E-LKPD based on Problem Based Learning (PBL) Approach to Measure Mathematics Literacy Ability of Elementary Students

Dini Wahyu Mulyasari[1*], Gunarhadi[2], Roemintoyo[3] (iD)

[1,2,3] Master Program of Educaional Technology, Sebelas Maret University, Surakarta, Indonesia

A B S T R A K

Siswa di Indonesia masih mengalami permasalahan terkait rendahnya tingkat literasi matematika di Indonesia. Refleksi E-LKPD berbasis PBL berupaya mengembangkan kemampuan literasi matematika siswa. Tujuan penelitian ini adalah menganalisis kebutuhan sumber belajar yaitu E-LKPD berbasis Problem Based Learning (PBL) dalam upaya meningkatkan kemampuan literasi matematika siswa. Metode penelitian yang digunakan adalah metode deskriptif kuantitatif. Partisipan dalam penelitian ini terdiri dari 13 siswa kelas V SD, diikuti oleh 2 (dua) orang guru. Teknik pengumpulan data dalam penelitian ini menggunakan angket literasi matematika, observasi dan wawancara. Sedangkan hasil analisis akan dianalisis menggunakan teknik analisis interaktif yang terdiri dari reduksi data, penyajian data, dan penyajian kesimpulan. Hasil penelitian menunjukkan bahwa guru cenderung resisten terhadap teknologi, dimana guru masih menggunakan LKS konvensional dan non-masalah. Jadi, hasil tes awal menunjukkan literasi matematika siswa cukup rendah. Dapat disimpulkan bahwa melalui E-LKPD berbasis PBL akan layak sebagai sumber belajar, guru berharap siswa menjadi lebih terbiasa dan terbiasa dalam memecahkan masalah berbasis masalah sehari-hari dan ini menjadi salah satu pendorong peningkatan literasi matematika siswa. keterampilan.

A B S T R A C T

Students in Indonesia are still experiencing problems related to the low level of mathematical literacy in Indonesia. PBL-based E-LKPD reflection seeks to develop students' mathematical literacy skills. The purpose of this study is to analyses need for learning resources, namely E-LKPD based on Problem Based Learning (PBL) in an effort to improve students' mathematical literacy skills. The research method used is descriptive quantitative method. The participants in this study consisted of 13 fifth grade elementary school students, followed by two (2) teachers. Data collection techniques in the study used mathematical literacy questionnaires, observations and interviews. Meanwhile, the results will be analyzed using interactive analysis techniques consisting of data reduction, presenting data and presenting conclusions. The results showed that teachers tend to be resistant to technology, where teachers still use conventional and non-problem-based worksheets. So, the results of the initial test show that students' mathematical literacy is quite low. Can be concluded that through PBL-based E-LKPD will be proper as a learning resource, the teacher hopes that students will become more accustomed and familiar in solving daily problem-based problems and this is one of the drivers of increasing students' mathematical literacy skills.

1. INTRODUCTION

Mathematical literacy is one of the important competencies that must be possessed by every individual in the 21st century. This provision of mathematical literacy skills will help a person in facilitating problem solving in everyday life by describing, modeling, explaining, and predicting mathematical phenomena (Bolstad, 2020; Farhan & Satianingsih, 2021) These skills are used as a person's basic ability to obtain and process information (Kolar & Hodnik, 2021; Machaba, 2018). With good mathematical literacy skills, a person already has one of the competencies in adapting to the development of APS information and technology (Hwang & Ham, 2021; Sheromova et al., 2020). Mastery of mathematical literacy skills has also become one of the government's goals in the learning process, especially in mathematics, as written in the 2013 curriculum document (Permendikbud No. 57, 2014), that students must be able to understand mathematical concepts starting from explaining relationships, using concepts and algorithms, flexibly, accurately, efficiently, and precisely, in problem solving (Del Cerro Velázquez & Méndez, 2021; Isnawan & Wicaksono, 2018). Furthermore, students must also be able to use patterns as hypotheses in problem solving, and use reasoning on properties, perform mathematical

manipulations both in simplification, and analyze existing components to further communicate the results of the analysis that has been carried out in the mathematical process (Putra, 2021; Wiryanto, 2020).

