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Project-Based Learning as the Alternative for Distance Learning in Pandemic COVID-19

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Abstract

Distance learning during the pandemic raises many problems such as internet network limitations, bandwidth cap and fully-loaded tasks of teachers and students. This study aims to provide a theoretical illustration of project-based learning for distance learning classes. The researchers used the library method with several stages, including determining problems and research objects, collecting data, classifying and eliminating data based on needs, doing relevance checks, synthesizing findings and describing results. The analysis was conducted qualitatively based on classified data according to the research needs.. The results of the study indicate that project-based learning is suitable to be used as an alternative of distance learning during the pandemic with six aspects of considerations: 1) readiness , 2) safety, 3) monitoring, 4) thematic,

Keywords:*Covid-19, Distance Learning Classes, Education, Project Based Learning*

INTRODUCTION

Ministry of Education and Culture circular letter No. 4 of 2020 regarding the implementation of educational policies in the emergency period of the coronaviruses disease spread (Covid-19) point 2 mentioned four conditions related to learning from home. This determination officially points out online learning from home implemented in Indonesia for all levels of education. Learning is carried out in new ways and methods, but still must be able to accommodate students' learning needs in developing their talents and interests (Arifa, 2020). The various readiness of schools, principals, teachers, students and parents raises multiple problems. Schools with supported online learning facilities will have no obstacles in handling online learning. It is different from schools that have limited facilities and inadequate human resources.

Previous research showed that there are several obstacles experienced by students, teachers and parents in distance learning, including lack of technical skills, internet costs, additional work for parents in accompanying children learning, reduced communication and outreach between students, teachers and parents, as well as unlimited working hours for teachers (Purwanto et al., 2020). In addition, based on a survey conducted by the Indonesian Child Protection Commission, there are two most significant obstacles for students dealing with online learning, including stacking assignments and internet bandwidth cap issues (Detiknews, 2020). Pursuing the curriculum in the pandemic period is no longer relevant. However, there are still many teachers who give assignments to students with short deadlines due to the limited facilities availableDozens of tasks assigned to children harm teachers, parents and students themselves. Teachers have the burden of having corrections even online. Parents, especially working mothers, are required to be multi-talented, both completing office work from home and guiding their children in learning (Marliani et al., 2020). Students can

experience mental stress due to overburden tasks different from regular school days. Assignments are no longer practical because of the adverse effects as a result of unfulfilling children's learning needs. Learning becomes a burden that does not foster students' abilities, interests and talents but increases the children's stress while studying at home. parents and students themselves. Teachers have the burden of having corrections even online. Parents, especially working mothers, are required to be multi-talented, both completing office work from home and guiding their children in learning (Marliani et al., 2020). Students can experience mental stress due to overburden tasks different from regular school days. Assignments are no longer practical because of the adverse effects as a result of unfulfilling children's learning needs. Learning becomes a burden that does not foster students' abilities, interests and talents but increases the children's stress while studying at home. parents and students themselves. Teachers have the burden of having corrections even online. Parents, especially working mothers, are required to be multi-talented, both completing office work from home and guiding their children in learning (Marliani et al., 2020). Students can experience mental stress due to overburden tasks different from regular school days. Assignments are no longer practical because of the adverse effects as a result of unfulfilling children's learning needs. Learning becomes a burden that does not foster students' abilities, interests and talents but increases the children's stress while studying at home. both completing office work from home and guiding their children in learning (Marliani et al., 2020). Students can experience mental stress due to overburden tasks different from regular school days. Assignments are no longer practical because of the adverse effects as a result of unfulfilling children's learning needs. Learning becomes a burden that does not foster students' abilities, interests and talents but increases the children's stress while studying at home. both completing office work from home and guiding their children in learning (Marliani et al., 2020). Students can experience mental stress due to overburden tasks different from regular school days. Assignments are no longer practical because of the adverse effects as a result of unfulfilling children's learning needs. Learning becomes a burden that does not foster students' abilities, interests and talents but increases the children's stress while studying at home.

Fun learning alternatives following the curriculum demands are needed to make children comfortable in learning at home, as well as teachers and parents. For example, character building can be taught by parents by telling the story (Ardhyantama, 2017). Good learning outcomes can also be obtained by using flash learning media (Ardhyantama, 2019). Another activity can be done by improving literacy activities. Home Literacy Environment can be implemented by considering four factors, including family resources, parental literacy behavior and attitudes, parental beliefs and understandings, and family literacy activities and practices (Apriyanti, Ulfiah, 2019). Project-based learning that encourages students to learn independently through inquiry, as well as collaborative work to research and make projects reflecting their knowledge into other options that can be used (Bell, 2010).

