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Implementation of Problem Based Learning (PBL) on Interactive Learning Media

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Abstract: The objectives of this research were to 1) analyze the need for the implementation of Problem-Based learning on interactive learning media based; and 2) to analyze the implementation of Problem-Based Learning on interactive learning media. This qualitative descriptive research used observation, interview, and documentation study techniques using the researcher as the main instrument. The data was analyzed by data reduction, explanation, comparison, and data conclusion. The data validity was done through triangulation. Based on the results obtained from expert assessment of the qualifications for applying Problem-Based Learning in interactive learning media, it is known that the stages in Problem-Based learning can be adopted and applied in interactive learning media. Applying the PBL model in interactive learning media suits class 4 social studies learning. This interactive learning media can help student learning during the COVID-19 pandemic so that learning is intertwined in two directions without meeting face-to-face.

Keywords: Interactive learning media, problem-based learning

1. Introduction

The aim of national education, according to Law Number 20 of 2003 article 3, is to develop the potential of students to become human beings who believe and fear Almighty God, have a noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic citizens. as well as being responsible. The learning process largely determines the achievement of educational goals. From the learning process that students follow, it is hoped that it can provide changes in students' knowledge, skills, and attitudes (Agus & Samuri, 2018).

Implementing the curriculum 2013 at primary school in religion is carried out through learning with an integrated thematic approach from class I to class VI. Integrated thematic learning is a learning approach that integrates various competencies from various subjects into various themes. Therefore, the basic competencies of Social Science Subjects are integrated into the basic competencies of Indonesian language subjects, the basic competencies of Pancasila and citizenship education subjects, and the basic competencies of mathematics subjects.

However, for grades IV, V, and VI, the basic competencies of sciences and social sciences subjects are independent, so the integration approach is multidisciplinary, even though the learning still uses an integrated thematic. Multidisciplinary integration is carried out without combining the basic competencies of each subject so that each subject still has its basic competencies.

As part of the Curriculum 2013 subject, social science aims to equip students to reach reasoning and aspects of values and norms. Social studies is important for students to connect in the family, school, and community environment. Social studies play a role so that students can understand social relationships and have attitudes that show the identity of the Indonesian nation in all aspects of life.

For this reason, teachers in implementing social studies learning should provide a learning experience that emphasizes the knowledge aspect and provides students with learning experiences that students can use to be skilled and behave well in their interactions in the family, school, and community environment. Social studies learning encourages students to develop competency attitudes, knowledge competencies, and competency skills of students as a basis for strengthening abilities in social, national, and state life. Castro (2013) stated that teachers must be able to prepare students as citizens who master knowledge, skills, attitudes, and values that can be used as the ability to solve

personal or social problems, as well as the ability to make decisions and participate in various community activities to become good citizens.

Siew et al. (2017) stated that the teacher is considered to have an important role in learning because the teacher interacts directly with students as the subject of the 2013 curriculum, so indirectly, the success of implementing the 2013 curriculum depends on the teacher's skills. Good learning is learning by providing the material that is directly experienced by students or seen by students, learning is delivered by instilling the concepts and characteristics of the essential values of the subject (Herijanto, 2012). Many teachers need help to develop student interest in learning social studies. From the student's point of view, social studies is a difficult subject to understand. The number of material concepts that must be mastered makes students need help understanding them.

Moreover, instructional media that can clarify concepts are rarely used by teachers (Hui & Wei, 2013). The impression arose that the teacher needed creativity to make lessons interesting for students. Consequently, these conditions affected student learning outcomes.

Therefore, the teacher must be innovative in delivering subject materials so that the students enjoy the learning. The teacher is suggested to use appropriate learning media which can be combined with learning models (Othman & Zamb, 2021). Therefore, it is necessary to analyze the needs of the learning model on interactive learning media and its implementation in the learning process.

2. Methodology

This study uses a descriptive qualitative method. According to Hammarberg et al. (2016), qualitative research methods examine the conditions of natural objects where the researcher is the key instrument. Data sources in this study were obtained from lecturers at Muria Kudus University, Class IV Primary School teachers, and fourth-grade elementary school students in the Jati District, Kudus Regency.

The data was collected through observation, interview and documentation study using observational guidance, interview guidance, and documentation study procedure. Data collected in the study were analyzed through data reduction, explanation, comparison, and conclusion. Meanwhile, the credibility test was conducted by observation extension, determination increase in the research, triangulation, peer discussion, negative case analysis, and member check.

