Ningsih, 2018). Industrial revolution 4.0. has potential benefits including speed improvement, service quality improvement, production flexibility and increased income in the development of the industrial revolution 4.0 (Prasetyo & Sutopo, 2018). Silalahi et. al. (2022) defined that there is a shift where industries engaged in digital technology are starting to dominate the ecosystem and the world economy such as Google, Alibaba, Grab, Gojek, Facebook and others (Sherly et. al., 2021). The industrial revolution presents several challenges, including data security issues, the loss of several jobs because they have been replaced by automation systems and the lack of quality human resources (Hamdan, 2018).

Ganovia et. al. (2022) stated that technology is important so that it has an influence on society in carrying out life in the era of the industrial revolution 4.0. (van Thao et. al., 2021). The era of the industrial revolution 4.0. creates competition in all fields, especially in the field of education so that efforts are needed that can create innovation and creativity that are tailored to needs (Maria & Sediyono, 2017). Learning innovations are carried out by utilizing information technology in the 4.0 revolution era and using a student-oriented learning approach, namely Student Centered Learning / SCL (Ramadhani, 2017). Learning innovation can be carried out efficiently, effectively and optimally if it is supported by learning management (Widyanto Slamet & Prihatin, 2018), because without learning management, learning cannot be carried out efficiently, effectively and optimally (Rukayah & Ismanto, 2016)

Based on Nirwana's research, educators who implement learning management in their classrooms get better learning outcomes than those who don't (Nirwana, 2014), further research was carried out by Gunawan, namely educators who apply learning management in the classroom to show better student learning outcomes (Gunawan, 2017). But different research results are shown by the results of Maria & Sediyono's research and the results of Suwito, Harun, & Ibrahim's research, namely the application of learning management in the classroom does not have a significant impact on student learning outcomes. different research is due to learning that has not implemented learning management principles such as planning, implementation and supervision properly (Suwito, Harun, and Ibrahim, 2017).

Several studies related to the industrial era 4.0 learning management include: 1) A research conducted by Abdurohman (2018) shows that the learning management of MTs Al-Falah Biru has a positive and significant effect on teacher performance in realizing student achievement. The relationship between this research and what will be studied is to discuss the results of learning management in religious education institutions. Researchers will develop research results in the form of implementing industrial era learning management 4.0. ICT-based in Hindu higher education institutions; 2) Subsequent research conducted Rayuni (2014) shows that learning

management at MAN 3 Palembang has been carried out well from the planning, implementation and supervision stages as well as efforts to increase learning management abilities in the form of adding insight by reading various supporting literature and improving facilities and infrastructure. learning support infrastructure. The relationship between this research and what will be studied is about learning management used in Islamic religious education institutions to improve the development of student knowledge in general, and 3) Subsequent research conducted by Maria & Sediyono (2017) shows that learning management at the Satya Wacana Hindu Elementary School Salatiga has the potential to implement ICT-based learning but there are still problems in planning ICT-based learning (Triana et. al., 2021) . This study develops an ICT-based learning management model which was developed at the planning stage of ICT-based learning. The relationship between this research and what will be studied is discussing ICT-based learning management in Christian religious education and this is used as a reference for researchers in developing technology-based learning management.

Researchers will develop research results in the form of implementing industrial era learning management 4.0. This study describes the application of industry 4.0 in early childhood education, so that it can be known and implemented more broadly.

Methodology

The research approach used in this study used a qualitative approach using descriptive research (Purba et. al., 2022). The research was conducted at one of kindergarten school in Pematangsiantar. Researchers collected various information from teachers who carry out learning using learning management principles. The first research data source came from informants, namely teachers who teach at one of kindergarten school in Pematangsiantar. Hence, the researchers also took the headmaster in the school to be interviewed in order to obtain data on the implementation of learning management in the industrial era 4.0 (Yakin, 2019).