Project-based learning strategies are proven to develop student achievement and learning activities (Sulistyarsi, 2016). This learning takes a long time, but fun, and can be done independently or collaboratively with parents, and can increase independence. With this strategy, students can use decent new technology skills, to become skilled communicators and advanced problem solvers (Bell, 2010).

Providing fun learning projects will be better than giving a stack of paper test assignments. This study aims to provide a theoretical illustration of project-based

learning as an alternative in distance learning during Covid-19.

METHOD

This is library research. The primary data were taken from research results, and the secondary data were obtained from various literature sources as supporting reference in the analysis process. Primary data sources were chosen from credible research results, both from Indonesia and overseas. At least 20 research papers are used as a resource. Papers are selected based on the year of research and their suitability for research. The papers of the last 10 years from accredited national journals and reputable international journals were used to obtain the necessary data.

The object of this research is project-based learning and learning situations in the COVID-19 pandemic. Library data collected will be analyzed based on the suitability of the theory. As for unrelated data will be eliminated. From the results of synchronization and elimination, the researchers get the outcome of whether project-based learning can be an alternative in distance learning during this COVID-19 pandemic or not.

The analysis step in this study starts from determining the problem and the object of research, collecting data, classifying and eliminating data based on needs, checking relevance, synthesizing findings and describing results.

RESULTS AND DISCUSSION

Problems in Distance Learning

Distance learning is widely used to provide learning opportunities for students and educators who have problems having face-to-face meetings in carrying out the learning process. In Indonesia, distance learning has been used in universities, one of which is open universities. This learning process and on the help of technology and information for the continuity of a good learning process and becomes a medium between students and teachers. Adequate facilities are one of the mandatory requirements for this type of learning model.

So far, distance learning is still dedicated to advanced education. This considers many things, one of which is the readiness of students to get material without doing face-to-face learning. Elementary school students with imperfect cognitive development and low level of conceptual understanding will certainly have considerable obstacles if they have to be forced to undertake distance learning. According to Piaget (Ibda, 2015) elementary school age children are still at the concrete operational stage (ages 6-12 years). This stage allows children to think using logic and can operate it but is limited to the objects that are observed by them. The abstract concept is still difficult to teach to elementary school children.

Covid-19 has had a major impact on the education system in Indonesia. Efforts to prevent the spread of covid-19 in the implementation of distance learning. Distance learning that is actually intended for high school is eventually forced to be carried out at a lower level of education. The low level of readiness, both from the level of student development, learning facilities, parents and teachers, causes various problems to arise in its implementation.

In distance learning the majority class was brought virtually. Online learning (e-learning) has negative and positive points. The facilities and supporting equipment become debatable in this case. Siahaan (2018) states that unready schools do not need to force using e-learning. But this study was carried out before the occurrence of a pandemic. During the COVID-19 spread, both teachers and students were forced to use technology in learning.

Various surveys were conducted to see the obstacles in distance learning. The two most difficult obstacles are the problem of limited internet networks and bandwidth cap (Jamaluddin et al., 2020). The data were taken from student respondents. Problems varied according to the level of education. Students

are trained and familiar to use smartphones, laptops and internet networks. Therefore, problems arise from those factors.

However, the problems become complex at the lower levels of education. (Purwanto et al., 2020) found that in primary school education the problems found were lack of technical mastery, internet costs as an additional burden for parents; parents were forced to accompany children during learning at home, less of communication and socialization among school residents, and unlimited working hours for teachers because they have to communicate and coordinate with parents, other teachers, and school principals.

Online learning requires adequate supporting and user facilities. Cultural differences, economic levels, education and school management, are very influential factors on the success of learning. Of the many problems arisen are dominated by network limitations, bandwidth cap and the activeness of students, parents and teachers.

Characteristics and Advantages of Project-Based Learning

Project-based learning is a learning model which is recommended by the ministry of education in carrying out higher-order thinking skills-oriented learning. Project-based learning shifting learning models that are more dominated by teacher, to student-centered. Learning is run by designing and creating a project which involves students actively and independently to be responsible for their respective projects.

Projects based on Indonesian dictionary version V are defined as work plans with specific targets and with a strict rule of completion. In learning, the project is inseparable from its original meaning. Project learning is full of ideas with clear objectives. This type of learning requires exact planning and consumes much time in the process.