3. Results and Discussion

The problem experienced in social studies learning is that students need to be more interested in social studies learning. Most students needed help understanding the material being taught. It was considered that social studies presented too much material, the books were too thick, and the language needed to be clearer for students to understand. On the other hand, teachers need help innovating learning activities, especially in making learning media, because of limited time and energy. Ultimately, the teacher only uses the existing textbooks and pictures in learning (Ismail & Khalib, 2020). The learning that has been carried out so far is still dominated by the lecture method by the teacher. The teacher explained the subject matter and asked the students to do assignments. Learning media was rarely used in social studies learning. Most teachers usually used only pictures on books or maps displayed in class. As a result, most students tend to be passive in the learning process, especially during the COVID-19 pandemic, which caused learning to be carried out online. It certainly created new problems in social studies learning. During distance learning, the learning process is carried out via cell phone. Students are known to have Android phones and can use them. The teacher created class groups and gave assignments through the WhatsApp group. However, giving assignments continuously makes students bored.

In response to such a condition, media had an important role in learning, so there was active interaction among students during learning and motivating students during the learning process. The application of varied learning models supported by instructional media can assist teachers in delivering material to students, especially elementary school students whose thinking stages are still at the concrete operational stage, so learning media are needed to help students understand the concept of subject matter.

Ramadhani and Koryati (2015) said that teachers as facilitators are expected to be able to create effective learning by the characteristics of students through the use of learning models and media adapted to the subject matter and student learning environment. Thus, the competence of knowledge, skills, and attitudes of students can increase. The use of media in the learning process can help students gain a better understanding, present interesting and reliable data, facilitate data interpretation, and condense information. Students who learn using learning media will tend to be more interested in learning than students who only learn by listening to the teacher's explanation (Pangestu et al., 2018).

Elementary school students' thinking stages are at a concrete operational stage that requires assistance in understanding social studies subject matter, which mostly contains theoretical concepts. Using instructional media will help students and teachers in social studies learning. Haryanti (2018) reveals that the unclear material conveyed during the learning process can be helped by presenting the media as an intermediary. By using the media, teachers feel assisted in the teaching and learning process; besides that, students also feel comfortable and not bored, and students can understand the material that has been taught. Putri et al. (2019) said that using interactive media as a learning

resource can expand and increase student knowledge and train students to think creatively and innovatively in learning. Arief (2009) stated that instructional media clarify the presentation of the message so that it is not too verbalistic, overcoming the limitations of space, time and sensory power; overcoming the passive attitude of students; and can equalize stimuli, experiences and perceptions.

Soliu and Elisha (2019) said that using instructional media can help students receive and understand the lesson's content optimally. Using media in the learning process will provide meaningful experiences for students. Kustyarini et al. (2020) believe that interactive learning media generate new desires and interests, arouse student learning motivation and provide an integral experience from the concrete to the abstract. In short, interactive learning media can convey messages in the teaching and learning process so that educational communication between teachers and students can effectively occur, making it easier for students to learn the subject matter. Learning media have various benefits for the realization of effective learning. Learning media is closely related to the components of teaching and learning activities. Media can make learning easier for students, foster motivation, help achieve learning goals, and increase student learning activities. Learning media can realize varied and effective learning. Learning media can fulfil the various functions above if the teacher can understand the types of learning media used.

Multimedia learning presents teaching materials in instruction and narrative with an interactive stimulus-response communication system, presented in a structured and systematic manner according to the applicable curriculum. If in multimedia the user, namely students, can interact with the media, then such multimedia is called interactive multimedia (Lai & Lin, 2020). The teacher becomes the key in the selection of the learning media used. The selection of instructional media can affect the effectiveness and efficiency of learning. Therefore, the selection of learning media must be done carefully by considering the characteristics of the media with various learning components so that later, the learning media is suitable, the learning process runs effectively, and learning objectives can be achieved. Good interactive learning media not only contains content material but can also help the student's analysis process and develop students' thinking skills. Thinking skills can be developed through observing, experimenting, reasoning, communicating, and concluding activities. These activities are contained in the problem-based learning model. Therefore, the material in interactive learning media can be made by containing the steps of the problem-based learning model.

Huijser et al. (2015) argued that students habitually seek, analyze, synthesize and apply information, with the teacher's guidance, to resolve the problems presented to them at the outset. Chung et al. (2015) stated that PBL focuses on student learning by involving students' active roles in solving problems according to the realities of life. Musdiani (2018) said that PBL helps students develop thinking skills, problem-solving, and intellectual skills and become independent learners. PBL encourages students to recognize how to learn and work together in groups to find solutions to problems in the real world. Problem simulation activates students' curiosity before starting to study a subject. PBL prepares students to think critically and analytically and to be able to get and use appropriate learning resources. Cintang et al. (2018) argued that PBL encourages students to have the ability to solve problems in real situations, build their knowledge through learning activities, focus on the material studied, carry out activities and scientific communication through group work, and use knowledge sources from the library, environment, and the internet.