The second research data source came from informants, namely parents of students to obtain data about student activities during the learning process. The third research data source is from the process of observing the implementation of learning in the classroom, to get an overview of the implementation of learning and the interaction of teachers and students.

The first and second research data collection techniques were unstructured interviews with teachers who carried out learning management and students who participated in the learning process. The sampling technique used is purposive sampling for teachers and snowball sampling for students. The third research data collection technique was using disguised observation to get a picture of the implementation of learning and the interaction of teachers and students.

To test the validity of the data in the form of data from interviews and observations, researchers will use source triangulation techniques. Test the validity of the instrument in the form of interview instruments and observation instruments, the researcher first determines what theory or concept will be used as a reference for interviews and observations. As for the reliability test on the interview instrument, it emphasizes the constancy of the results of the answers raised by the interviewees.

Data analysis techniques from interview data sources using field data analysis interactive analysis models from Miles and Huberman in Herman et. al. (2022). Meanwhile, the analysis of the data from the observations was carried out using the checklist method.

Results and Discussion

The competence of educators in implementing the curriculum is an important thing, with good competence the implementation of the 2013 curriculum which emphasizes student-centered learning can be carried out properly. The competence of educators in the 2013 curriculum applies a real, relevant, creative and meaningful learning process so that students' potential can develop as expected (Apri, 2015).

Based on the results of interviews with the principal of that kindergarten school in Pematangsiantar, the teacher who teaches in early childhood education has experienced education and training about the industrial era 4.0 and the use of technology in learning activities. Learning activities are currently starting to shift from the conventional delivery of material using the lecture

method, to the delivery of learning materials that prioritize the active role of students and the use of ICT in supporting learning activities (Andriani, 2015)

The use of ICT in supporting learning in the era of the industrial revolution 4.0. among others such as: (1) blended learning/video conference is a combination of e-learning and face-to-face learning using e-learning learning media in learning (Hariastut Ni Luh Putu, 2021), (2) e-learning, is a form of learning that is facilitated and supported by the use of ICT such as the internet (Hanum, 2013), (3) hybrid learning, is learning that combines face-to-face learning methods with online learning (Hendrayati & Pamungkas, 2013: 181), (4) distance learning, is a distance learning program that utilizes ICT as its main supporting media such as the internet (Silalahi, Silalahi and Herman, 2021) , and (5) resource sharing is an agreement made informally or formally that results in the activities of a group of teachers sharing information and so on that will be conveyed in the classroom, in order to meet the needs of other teachers for better information (Endang, 2019)

There are several ways to use technology in early childhood learning, including the following: a) multimedia technology where teachers and students use visual-based technology for the learning process, for example by showing animated videos about stories introducing fairy tales that show good attitudes to instill good character in children and can use augmented reality (AR) technology to show simulations of letters and numbers to introduce numbers and letters to early childhood, b) Internet technology can assist in the teaching and learning process which utilizes applications that are currently trending, namely search engines (google) where educators can search for teaching materials and learning resources in developing knowledge in early childhood, and c) utilization of Ms. application. Power Point to explain interesting teaching materials owned by educators so that the learning process in early childhood is more fun.

The application of e-learning by teachers and students, among others, during the learning process. The learning process that is carried out does not have to meet in class, but is carried out on e-learning applications. Another benefit obtained in the application of e-learning is that students can freely explore their abilities through technology media by utilizing the internet network at one kindergarten located in Pematangsiantar. The application of e-learning technology at at one kindergarten located in Pematangsiantar has indirectly been able to improve students' abilities in mastering the Internet of Things, Operational Technology, and Information Technology so that later they can produce graduates who are skilled and competitive in mastering data literacy as a form of finding learning resources (Syamsuar & Reflianto, 2018). In addition to the use of information technology media, innovations made by at one kindergarten school located in Pematangsiantar are with learning approaches and strategies to develop students' abilities to be ready to face the era of the industrial revolution 4.0. The Student Centered Learning/SCL learning approach or students as learning centers is the right learning approach in the industrial revolution 4.0 era.