The importance of mathematical literacy as a component of 21st century competence is not in line with mathematical literacy skills in Indonesia (Habibi & Suparman, 2020; Uscianowski et al., 2020). This is evident from the results of the 2018 PISA (Program for International Student Assessment) study. These results show that 71% of students' PISA math scores are below the minimum PISA competency. The student's average math achievement score is ranked 71 out of 79 countries. Indonesia got a score of 396 which is still below the average score of 489 (Firdaus, 2017; Habibi & Suparman, 2020). The conclusion for the results of Indonesian mathematical literacy skills at PISA 2018 that students in Indonesia are only able to reach level 1. The results of the Indonesian mathematics assessment based on The Trends in International Mathematics and Science Study (TIMSS) show that the achievement of Indonesian students in mathematics in grade 4 elementary schools is ranked 44 out of 49 countries with a score of 397 out of a minimum category score of 500 determined by TIMSS (Chamisah, 2017; Hadi & Novaliyosi, 2019). In the cognitive domain, these results indicate that students in Indonesia are still at a low level in the category of student ability based on the TIMSS (Nelson et al., 2021; Rizta et al., 2013).

There are three dimensions that form the basis for the PISA mathematical literacy assessment, namely: 1) the situation or context; 2) content; and 3) process (Gonzales, 2009; Purwanti et al., 2020). These three dimensions describe the place where events occur in general, the material studied and the stage of completion. To measure the level of students' mathematical literacy skills, there are indicators consisting of 6 levels and have categories that indicate that the higher the level achieved, the higher the students' mathematical literacy ability (Liu et al., 2021; K. D. Witte et al., 2015). In the context of fifth grade elementary school students, mathematical literacy is described as the ability to interpret symbols, read data, and solve problems through story problems (Rakhmawati & Mustadi, 2021; Schmitt et al., 2017).

In general, the ability of low mathematical knowledge is influenced by several factors, including; the material chosen, the learning provided by the teacher, the classroom environment, the support of the family environment, readiness in carrying out tests and the abilities of each student themselves (Nelson et al., 2021; Simamora & Tilaar, 2021). In addition to these factors, there are a number of determinants of the achievement of mathematical literacy, namely personal factors, instructional factors, and environmental factors (Fitrianawati et al., 2020; Muzaki & Masjudin, 2019; Rodhi, 2021; Zulkarnain et al., 2021). Personal factors are related to students' perceptions of mathematics and students' self-confidence to mathematical abilities. Environmental factors are related to the characteristics of teachers and the existence of learning resources and media in schools. And instructional factors related to intensity, quality, and teaching methods, which include strategies, and learning approaches.

The urgency of this research is to answer the problem of low mathematical literacy in Indonesia, especially in elementary school students. This study tries to describe the need for E-LKPD (Electronic Student Worksheet) combined with a PBL (Problem Based Learning) learning strategy or model. This PBL-based E-LKPD reflection seeks to develop students' mathematical literacy skills. The hope is that students' literacy problems get the right solution in terms of the learning resources used by students. LKPD (student work sheets) are sheets containing assignments that must be done by students (Pratama & Saregar, 2019). Activity sheets are usually in the form of instructions or steps to complete a task from the content being studied (Darmawan & Yuwaningsih, 2021; Puspita & Dewi, 2021). E-LKPD is also a stimulus or teacher guidance in learning that will be implemented and presented in writing, the message content of the E-LKPD must pay attention to the elements of graphic media writing, material hierarchy and selection of questions efficiently and effectively (Farman et al., 2021; Istiqomah et al., 2021).

