



Emibaru: Interactive E-Modules Based on Problem Solving Ability for Fifth Grade Students in Elementary School

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ABSTRAK

Menyelenggarakan pembelajaran yang bermakna adalah hal yang krusial untuk mengakomodasi pengembangan kemampuan pemecahan masalah siswa. Penelitian ini dilatarbelakangi dari rendahnya kemampuan pemecahan masalah siswa sekolah dasar dalam menyelesaikan soal cerita berkaitan dengan matematika, sehingga perlu adanya upaya guru untuk mengembangkan bahan ajar untuk siswa dalam meningkatkan kemampuan pemecahan masalah matematika. Tujuan penelitian ini adalah untuk mengembangkan E-module Interaktif Bangun Ruang (Emibaru) dan mengevaluasi kemampuan pemecahan masalah siswa kelas V dalam penggunaan e-modul interaktif tersebut. Pendekatan kuantitatif dan metode quasi experimental dengan desain pretest- posttest control group design diterapkan dalam penelitian ini. Teknik sampling simple random sampling dengan 12 siswa kelompok eksperimen dan 9 siswa dari kelompok kontrol. Teknik pengumpulan data adalah wawancara, observasi, dan tes Instrumen yang digunakan adalah lembar wawancara, lembar observasi, dan tes essay. Teknik analisis data menggunakan Uji-T berbantuan aplikasi SPSS 23. Hasil penelitian berdasarkan analisis Uji-T menunjukkan $t_{2,237}$ dan nilai Sig. (2-tailed) adalah $0,037$ pada $df_{19} < 0,05$. Dinyatakan terdapat pengaruh e-module interaktif bangun ruang (Emibaru) terhadap kompetensi matematis pemecahan masalah pada materi bangun ruang (kubus dan balok).

ABSTRACT

Creating meaningful learning is crucial to accommodate students' problems solving ability development. This research is motivated by the low problem-solving ability of elementary school students in solving mathematical word problems, hence the need for teachers to make an effort in developing teaching materials for students to improve their mathematical problem-solving abilities. This study aims to develop a spatial interactive e-module (Emibaru) and evaluate the problem-solving abilities of 5th-grade students in using the interactive e-module. The quantitative approach and quasi-experimental method with a pretest-post-test control group design were applied in this research. The sampling technique was simple random sampling with 12 students from the experimental group and nine from the control group. Data collection techniques are interviews, observations, and tests. The instruments used were interview sheets, observation sheets, and essay tests. The data analysis technique used the T-test assisted by the SPSS 23 application. The results based on the T-test analysis showed $t_{2.237}$ and the value of Sig. (2-tailed) is 0.037 at $df_{19} < 0.05$. It was stated that the spatial interactive e-module (Emibaru) influenced problem-solving mathematical competence in geometric materials (cubes and blocks).

1. INTRODUCTION

Education is a means of advancing the potential possessed by humans. The role of education is essential to develop the quality of being fully human. Through the educational process, students continue to be educated with learning to improve their abilities and talents (Acar et al., 2021; Suntani et al., 2021). One way to develop students' potential is through learning mathematics. Until now, learning mathematics continues to be taught at various levels. SD is an educational institution that provides mathematics learning for students to develop human potential and quality of social life. Crucial mathematics material is given to all students at the elementary level to equip students with systematic, critical, and logical mastery (Hwang et al., 2021; Sulistyanningrum et al., 2019). In its development in science, mathematics always influences other sciences. Mathematics always contributes to various branches of science. Therefore, mathematics is

part of science connected to everyday life and is an essential element in education. Developing intellectual development is vital for students, primarily through mathematics (Anderha & Maskar, 2020; Kho & Tyas, 2020). So, learning mathematics is a way for students to think, understand or solve problems in the natural world.