Based on the results of interviews with the principal of one kindergarten school located in Pematangsiantar, it was stated that the *student center learning approach* applied at one kindergarten school located in Pematangsiantar used a problem-based learning approach by raising problems related to learning materials. The *student center learning* approach makes students active independently or in groups in learning, able to find sources of information so as to answer problems that exist in the learning process and have the ability to analyze, build and present their knowledge with relevant learning resources, besides that *student center learning* emphasizes the responsibility to students for learning activities to analyze and collect various information to solve problems that are used as learning materials (Verawati and Desprayoga, 2019). This condition makes students have the ability to think critically, creatively and innovatively in solving problems in the community, able to work together and communicate and have good character in behaving and acting.

Based on the results of an interview with EY as one kindergarten teacher, she stated that the steps taken in the process approach were conveying a problem in the form of a video, for example a video of the Ramayana story, then the teacher would form a group, the students carried out the process of observing to look for existing problems. in the video. The teacher is only a guide in explaining the purpose of the video. After seeing the show, students will make questions from the problems found, then students collect some facts and sources to answer these questions.

Students conclude from the answers that have been found and each group expresses opinions or answers found in front of the class.

The teacher becomes a facilitator during the discussion process, then the final product of students will produce a problem solving according to the courses taken (EY, one kindergarten school teacher, January 13, 2022). Problem-based learning is learning to take advantage of actual problems that are being discussed by the public but have relevance to the learning material, then students are asked to extract information to obtain solutions to these problems (Sutrisno & Suyadi, 2016:152). Problem-based learning can improve students' competence with critical thinking, active learning, problem-solving skills, communication skills, collaboration compared to other learning strategies (Rusman, 2017: 334).

In addition to using problem-based learning, the learning strategy used is a simple project learning strategy, namely a systematic learning strategy, through the stages of searching for designed questions, tasks and products. Project-based learning emphasizes student involvement in the implementation of simple projects at the beginning of learning, problem solving activities and other meaningful tasks, providing opportunities for active learning and ending by producing valuable and realistic products. The implementation of simple projects is carried out in an innovative and collaborative manner and focused on problem solving by students independently . Based on the results of an interview with SPNS as the principal of one kindergarten school located in, stated that the learning applied by that school is not only problem-based but also simple project-based which involves students in producing a product according to the courses taken. The stages of simple project-based learning at one kindergarten school located in Pematangsiantar as stated in the following paragraph.

The teacher will provide questions related to the ceremony, for example students are assigned to make nahunan ceremony facilities. Then students will make ceremonial facilities in the form of products, the results of which will be presented later by describing the functions and uses of the ceremonial facilities. This learning is able to make students directly practice how to make the facilities needed in the ceremony, so that it can stimulate and hone students' abilities in the Christian religious field. The application of ICT-based learning is not without obstacles faced by teachers and students. Based on the results of an interview with EY as a teacher at that school, she stated that problem-based learning and simple project-based learning require good planning in the form of problems that can be brought into the classroom and in accordance with the theme of the material to be taught. Making problems, both in the form of interactive videos and in text form, requires special skills so that the problems created by the teacher can be easily understood and interesting for students to work on (LT, teacher in Pematangsiantar, March 16, 2022).

Based on the results of an interview with LT as a teacher at one kindergarten school, she stated that after the learning tools were made, they prepared technology-based learning media to support the use of learning approaches and strategies in the form of internet networks, television, LCD projectors, computers, supporting computer applications/programs and so on. The use of technological devices during the learning process will not be optimal if educators are not able to implement the lesson plans that have been prepared and do not have good classroom management skills. Based on the results of interviews with LT as a teacher, she stated that learning using technology, one of which was a video obtained from the YouTube application, made students understand more about the material being taught because the learning was interesting and not boring (LT, a teacher, 12 January 2022).