Project procurement is a critical feature that is easy to remember. According to Thomas (2000), projects that can be used in learning are summarized into five aspects, namely centrality, driving questions, constructive investigations, autonomy, and realism. In project-based learning, those five aspects must be completed.Characteristics of project-based learning activities were identified as environments that students perceived as authentic or meaningful, collaborative work and communication via telecommunications, and activities that provided students with opportunities for both knowledge enhancement and skill-building(Murphy & Gazi-Demirci, 2001).

Authentic learning puts forward the meaning of learning to students. Learning is not just being able to read, write and memorize, it returns to the basic principles of learning to support the necessities of life, so looking for meaning is more important than just memorizing theories. Meaning in project based learning is obtained from a contextual approach, through projects prepared by students. Designing and carrying out projects using a balanced collaborative use of theory and practice so that students not only know the subject matter and memorize it but are able to understand and apply it in their lives.

Collaborative work is considered to provide a better learning experience than continuously using competitive learning methods. Learning is not just a matter of who is smarter and can survive all tests. The development of the world requires individuals who are ready to work together and have good social skills to be invited together to achieve common goals.

In fact, projects based learning can be carried out without the help of communication technology, as long as there are adequate learning resources are sufficient for students. This makes project based learning can be carried out anywhere by anyone, as long as the learning design prepared is based on the availability of facilities and infrastructure as well as adequate student and environmental conditions.

However, learning by taking advantage of technological advances provides a very different learning experience. Many unique and new ideas that students can adopt in carrying out the projects they compile can be obtained from the latest communication media and technology. Many students get inspiration on how to answer the problems that have been determined at the beginning of the lesson, as well as looking for the best, efficient and interesting way through shows available on online-based social media such as YouTube.

The presentation of good work gets its own attention in this model of learning. Good communication methods and media become familiar with students. Through activities, both thinking processes and skills are learned by students in a balanced manner with the right portion and proportion. Through project learning, there are many activities related to constructive search for knowledge through activities that one students' skills both cognitively and psychomotor.

Since the implementation of the 2013 curriculum in Indonesia, a scientific approach has been used in various levels of education. Some suggested and considered a suitable method with a scientific approach including discovery learning, problem-based learning and project-based learning (Sani, 2014). These learning models can develop creative and innovative students.

Project-based learning is claimed to have many advantages in improving students' abilities in the academic field. Higher-order thinking skills have been taught through project-based learning models. (Aziz, 2014) found that project learning can be used to improve science process skills and critical thinking skills of fifth-grade elementary school students. (Purbosari, 2016) showed that project-based learning made encyclopedias can improve student academic ability. Academic ability refers to the score of learning outcomes that experienced a significant increase in the second cycle of research.

Project-based learning has more value because it increases high order thinking skills, fun and sharpens the creativity. This learning has different characteristics from conventional learning, especially drilling paper-based tests. Learning projects appreciate student performance from the learning process to the results. This point is relevant to the 2013 curriculum and improves students' higher-order thinking skills.

Fun learning will get positive responses from students. Positive responses shown are seen in the feeling of well-understood, increase of motivation and interest in learning (Bahriah et al., 2017). fun learning eliminates students' pressure, especially the focus is only seen on the result. In this case, students cannot enjoy the learning process as the spirit of learning. Pursuing the high target on students' outcomes gives a mental burden on students and teachers, especially parents who accompany the child's learning process at home during the pandemic.

Relevant designed projects to the learning material by considering the students' and facilities available will provide a fun learning process and related to the learning objectives. Making a project requires a longer time than drilling questions, but the results will be memorable and remembered in students' memories. The deep impression in project learning was gained due to students' involvement together with their senses and thinking abilities. Three aspects of development, cognitive, affective and psychomotor, work together in project learning. Projects based learning completed with its strength is different from doing rote learning and completing tasks that only foster students' cognitive abilities. Activities fostering gross and fine motor skills, planning, project work processes, the results and evaluations conducted by students individually,

Project-based learning provides opportunities for teachers to adapt curricula to local contexts in various ways (Condliffe et al., 2016). Through this approach, the learning process becomes inseparable from the student environment. The material becomes more familiar with students.

Learning should be carried out by providing a contextual approach so that it becomes more meaningful for students. Students who live in rural and urban areas, of course, have different understandings and experiences regarding traffic or regulations. The contextual approach according to the conditions of students makes them have a better understanding of the learning materials. Students' sensitivity and sense of ownership of the material grows faster with contextual learning. Some consider project learning to be a serious, burdensome, costly, time-consuming, and very inappropriate learning model for primary school children because of their lack of proficiency. Project based learning can be adapted to the students' conditions, this means it includes elementary school students even in low grades. the teacher' s function in project based learning is as a facilitator, director and mentor. At the primary school level, projects can still be given according to their capacity. Elementary school children who are in the concrete operational phase need this type of learning that involves physical activities the most. Providing learning by utilizing available resources in the surrounding environment to providing meaning, it also provides real situations and objects to students with a low thinking phase. Elementary school students need more information that is real, can be observed, and even be felt or touched directly. This learning is precisely given to elementary school students by adjusting the level of difficulty. Considering the students' simple thinking processes, simple projects can be given while still providing intensive guidance.