PBL-based E-LKPD must be able to trigger students in developing literacy skills, because everyday problems are in the form of questions or assignments that are presented. PBL-based E-LKPD because, Problem Based Learning (PBL) is a model by involving students to solve problems through scientific stages so that they can learn knowledge related to problems and have problem solving skills (Farhan & Satianingsih, 2021; Mulyanto et al., 2018; Puspita & Dewi, 2021). The focus of the PBL approach lies in the process of students constructing their own knowledge, developing inquiry and thinking skills to a higher level (Priyonggo et al., 2021; Risnanosanti & Ristontowi, 2019). Students must be able to formulate a temporary answer to a problem that requires logical intelligence, courage and active solutions to real situations (Anazifa & Djukri, 2017; Hendriana et al., 2018). PBL emphasizes the broader teaching and learning process and creates opportunities to develop knowledge (Amin et al., 2021; M. P. Simanjuntak et al., 2021). The PBL learning model is suitable for improving students' mathematical literacy skills. This is because the PBL model learning activities have several benefits, namely increasing students' problem-solving skills, students will more easily remember the learning materials they have studied, increase

students' understanding of what they are learning, and motivate students to develop higher-order thinking skills (Firdaus, 2017; Hendriana et al., 2018; Priyonggo et al., 2021; Putra, 2021).

Referring to the various studies that have been carried out both specifically discussing and examining Problem Based Learning in mathematics learning (Kolar & Hodnik, 2021; Sekarwangi et al., 2021; S. F. Simanjuntak, 2019), the use of E-LKPD during the learning process (Bakri et al., 2020; Farman et al., 2021), and the importance of mathematical literacy (Sheromova et al., 2020; Umbara & Suryadi, 2019) as a basis for thinking to become third the topic into a single focus problem raised. The combination of problem-based learning-based Electronic LKPD is the main basis in this research compared to various studies that have been carried out, with the hope that through the design of the Electronic LKPD (E-LKPD) which was integrated with a problem-based learning approach, it can be a tool for teachers to measure abilities and even improve students' mathematical literacy, especially elementary school students.

Based on the results of the analysis on the importance of PBL, students' mathematical literacy basically requires a learning innovation as an effort to overcome this. Taking into account the facts that occur in the field, the combination of the E-LKPD with the PBL model is considered to be a breakthrough to spur students to think about solving problems and solutions to the problems given. PBL-based E-LKPD utilizes problems, questions, or puzzles as triggers for students' learning processes in using concepts in real life. This study has the aim of conducting an analysis in the form of identifying the needs of the model and design to create an E-LKPD that is in accordance with the characteristics of the material and truly answers the needs of students.

2. METHOD

This study uses a quantitative descriptive method (Dietmaier, 2017; Sugiyono, 2018). The use of this approach is in line with the research objective, namely in order to analyze and describe data in the form of numbers as an effort to explain a phenomenon and its meaning or conclusion. The research was carried out from December 2021 to January 2022, which is located at State Elementary School 4 along Glenmore, Banyuwangi Regency. The research subjects consisted of 13 students and 2 fifth grade elementary school teachers, while for the sample selection technique in this study using cluster sampling technique, with the hope that the selected sample will be representative of the competencies of various students.

Data collection techniques used consisted of mathematical literacy tests, observations and interviews. The instrument used in accordance with the data collection technique consisted of items, an observation sheet and a list of questions. The data obtained were then analyzed through interactive analysis techniques, with the procedure namely data reduction, data presentation and drawing conclusions. Besides that the research data were also analyzed descriptively in order to describe the data collected without making conclusions (Ambarsari et al., 2021; Fitrianawati et al., 2020; Widoyoko, 2012). Validity The instrument used in this study uses an expert judgment technique, where experts have competencies relevant to learning media, and mathematical literacy to assess the instrument used, where the results of expert judgment show that the instrument is can be used and distributed to students, as well as interviews with educators (Ambarsari et al., 2021; Widoyoko, 2012).