Malinda et al. (2017) added that PBL triggered real problems in the learning process before knowing formal concepts. Students critically identify relevant information and strategies and carry out investigations to solve these problems. By solving these problems, students gain knowledge and develop critical thinking skills and problem-solving abilities. Through the discussion process, the knowledge is woven into student knowledge. Problem-based learning has the characteristics of real problems for students as a context for students to learn to think critically so that they have problem-solving skills and gain complete knowledge.

The application of PBL steps in the flow of using interactive learning media is by the directions in Minister of Education and Culture regulations No. 22 of 2016, which explains that learning is intended so that students can master various competencies in attitudes, knowledge, and skills and encourage students to produce a work or solve a particular problem. Learning that adopts PBL at every step focuses learning on students by actively involving students' roles to solve various problems that exist around students. Using varied learning methods and interactive learning media will help teachers create a pleasant learning environment to increase student motivation to learn and be active in learning.

Wibowo and Rosya (2018) said that the use of learning media can make students gain knowledge through direct experience so that learning is more meaningful; in this situation, the media can be used to provide more concrete and precise knowledge and easily understood by students. The use of instructional media can foster students' interest in learning. Students will be encouraged to learn when they have an interest in learning.

The student's problems in learning can be solved by integrating Problem-Based Learning into Interactive Multimedia Learning. PBL is a learning model that exposes students to the problems of everyday life in learning by raising problems. This model helps students develop thinking, problem-solving, and intellectual skills and become independent and independent learners. It consists of five learning syntaxes that can be applied easily to the learning media. The learning syntax used as guidelines in learning using PBL is observing, thinking, reading, creating, and reviewing. Here are the steps of the scientific-based quantum learning model, as shown in Fig. 1.

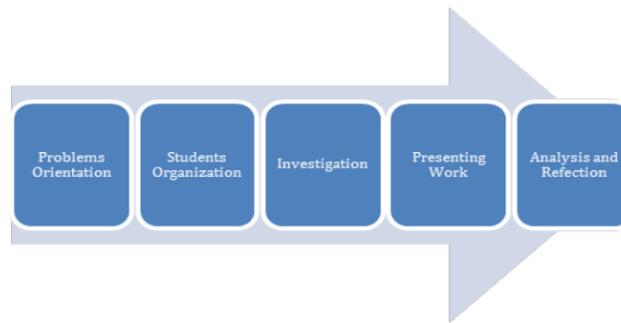


Fig. 1: Syntax of problem-based learning

At the problem orientation stage, the teacher provides problem orientation to students. Sani (2014) stated that the teacher presents the problem, discusses learning objectives, and describes the logistical needs for learning. The teacher also plays a role in motivating students to be actively involved in learning. Tibahary and Muliana (2018) argued that the teacher provides orientation about problems to students. The teacher helps students to create study groups. The teacher discusses the learning objectives, explains the materials needed, motivates students to be involved in solving the selected problems. At this stage, students can be asked to listen and pay attention to the instructional video shows. The teacher tells students that they will get a variety of information from the video.

At the student organization stage, teachers organize students to carry out investigations. The teacher helps students to define and organize learning tasks to solve problems (Sani, 2014). At this stage, students can be divided into several groups heterogeneously. Each group was asked to determine the group leader. The teacher conveys how to work and the steps for group discussion activities to solve problems together. Each group receives a group discussion worksheet that contains the problems according to the subject matter that has been presented by the teacher.

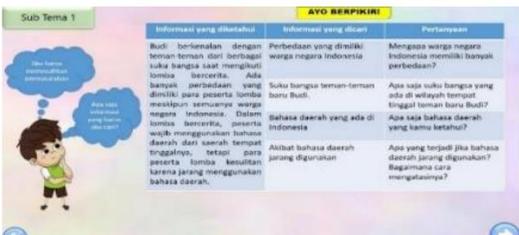
At the investigation stage, the teacher encourages students to obtain appropriate information, carry out investigations, and seek an explanation for solutions (Sani, 2014). The teacher encourages students to get and collect appropriate information, carry out experiments, to get explanations and solutions (Tibahary & Muliana, 2018). As a group, students discuss solving problems in a group discussion worksheet. The teacher goes around and monitors the work of each group and provides explanations and assistance to groups that are experiencing difficulties. The teacher strives for every student in the group to be actively involved in the investigation. The teacher ensures that group discussion activities run in an orderly manner.