Project-Based in Distance Learning

Problems in distance learning need immediate solving solutions. School readiness for both human resources and supporting facilities distinguishing the level of problems faced. The less availability of resources causes, the more significant problems faced. Distance learning with various obstacles is carried out related to the abilities of each school.

Several problems have been reviewed that arise in distance learning, including technology mastery, limited internet access and internet bandwidth cap fees. This condition causes the teacher to give more drilling questions for a certain period, and those tasks will be examined both online and offline. Learning demands students to be able to solve a series of questions. It becomes a comprehensive problem starting from elementary school to a higher level of education.

The level of students' and teachers' boredom and stress increase because of many demands. One of those demands points to pursuing a curriculum that must be completed with paper-based test tasks. The fastest way to master test questions is by drilling. This method is believed to be able to make students adapt and remember the types of items given quickly. It should be underlined that students can immediately recognize the types of questions, along with possible answers that arise. The students who can answer the questions well get a high score. This is a role learning type that was used a few centuries ago. Students who can answer questions may not necessarily understand what they are learning. The essence of learning to gain experience and knowledge is lost. The parents also get high demand to accompany their kids in learning.

Avoiding a less meaningful learning process requires a comfortable learning model used by all parties. Project-based learning is echoed that can motivate students' interest in learning, improve learning outcomes and raise their creativity (Adnyawati, 2011). Students drive their learning through inquiry, as well as

work collaboratively to research and create projects that reflect their knowledge. From gleaning new, viable technology skills, to becoming proficient communicators and advanced problem solvers, students benefit from this approach to instruction (Bell, 2010).

The use of a project-based learning model considering the level of student saturation with the learning assignment system. The majority of teachers in the early days of the pandemic in Indonesia, referring to the policy outlined by the minister of education, conducted a variety of assignment learning models. Some schools provide student worksheets to be filled in at home and the results are deposited by the parents. The results of student work will be checked by the teacher and replaced with new assignments on new teaching materials. The number of tasks that students have to complete continuously has a saturated effect on both students and their parents. Parents has to accompany students to do assignments, and this makes them complain because a lot of time is taken up being a teacher for their children at home.

Project based learning is actually also an assignment, which is to create a project. At the end of the lesson, the project is expected to emerge an idea or even a product related to the teaching materials. The difference is the form of the assignment itself. Yamashita & Yasueda (2017) in their research conducted fun project learning using activities outside classroom by using flipped learning based on community. Project learning differs from test and question based assignments. A series of learning activities carried out in project learning requires a lot of skills, for example: strategizing, speaking, seeking information, compiling data, communicating, processing data, persuasion and skills that require psychomotor skills such as how to assemble tools and so on . This type of activity requires many combinations of thinking and social skills and abilities. This combination gives the impression of fun learning because it accommodates more student needs and prevents students from feeling bored because they only do tasks of cognitive learning.

Project learning during the pandemic must consider the aspect of readiness and safety. Aspects of readiness include the ability of human resources and supporting facilities. The learning designer must be able to measure the potential of students and their family environment to determine the type of project chosen. Considering the ability of each student and family aims to find various projects provided according to each person's capacity. Readiness is not only limited to academic skills but also considered financial, psychological, physical and material availability. The safety aspect is prioritized during the Covid-19 outbreak. The tools and materials for the project must be available at the students' house environment, without having to go shopping in various shops. Ensuring that students can operate the equipment needed is also necessary. The teacher has to determine suitable project equipment to the student's condition. Therefore, the teachers need to discuss with students and parents before developing project-based learning.

Even though assisted by parents, the teachers need to monitor the students in doing the project. Learning collaborative with parents can be the solution if individual learning faces obstacles. Then, the project's progress reports can be done by considering the method used, even online or offline, also just send the documentation and photos by focusing on the aspects of trust. The communication among students, parents, and teachers is essential in distance learning to limit the problems. Excellent communication can limit classic problems, such as project manipulation. The parents and students have to understand each other that the project carried out aims to develop the students' abilities, so parental assistance does not exceed the proportion of student work activities themselves.