3. RESULT AND DISCUSSION

Result

The first part will explain about the test results on the level of Students' Mathematical Literacy. The following are the results of the mathematical literacy test to measure students' mathematical literacy skills based on the standard 6 PISA ability levels (Fitrianawati et al., 2020; Purwanti et al., 2020; Yusupova & Skudareva, 2020). There are 5 essay questions which are fractional material in class fifth even semester 2016/2017 academic year. Mathematical literacy test questions are show in Table 1.

Table 1. Mathematics Literacy Questions for Elementary School Students

No	Question
1	*Perbandingan usia ayah dan ibu ialah 4:3. Jika jumlah usia keduannya 76 tahun, berapakah usia masing-masing pada 3 tahun yang akan datang?* [The ratio of the ages of the father and mother is 4:3. If the sum of their ages is 76 years, how old will each be in the next 3 years?]
2	*Tim pramuka putra akan mengadakan percobaan pendirian tenda. tenda tersebut memerlukan 12 utas tali, Panjang keseluruhan tali yang dimiliki oleh tim pramuka putra adalah 18 2/5 meter. Berapakah meter Panjang tali setiap utasnya?*

No	Question
	[The Boy Scouts team will conduct a tent erection experiment. The tent requires 12 ropes, the total length of the rope owned by the Boy Scouts is 18 2/5 meters. What is the length of the rope in meters of each thread?]
3	*Lia memiliki 40 buku tulis yang digunakan untuk sekolah. 1/5 dari jumlah buku tulis Lia telah digunakan di kelas 5 dan 1/4 dari jumlah buku yang tersisa telah diberikan kepada adik Lia. berapakah jumlah sisa buku Lia untuk persiapan kelas 6?* [Lia has 40 notebooks that are used for school. 1/5 of Lia's notebooks have been used in 5th grade and 1/4 of the remaining books have been given to Lia's sister. how many books does Lia have left for 6th grade preparation?]
4	*Jumlah tabungan Rian dan Eka adalah Rp. 2.050.000. Perbandingan uang Rian dan Eka adalah 4 : 3. berapakah selisih uang Rian dan Eka?* [Rian and Eka's total savings are Rp. 2.050.000. The ratio between Rian and Eka's money is 4: 3. what is the difference between Rian and Eka's money?]
5	*Pak hassan memiliki ladang seluas $10\frac{5}{6}$ ha. Seluas $2\frac{1}{6}$ ha ditanami jagung, $5\frac{1}{2}$ ha ditanami singkong, dan sisanya akan ditanami kacang. Berapakah bagiankah yang akan di tanami kacang?* [Pak hassan owns a field of 10 5/6 ha. 2 1/6 ha will be planted with corn, 5 1/2 ha will be planted with cassava, and the rest will be planted with peanuts. How many parts will be planted with beans?]

The following is a description of the results of the mathematical literacy test for 13 students in grade 5 SD 4 throughout Glenmore which consists of 9 female students and 6 male students, the results obtained are as follows. Question Number 1: 5 students who answer questions according to the known context as well as all available relevant information with clear questions. Students are guided and stimulated to identify information from questions and complete instructions according to the completion process. There were 8 students who did not answer at all. From this, it can be seen that the mathematical literacy skills of fifth grade students have not been trained and are at level 1. This can be assessed from the variety of answers given by students, the problem solving of fifth grade students has not varied, according to the teacher's guidance.

Question Number 2: there are 7 students who answer the questions according to the context and know the meaning of the information available with clear questions. Students are guided and stimulated to identify information from questions and complete instructions according to the completion process. There are 6 students who did not answer at all. From this, it can be seen that the mathematical literacy skills of fifth grade students have not been trained and are at level 1. This can be assessed from the variety of answers given by students, the problem solving of fifth grade students has not varied, according to the teacher's guidance. Question Number 3: there are 9 students who answer questions according to the context and know the meaning of the information available with clear questions. Students are guided and stimulated to identify information from questions and complete instructions according to the completion process. There are 4 students who did not answer at all. From this, it can be seen that the mathematical literacy skills of fifth grade students have not been trained and are at level 1. This can be assessed from the variety of answers given by students, the problem solving of fifth grade students has not varied, according to the teacher's guidance.