Management is important in determining the success of an organization to achieve the goals that have been set. Management is the performance process of an organization in achieving common goals by implementing the functions of planning, organizing, implementing activities and controlling. Likewise with education in the learning process where the process can be carried out efficiently, effectively and optimally, if supported by effective management (Manullang, 2014: 210). The functions of planning, implementation, and supervision are management functions used by educators in carrying out learning (Davies, 2007: 310). Based on the results of an interview with LT as a teacher, it was stated that the management stages that we carried out started from the planning, implementation and supervision stages of learning (KM, other teacher, 12 January 2022). The same opinion was conveyed by LT, stating that the stages of learning carried out by the teacher started from the planning stage (introduction, and delivery of subject matter plans), implementation

(learning implementation) and supervision (evaluation of learning outcomes) (Per January 14, 2022). Based on interviews with teachers, students and the results of observations in the classroom at one kindergarten school located in Pematangsiantar, the stages of learning carried out are planning, implementation and supervision.

In addition, the implementation of learning carried out by some kindergarten teachers has also implemented a Learning Management System where students can use technology media to find learning resources in solving problems given by educators. Based on the results of an interview with LT as a teacher at the school, she stated that the existing technology at the FDA is very helpful in developing creativity and innovation for both teachers and students to carry out the teaching and learning process (LT, a teacher, 12 January 2022). Learning management that has been applied is very important to support the development of learning, especially one kindergarten school located in Pematangsiantar so that the goals that have been made through the Semester Learning Plan by looking at the achievements of graduates from that kindergarten school can be achieved.

Discussion

Because they believe we utilize language on a daily basis, many people believe learning a language is simple. Learning a language is not just being able to speak in it but also being aware of and comprehending the meaning that each uttered word or expression conveys. The majority of pupils find speaking and speaking challenging when learning languages, especially English. Having trouble expressing thoughts verbally, having a small vocabulary, having trouble speaking according to the norms of grammar, having trouble pronouncing words correctly, and lacking the bravery to speak out of fear of being incorrect are the usual causes of speaking difficulties. There are a number of helpful strategies to pursue in order to improve speaking abilities, including expanding vocabulary, reading aloud, learning basic English grammar, reading English texts, speaking English, listening to English songs, watching English films, and enjoying English subjects. This essay also covers the role-playing and picture-story media as instructional strategies for enhancing students' English-speaking abilities (Sari & Lestari, 2019).

Not only listen, take notes, but are active in the thought process. The ability to think at a higher level is one of the important competencies in the modern world, so it must be owned by every student. Creativity in solving problems in HOTS, consists of complete: 1) Ability problem. The critical thinking ability of early childhood tends to be low so that it requires stimulation in their current education. Optimizing teachers to help develop abilities is needed, based on the higher order of thinking skills indicator that higher order thinking skills used through the inquiry learning model can stimulate critical thinking skills in young children. 4-5 years according to the ability possessed. In addition, a literacy culture is needed so that children are able to have broad knowledge and comparisons with situations that occur so that they can explain or accept input from various points of view, and are familiar with renewable sources of information; 2) Ability to evaluate strategies used to solve problems from various points of view different. By having critical discourse skills, early childhood can solve problems independently, ranging from small problems to problems that require adult assistance. Like asking a lot of things around the environment and high curiosity. In this case, children are required to compile, express, analyze and solve problems in their daily lives. Improving creative and innovative skills following increasingly sophisticated technological developments, so that they can face competition, convey new ideas to others, are not ashamed to develop, and can be open and responsive to new and different perspectives. In addition, by improving communication skills through routine discussions or dialogues at home or at school, making communication habits a process of maturation and solving problems, and getting used to being able to work together in teams and collaborate with friends in solving certain problems with the assistance of the teacher; 3) Finding model-model different new solution which with the previous methods.