At the presenting work stage, the teacher helps students to develop and present results. Teachers help students to plan appropriate and relevant products, such as reports, video recordings, and so on for the purposes of delivering results (Sani, 2014). Each group is asked to present the results of problem-solving in the form of a report, then present the results of their group work in front of the class. Other groups can respond to other group presentations. The teacher stimulates interaction between students during the presentation and the question and answer takes place. Each student is asked to record input and comments as material for the improvement of the results of their discussion.

At the analysis and reflection stage, the teacher encourages students to analyze and evaluate the investigation process. The teacher helps students reflect on the investigation and the process they are doing (Sani, 2014). In this stage, the teacher discusses the results of the discussion, clarifies the problems that have been discussed, and then concludes with the students on the problems that have been discussed.

Problem-based learning can increase student learning activities in a pleasant atmosphere. In PBL learning activities, students actively think, ask questions, and find their sources to solve problems. So that the learning process is not boring, PBL can develop students' ability to think critically. Problem-solving activities in PBL require students to think critically. Solving this problem does not depend on knowledge in one discipline alone but is related to the knowledge students have previously had and knowledge across disciplines. PBL encourages students to apply their knowledge to the real world. The problems used in PBL are problems related to students' daily lives (real), so students learn to solve these problems and simultaneously be able to apply this problem-solving in their lives. PBL directs students to become independent learners. In PBL, students are accustomed to being faced with a problem that must be solved, so in everyday life, students will independently apply their knowledge or try to find new knowledge to solve the problems at hand. A scientific-based quantum learning model can be implemented in Table 1.

Table 1: Implementation of syntax problem-based learning on interactive learning media

No	Leaning syntax	Leaning activities implementation	Visualization on media
1	Problem orientation	Let's observe, this section describes the needs to be studied and presents problems related to real life	
2	Student's organization	Let's Think, in this section are presented organizing learning tasks students have to do the appropriate issues that have been presented. Study assignments are organized into questions	
3	Investigation	Let's read, in this section students are encouraged to find appropriate information as a solution to problem solving	
4	Presentation	Let's work, in this section students are helped to be able to present problem-solving solutions in tabular form	
5	Analysis and reflection	Let's review, in this section students are asked to reflect on the solutions to problems that have been found	

Based on the results obtained from an expert assessment of the qualifications for the application of Problem-Based Learning in interactive learning media, it is known that the stages in Problem-Based Learning can be adopted and applied in interactive learning media. The application of the PBL model in the form of interactive learning media is very suitable for use in class 4 social studies learning. This interactive learning media can help student learning during the COVID-19 pandemic so that learning is intertwined in two directions, even without face-to-face meetings. However, this media can also be used to support the implementation of the PBL model in the classroom. This can be seen from the results of the expert's assessment, as shown in Table 2.

Table 2: Expert assessment results of the implementation of PBL on interactive learning media

No	Validation	Percentage	Qualification
1	Learning materials	93.75%	Very qualified
2	Media	96.43%	Very qualified
	Average	95.09 %	Very qualified

The expert's assessment results were supported by responses from teachers and students in grade IV Primary School in the Jati sub-district who had used interactive learning media that applied the PBL learning model, as shown in Table 3.

Table 3: Results of the responses of teachers and students in elementary school grade IV

No	Validation	Percentage	Qualification
1	Teacher	84.29%	Very qualified
2	Student	81.40%	Very qualified
	Average	82.85%	Very qualified

The data shows that the teacher and student responses are in the very feasible category, meaning that the application of PBL in interactive learning media makes students more interested and active in learning. This interactive learning media can be used to realize more varied online learning during the Covid-19 pandemic. The PBL model that is applied in this interactive learning media shows that learning can be done anywhere and anytime. In addition, this interactive media can overcome misunderstandings in learning and bridge interactions between teachers and students during online learning. Through the application of PBL in interactive learning media students will feel interested, motivated, and able to learn independently because this interactive media is operated via handphones where students today are accustomed to using handphones in their daily life. Therefore, students will be more comfortable studying on their own, challenged to find solutions, and gain new knowledge.

4. Conclusion

The data shows that the teacher and student responses are in the very feasible category, meaning that applying PBL in interactive learning media makes students more interested and active in learning. This interactive learning media can be used to realize more varied online learning during the COVID-19 pandemic. The PBL model applied in this interactive learning media shows that learning can be done anywhere and anytime. In addition, this interactive media can overcome misunderstandings in learning and bridge interactions between teachers and students during online learning. Through the application of PBL in interactive learning media, students will feel interested, motivated, and able to learn independently because this interactive media is operated via handphones, and students today are accustomed to using handphones in their daily lives. Therefore, students will be more comfortable studying independently, challenged to find solutions and gain new knowledge.

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