Question Number 4: there are 8 students who answer questions according to the context and know the meaning of the information available with clear questions. Students are able to independently identify information from questions and complete instructions according to the completion process. There are 5 students who did not answer at all. From this, it can be seen that the mathematical literacy ability of grade 5 students has not been entrenched and is at the level of mathematical literacy 2. This is based on variations in student answers that are more diverse. Question Number 5: there are 11 students who answer questions according to the context and know the meaning of the information available with clear questions. Students are able to independently identify information from questions and complete instructions according to the completion process. There are 2 students who did not answer at all. From this, it can be seen that the mathematical literacy ability of grade 5 students has not been entrenched and is at the level of mathematical literacy 2. This is based on variations in student answers that are more diverse.

The results of further research will describe the results of observations on the activities of utilizing learning resources used by students. The results of the study show that the development of mathematical literacy at SDN 4 Throughout Glenmore is only seen during mathematics learning, so that the process of developing students' mathematical literacy has not been seen optimally. Mathematical literacy development activities are carried out by means of students understanding the function of the

topic being discussed by the teacher for everyday life. During the question-and-answer process by the teacher, some students were silent which indirectly implied that they did not know the function of studying the topic. Students seem more enthusiastic about the function of studying the topic when the teacher has explained the problems of the everyday world related to the topic, and tried to guess the problems related to the material.

The results of further observations relate to the learning resources used by teachers and students during the mathematics learning process. The learning resources used by teachers and students are only student worksheets, so the main material is written on the blackboard for students to copy. The teacher directly explains the function and procedure for completing the material being taught (the material for counting fraction operations). Efforts to deepen understanding related to the topic students are instructed to work on the questions that have been provided in the student worksheets. According to the researcher's observations, the worksheets used by students at the school were given through certain publishers. Student worksheets contain short material according to school level and practice questions. Student worksheets used in schools contain material for one semester. The visualization of the worksheets used by students is show in Figure 1.
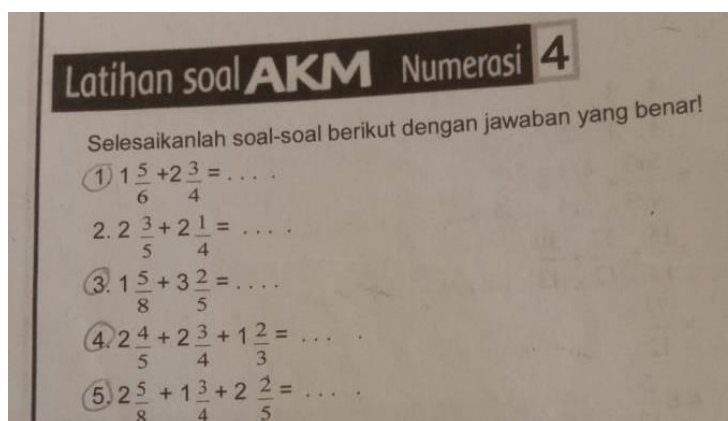

Figure 1. Visualization of Questions on Student Worksheets

Then the results of further research will show the descriptive acquisition of interviews with teachers who are also assigned as school principals. Interviews were conducted with principals regarding the development of mathematical literacy at the school level and teachers of mathematics subjects related to the development of mathematical literacy in the learning process. Glenmore learning experience related to mathematical literacy skills. Based on information from the principal regarding the development of students' mathematical literacy, it was stated that the school realized the importance of mastering literacy skills for students, but the literacy skills development program was carried out simultaneously with the learning process taking place. The principal also gives special instructions to mathematics subject teachers regarding the development of students' mathematical literacy skills.