Communication, guidance and monitoring of student learning progress in distance learning can be done using the help of various social media. Baihaqi et al. (2020) in his research using at least three kinds of online learning media, namely whats app group, google form and SWAY office to carry out distance project-based learning. Learning carried out by remote monitoring utilizing online media has been shown to improve collaboration skills and oral and written communication. This research was conducted on fifth grade elementary school students. This shows that at the primary school level students can be guided in project work through several online media options that are deemed appropriate and easy to access.

The choice of media in distance learning determines the success level of learning. A good communication process between students and teachers can reduce student stress levels caused by difficulties in understanding instructions and learning materials. According to Ardhyantama and Idayani (2020), the choice of media was carried out by teachers based on accessibility, availability and affordability. The most widely used media for teachers to interact with students is the group whats app. This is done by considering ease of access and low usage costs.

For countries with a heavily loaded curriculum like Indonesia, thematic project choices can be used to reduce the number of student projects. One project can cover many learning contents. For elementary schools, thematic learning is familiar and can be done quickly because it only involves one teacher. Subject teachers in secondary schools must collaborate in developing projects so the project can contain a variety of learning materials without burdening students. Projects carried out thematically have better meaningful values because they tend to be implementation and easy for students to remember. In language learning, for example, interdisciplinary-based schemes can be used to improve students' English language skills (Poonpon, 2017).

Hapidin et al. (2018) developed a project-based thematic learning model. In its development, there are several stages that need to be carried out in designing learning processes, namely starting from developing themes, determining subject competency standards, learning methods, determining learning media and resources, developing teaching materials, making learning procedures and developing assessment tools . In general, the preparation of a learning plan can be done referring to these steps. Determining a theme is very important to see what competencies will be taught and determine further steps that will be developed. The theme covers the subject matter to be discussed. After the theme is determined, the teacher will easily sort out which material is suitable to be combined in the learning project.

A project with a thematic learning model is easier for students to gain knowledge holistically and also provides a contextual approach. Local themes that are familiar to students are even easier to design and apply in learning. By utilizing local wisdom, teachers can compile learning plans that take advantage of the availability of abundant learning resources in the student environment. This makes it easier for students to find learning resources for making projects. In pandemic conditions, teachers can prevent students from leaving the house by utilizing learning resources that are widely available in the student environment, of course this can only be done if the teacher really understands and masters the environment where students live.

The development of other project learning models was carried out by Aliyah (2017) who prepared learning support, namely syntax, social systems, reaction principles, support systems and instructional impact, along with learning support devices. This completeness was made to improve students' creative

thinking skills, which proved to be effective and efficient.

The teaching made with the Project-Based Learning Method contributed to the students' success more when compared to the teaching made according to the current program(Ergül & Kargın, 2014). The success of the project is influenced by the excellent planning and evaluation of each stage. Variations and innovations can be made by maintaining five principles in project learning, including 1) centered as the essence of the curriculum, 2) driving questions, 3) investigations, 4) autonomy related to student freedom of exploration, and 5) realistic (Mihardi et al., 2013). There are six stages in project learning: 1) goal description, 2) specify criteria, 3) background knowledge, 4) generated ideas, 5) implement solution-reflect, and 6) generalize (Mihardi et al., 2013).

There are six points as the consideration in using a project-based in distance learning, as presented in table 1.

Table 1
Project-Based in Distance Learning

Aspects	Scopes
Readiness	Human resources and supporting facilities
Safety	Affordability and operational capability
Monitoring	Process until the result evaluation
Thematic	Material combination to ease the students
Principles	Centered, driving question, investigation, autonomy and realistic
Stages	goal description, specify criteria, background knowledge, generated ideas, implement solution-reflect, and generalize

CLOSING

Conclusion

Project-based in distance learning during the pandemic can be used to overcome learning problems such as internet networks, limited bandwidth cap, and paper test assignments. Although it is not far from the learning projects carried out in class, the modifications can be done according to the needs and availability of facilities. Six aspects that needed to be considered in projects based on distance learning are 1) readiness, 2) safety, 3) monitoring, 4) thematic, 5) project learning principles, and 6) stages of learning. Considering the condition of students who are getting bored with distance learning, this research can be used as a fun learning process variation. By implementing project-based learning, students get ability on cognitive, social, affective, psychomotor and other skills. Teachers can take advantage of learning resources around students and monitoring through online applications that are considered the most suitable for their conditions. This research is still limited to a literature review, so in the future it is necessary to carry out a further research to find out the ideal project-based learning design for distance learning and how to solve the problems that arise.

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