In improving critical discourse in early children, unique and fun methods are needed, such as using visual media, audio, games, or internet applications to improve thinking skills. Get used to answering questions regularly and providing knowledge through the surrounding environment, such as triggering curiosity about something, solving problems ranging from simple to levels that require decision making, and finding solutions to improve literacy by providing

books with visuals and topics that interesting. Higher order thinking skills can be trained in the learning process in the classroom. Therefore, in order for students to have higher-order thinking skills, the learning process also provides space for students to find ideas (Hidayati, 2020).

The following are some studies that have discussed the same problem as a comparison for this research, namely: 1) (Khaliq et al., 2017) in this research entitled "Efforts to Improve Students' Mathematical Critical Thinking Power by Using the Contextual Socratic Method" The results of the study explain if The results of this study indicate that there is an increase in students' mathematical critical thinking power by using the contextual Socratic method on the flat side of the subject of cubes and blocks, 2) (Inggriyani & Fazriyah, 2017) in this research entitled "Analysis of students' critical thinking skills in learning to write narratives in elementary school" The results of the study explain if the results showed that (1) The average critical thinking ability of fourth grade students was 55.04 which was classified as low, with the highest indicator being the indicator of analyzing questions at 82.99% and the lowest indicator being the indicator identifying assumptions at 0%. (2) the efforts made by teachers at SD Negeri 2 Pemaron to develop critical thinking skills, namely providing open questions and providing learning guidance. (3) the obstacles faced by teachers and students in developing students' critical thinking skills, namely inadequate school facilities, and lack of parental attention to their children's learning activities, 3) (Thohir et al., 2020) in this research entitled "Training on Writing Comprehension Questions Based on High-Order Thinking Skills for Private SMA/SMK/MA English Teachers in East Lombok Regency" The results of the study explain if PKM activities in the form of HO-based comprehension questions for English teachers in private SMA/SMK/MA in East Lombok district have been well implemented. The participants welcomed the activity and this can be seen from their enthusiasm during the activity and also from the responses they gave to a number of statements related to this service activity. According to the participants, this type of activity is very beneficial because it can boost their knowledge and understanding, which can afterwards improve education quality. They anticipate that such exercises will be followed up with more participants, more time, and more varied materials, 4) (Novriyanti, 2014) in this research entitled "Teaching speaking with critical thinking by guessing film ending at senior high school" High school students are expected to have the ability to speak English fluently and critically. But in reality, many high school students have difficulty in speaking English. This is brought on by a variety of issues, including a lack of vocabulary, an inability to come up with original ideas, and a lack of understanding of English pronunciation. These problems can be overcome by increasing speaking practice in class. Therefore, it is the teacher's job to create a classroom atmosphere and learning process that generates ideas, so that students are willing to speak and think critically. One way that can be used is the use of film. Films can be used in a variety of learning activities, one of which is by guessing the ending of the film (Guessing Film Ending). This activity is divided into three stages, namely pre teaching, whilst teaching and post teaching. At the Whilst Teaching stage, the teacher plays a film to watch together in class.

(Rohayati et al., 2019) describe that Critical thinking proposed by Chaffee, et al as a thought process to evaluate something carefully so as to produce smarter decisions and be accepted by the mind, that critical thinking involves the ability analysis and argument. Critical thinking standards in writing, especially the type of expository text, the themes of clarity, logic, relevance, accuracy of argument quality, accuracy in conveying something to avoid ambiguous meaning caused by fallacy, so that a text or writing must be coherent and coherent. (Hekmatiar, 2019) said that Teachers always train students' critical thinking skills by developing students' thinking power by not limiting their ideas but by directing these ideas. These activities can be carried out by paying attention to a problem topic in detail and thoroughly, identifying similarities and differences, conducting observation activities to understand information from various points of view, and considering the long-term consequences of the chosen solution. In addition, the teachers always train students to increase their English vocabulary. Encourage students to always increase their vocabulary mastery through listening activities such as news, films and other media, speaking, writing and reading exercises.