Creating meaningful learning is crucial for students. Previous study revealed how to create meaningful learning, namely the importance of designing and developing learning in a student environment where students are the target of learning and the socio-cultural community where students live (Septianti & Afiani, 2020). The characteristics of advance-class students, according to previous study include: 1) Interested in everyday life (concrete practice), which creates a tendency to work more practically; 2) Very practical, curious, willing to learn; 3) Interested in things at the end of the period because the expert explains that is the beginning of a particular subject and subjects that stand out in that factor; 4) Up to about 11 years old, children need educators to complete their tasks, and 5) Children now prefer to frame peer meetings, usually to be able to play/role together. Piaget's theory reveals that school students especially in class V, there is a concrete operational stage, namely the age of 7-11 years, where children develop the capacity to follow (protection), sufficient power, carry out arrangements (sort from smallest to largest and vice versa), and deal with number ideas (Juwantara, 2019; Penagos-Vásquez et al., 2021).

The main goal of mathematics education is to provide explanations to students to solve problems. NCTM reveals that problem-solving abilities or skills are math skills at a high level. Problem-solving is an activity to solve story problems, deal with non-routine problems, practice mathematics in real life or different situations, demonstrate, and make guesses (Ghulam Behlol et al., 2018; Gunadi et al., 2022). The concept of critical thinking from Polya can be applied. Polya's problem-solving stage is understanding the problem, strategizing, performing calculations, and re-examining (concluding) (Asri, 2018; Daulay & Ruhaimah, 2019). The incident above is the same as in elementary schools, namely that the mathematical competence of problem-solving skills in mathematics is not maximized. The results of the researcher's interview with informants, namely educators in class V of Cacaban 1 Public Elementary School, Magelang City, on Friday, February 18 2022, showed that some students had weak problem-solving skills. In the geometric material, students find it challenging to story math questions related to problem-solving. When students are given questions that apply stories to material, they feel confused, so they often ask the teacher for an explanation regarding the meaning of the questions. In addition, students already have the notion that mathematics is complex, even for easy things they have suggested, so they feel that it is difficult.

Another factor affecting the low problem-solving mathematical competence in grade V is that teachers rarely use learning models that have not developed competence skills, especially during distance learning. Even though teachers have tried to convey learning with technology-based learning media, such as making learning videos, they cannot replace the teacher's role when accompanying students directly (Nurdiana Hidayanti et al., 2022; Syafitri et al., 2021). With the state of distance learning, teachers can only explain now through Google meetings. Students generally have low mathematical mastery. This can be seen when solving word problems to solve the problem. They still struggle to understand the problem, strategize, do calculations, and re-examine (concluding). Meanwhile, mathematical ability is one of the important abilities that should be developed in students at school. Previous study revealed that problem-solving skills are important for students to have as a fundamental skill in learning mathematics and as a general goal of mathematics education (Buchori, 2019).

The strategy carried out by the teacher has not been able to provide a good understanding of students related to problem-solving mathematical competence because learning is carried out in a one-way system. For example, the teacher only provides instructional video media, so there is no optimal feedback between video media and students, especially geometric objects. Another strategy is when the teacher only explains or, in other words, the teacher uses the lecture method, so students will understand little by little what the educator is teaching. However, if educators always use lecture techniques in current distance learning, let alone learning geometric shapes, students will get bored over time. The lecture method that is used too often is considered less effective (Blumberg & Fisch, 2013; Gupta et al., 2022). The low problem-solving skills are caused by the lecture technique used in learning mathematics in elementary schools and the theoretical methodology with dominant lecture strategies and assignments, which will be less than ideal (Mulyati, 2016; Rahayu et al., 2019).

Interactive learning media can optimize mathematics learning activities. Its characteristics make interactive learning media attractive, especially for elementary school students. Interactive learning media can accommodate user responses. As stated by previous study that interactive is a process of empowering students to control the learning environment (Mustika et al., 2017). Interactive media is adapted to the characteristics of students, especially fifth-grade elementary school students who can respond to stimuli from the computer device. By using interactive media, students can interact using the instruments used so that they are more flexible in learning. Interactive media is a means to interact between media and users.