To find out more about the development process and the level of students' mathematical literacy skills, especially the fifth grade at SDN 4 Throughout Glenmore, the researcher took the initiative to seek information from the teacher concerned. The teacher explained that during the learning process, the teacher tried to use examples of mathematical problems from everyday life, so that they were relevant to the students' condition. However, the teacher felt that he had encountered a problem when the students started working on the questions. If the questions are in the form of problem solving or story sentences, students still often ask the meaning of the question. The results of the interview discussed the causes of the obstacles in the development process and the low mathematical literacy of students. Further information relates to the causes of students' unfamiliarity in dealing with problem-solving-based questions.

According to the teacher, the learning resources used by students are student worksheets (LKS). However, student worksheets (LKS) do not support the development of mathematical literacy, because the questions contained in the LKS do not contain problems with the type of problem solving (direct mathematical sentence questions). These constraints cause there is no correlation between the development of mathematical literacy carried out by teachers and student learning activities at home. If students are given homework in the form of problem solving, they tend not to be done, and if students only do assignments in the LKS, the students' mathematical literacy skills do not develop.

Discussion

The results of the students' mathematical literacy test in the field showed that students' mathematical literacy skills, especially at the State Elementary School 4 Sepanjang Glenmore, were still low. During the process of completing the test, several times students still need to be guided or stimulated related to the question in question, so that students understand the context of the problem. These results indicate that students are not used to dealing with and solving problems based on that guide the development of mathematical literacy. The causes of low mathematical literacy include: (1) the weak strength of students' mathematical reasoning and the ability to apply it in everyday life; (2) Indonesian students are less trained in solving problems with characteristics such as those on TIMSS and PISA; (3) students' low interest in mathematics (Jung et al., 2019; Liu et al., 2021; Rodhi, 2021).

One of the reasons for the weakness of students' mathematical reasoning abilities can be because students are not trained in applying mathematical principles in everyday life. In practice, mathematics learning is often delivered using the lecture method and drilling practice questions. The practice questions given by the teacher must be varied and improve students' mathematical reasoning abilities, but what often happens during the mathematics learning process is that the questions that students do do not have good variety and quality so as to improve students' mathematical reasoning abilities (Schmitt et al., 2017; Siregar et al., 2021). HOTS-based questions can be used as a measure of quality and variation in training students' mathematical reasoning (Ramlee et al., 2019; Simamora & Tilaar, 2021; Supriyatin et al., 2019).

Practice questions that are direct mathematical sentences do not give students the opportunity to construct their own mathematical sentence formation or solutions to everyday math problems (Ahn & Edwin, 2018; Sheromova et al., 2020; Yakub et al., 2019). The results of this observation related to learning resources illustrate that one of the causes of the low mathematical literacy of students, it is because there are no presence of learning resources that support the development of students' mathematical literacy (K. De Witte et al., 2015; Yusupova & Skudareva, 2020). Learning resources that do not support this cause students are not accustomed to forming mathematical sentences from mathematical problems in everyday life. This can be seen during the mathematical literacy test process. To form mathematical sentences, students still often ask the teacher for help in understanding the meaning and orders of the test questions given. In accordance with the statement that state mathematical literacy skills are formed when the student has a deep knowledge of the mathematical concepts being studied (Hapsari, 2019). The relationship between the development of mathematical literacy skills and the teacher's efforts to reflect on the learning topics to be studied with problems in everyday life in addition to increasing understanding of these topics is an effort to increase student learning motivation. With high motivation and knowing the function of the topics studied, students are expected to master the topic well (Alan & Afriansyah, 2017; Muzaki & Masjudin, 2019).