By constantly encouraging students to speak English, learning activities can continue to achieve their main results. English speaking activities can be carried out in a school environment by prioritizing fluency and content before grammar, pronunciation, emphasis and intonation. For

students, it is suggested that correcting speaking errors is not too frequent and not too stressful for students. Correcting students' speaking errors can be done after students finished speaking. Thus, students are not afraid and can be more confident in speaking English. By constantly encouraging students to speak English, learning activities can continue to achieve their main results. English speaking activities can be carried out in a school environment by prioritizing fluency and content before grammar, pronunciation, emphasis and intonation. For students, it is suggested that correcting speaking errors is not too frequent and not too stressful for students. Correcting students' speaking errors can be done after students finish speaking. Thus, students are not afraid and can be more confident in speaking English.

(Rahmawati & Ashadi, 2018) informed when students think critically, they need these skills as a foundation. The things that go to two are needed not only for the student's life now but also for the future. The Early Partnership for 21st Century Learning or P21 (2011) characterizes critical thinking as sufficient ability to reason effectively, use systems thinking, guide judgment and decision making, and solve skills. problem. If teachers embed these skills in the curriculum, they will result in educating the majority of citizens and preparing them for their jobs and future life. (Ginting, D. A., Hassan, M., Lestari, N. S., Rahmadhani, M., & Marpaung, 2020) to hone critical thinking by identifying main ideas, completing blank sentences, describing places or people, classifying phrases, vocabulary building, finding adjectives, playing games, matching pictures, collaborative descriptions, speaking, writing, reading, listening, and pronunciation exercises.

Teachers and educators need to be aware of the demands of the students. Teachers must also create engaging, appropriate, and creative assessments. In truth, many schools still evaluate pupils' comprehension using the traditional method (paper-based tests). The researchers discovered that students felt bored and had less interest in taking the tests based on observations of the learning process. Instead of doing the labor themselves, they would rather steal from others. The traditional approach (paper-based testing) hinders learning. If professors or students frequently become bogged down with students' assignments, it is not difficult. As a result, it can be difficult for educators to develop (Yulia & Susilowati, 2020).

This has consequences for the requirement for business English teachers to use a strategy that can lessen these preconceptions (Paramudia et al., 2021). According to (Trisnawati & Sari, 2019), Education professionals all over the world are pushing a variety of skills to help pupils in the twenty-first century prepare for future competition. Students require what are referred to as the "4Cs" of the twenty-first century: creativity, collaboration, communication, and critical thinking (creativity). It is crucial to successfully incorporate 21st century abilities into the educational process. A module is one of the teaching tools that is required. The outcome of researching, analyzing, and integrating 21 critical thinking courses, strategies, tests, and taxonomies is Ilyas's Critical Thinking Framework.

Based on the research mentioned above, it has been determined that the discovery learning method (discovery) is a teaching strategy that controls instruction in such a way that students learn previously unknown material without being told; instead, they discover it partially or entirely on their own. Activities and lessons in discovery learning are created in a way that allows students to understand concepts and principles on their own. Students identify numerous key concepts through making observations, categorizing, speculating, analyzing, and drawing conclusions. The school environment only teaches basic critical thinking, so parents' influence on implementation is in the sustainability and long-term aspect, which is related to parenting and the way in which we educate parents, both in terms of education and daily interactions. As a result, parents and teachers play a significant role in improving critical thinking skills in early childhood. This is due to habits or routines that are mostly done at home compared to school.

Conclusion

Human resources are needed who have certain competencies such as high understanding abilities, critical thinking skills, collaboration and communication skills. A number of breakthroughs and innovations are needed to improve the quality of the learning process, including curriculum development and teacher and student competencies. All innovation and breakthrough processes in learning will not work well if they are not supported by the ability of

teachers to implement learning management principles properly. One kindergarten school in Pematangsiantar has carried out several learning approaches by applying the use of information technology as a learning tool or media.

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