As seen in the results of observations of student learning resources that the quality of the questions is not able to grow students' mathematical literacy skills because they are at a low level or LOTS. In an effort to develop students' mathematical literacy, the results of observations during the learning process and the learning resources used provide an illustration that the teacher has tried to provide a relationship between the topics studied and problems in everyday life at the beginning of learning (Melasevix et al., 2021; Yolanda & Wahyuni, 2020). The problem of developing students' mathematical literacy occurs at the most important learning stage, namely the direct construction process of students in studying a topic, that the questions or problems that students solve do not stimulate students' understanding to a higher level (Hapsari, 2019; Zulkarnain et al., 2021). The questions that are worked on both questions from the teacher and learning resources (Student Worksheets) do not stimulate students to solve a particular problem because they are only in the form of mathematical sentences, so students lose the bridge between the concepts being studied and the problems of everyday life. These results are in accordance with several causes of low mathematical literacy, including: (1) students do not have the ability to make mathematical sentences from a particular problem; (2) understanding of the concepts being studied is still shallow; (3) less thorough in understanding the commands in the problem; and (4) the low critical thinking ability of students in deciding a solution to the problems in the problem (Liu et al., 2021; Yang et al., 2020).

The problem of the incompatibility of learning resources with the teacher's vision and mission in developing literacy skills is the biggest obstacle. The content and quality of learning activities in textbooks as learning resources influence students in improving their mathematical literacy skills (Nursyifa et al., 2020; Ramda, 2017; Yakub et al., 2019). This is based on the opinion that the level of quality of learning activities and practice questions in textbooks affects the learning experience both in theory and practice. Teachers are well aware of the urgency of LKPD in improving students' mathematical literacy, so when discussing the development of PBL-based E-LKPD in an effort to increase mathematical literacy, teachers feel interested and hope that the contents of the LKPD are in accordance with student needs. The teacher

hopes that the PBL-based E-LKPD can train students independently in solving math problems in everyday life (Darmawan & Yuwaningsih, 2021; Puspita & Dewi, 2021; Ramadhana & Hadi, 2021).

The implication of this study provide insight related to PBL-based E-LKPD is designed as a learning resource and a means of practicing mathematical literacy independently and relevant to technological developments. One of the factors for developing mathematical literacy is the ability or habit of students in solving mathematical problems in everyday life (Kolar & Hodnik, 2021; Purnama & Suparman, 2020; Samosir, 2022). Students with high mathematical abilities because they are used to solving everyday mathematical problems tend to have high levels of mathematical literacy skills compared to students who have low mathematical abilities and are not accustomed to solving mathematical problems (Salsabila & Pradipta, 2021; Zainiyah & Marsigit, 2019). The factor that students are not accustomed to in dealing with everyday math problems is because students feel insecure about their mathematical abilities. Students' image of difficult mathematics learning in students' self-mindset ultimately reduces motivation to study further mathematics (Melasevix et al., 2021; Nelson et al., 2021). This research still has limitations, namely limited to the need for e-LKPD for learning in elementary schools, but still cannot determine an attractive e-LKPD design and has not yet reached the stage of developing e-LKPD that is ready to be used in the learning process.

4. CONCLUSION

The results of this study concluded that the low mathematical literacy ability of elementary school students was caused by students' unfamiliarity in dealing with problem-solving-based practice questions. So that students tend to feel difficult and afraid when faced with learning mathematics with problem solving models. In addition to the teacher's role, the role of learning resources used by students is important for the development of students' mathematical literacy. Facts on the ground show that student worksheets as learning resources used by students as a means of practice do not support the development of students' mathematical literacy. The results of the theoretical analysis and relevant research examined in this study stated that PBL-based E-LKPD as a solution to teacher problems in developing students' mathematical literacy skills was an interesting thing and needed by teachers. Various learning activities, practice questions and PBL-based E-LPD designs are designed according to PBL learning principles and student characteristics. It is hoped that the PBL-based E-LKPD can help teachers in efforts to improve students' mathematical literacy skills.

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