Implementing the 2013 curriculum at the elementary school level coincides with the demands of developing education 4.0. During the industrial revolution, instruction was marked by increased connectivity, artificial intelligence, visuals, and the development of digital systems (Lampropoulos et al., 2019; Restina et al., 2021). Therefore, it is necessary to develop modules for fifth-grade students, which were initially just like in (printed) textbooks, into e-modules (electronic modules) to facilitate student learning anywhere and anytime because they use ICT (information and communication technology) devices such as a computer or cell phone. E-modules can display text, animation, images, videos, and story questions according to learning objectives (Darmaji et al., 2020; Restina et al., 2021). Especially in learning mathematics, fifth-grade students can use it directly and use it repeatedly to improve their problem-solving mathematical competency skills.

The advantage of using interactive e-modules written by researchers in research is that learning geometric shapes, especially cubes and blocks, will be exciting and interactive and make it easier for students to understand. In line with the advantages of using interactive e-modules, namely engaging learning, learning objectives can be formulated, the material is arranged systematically, there are instructions for use, there are animations and videos, there are practice questions related to problem-solving, as well as media for students to be able to learn independently. In addition to the advantages of e-module interactive, the study conducted by researchers is similar to another study that concluded that there is effectiveness and usefulness of interactive e-module products as seen from the student of the results learning after using the interactive e-module from the results of the post-test (Herawati, N. S., & Muhtadi, 2018).

Based on the above discussion, it is necessary to conduct a study that develops learning media and strategies to improve elementary school students' problem-solving abilities in mathematics. Therefore, this research is carried out with the aim of creating a spatial interactive e-module (EMIBARU) and evaluating students' problem-solving abilities in mathematics learning at the elementary school level. The novelty of this research is the creation of a learning media collaborated with an interactive strategy through the development of the spatial interactive e-module (EMIBARU) based on problem-solving in mathematics learning at the elementary school level. The plan for developing problem-solving skills is presented in the spatial interactive e-module (EMIBARU) that can stimulate students' problem-solving abilities and evaluate the influence of the spatial interactive e-module (EMIBARU) on problem-solving abilities of elementary school students.

2. METHOD

This study used a quantitative approach with a quasi-experimental design method. The quasi-experimental method links two sample groups: the experimental and control groups. The experimental group consisted of students who got the action of using interactive e-modules. In contrast, the control group consisted of students who did not get the effort of implementing interactive e-modules but videos. The form of the research design is the pretest-posttest control group design. The research population was students of class V SD Negeri Cacaban 1, totaling 21 students. The sample by applying the simple random sampling technique was all 21 students consisting of 12 students in the experimental group and 9 in the control group. The research was conducted in January-April 2022 at Cacaban 1 Public Elementary School, Magelang City. Details of research activities are 1) Observation of learning, 2) Giving a pretest, 3) Giving action (using interactive e-module media), and 4) Giving a posttest. Data collection involves interviews, observation, and test techniques. Which instruments used are interview sheets, observation sheets, and essay question sheets. The rubric for assessing the mathematical problem-solving ability of elementary school students is show in Table 1.

Table 1. Rubric of Mathematical Problem-Solving Ability Test Instrument for Elementary School Students

Indicators of Mathematical Problem Solving Ability	Question Indicator	Question Form	Question Number
Students are able to understand problems by identifying known and unknown elements.	Given a problem, students are able to identify the elements that need to be known and asked about in the concept of the volume of cubes and rectangular prisms.	Essays	1-5
Students are able to create/develop problem-solving strategies.	Given a problem, students are able to determine problem-solving strategies related to the concept of volume of cubes and rectangular prisms.	Essays	1-5

Indicators of Mathematical Problem Solving Ability	Question Indicator	Question Form	Question Number
Students are able to apply problem-solving strategies.	Given a problem, students are able to apply problem-solving strategies related to the concept of volume of cubes and rectangular prisms.	Essays	1-5
Students are able to draw conclusions and check the correctness of answers.	Given a problem, students are able to draw conclusions and check for accuracy in solving problems related to the concept of volume of cubes and rectangular prisms.	Essays	1-5

A research instrument is tested for its validity first to determine the accuracy of the measuring instrument when used. The type of validity of the research conducted is content validity. CVR and CVI or V Aiken coefficients to prove content validity. In addition to testing its validity, it also tested its reliability. This test determines measurement results' reliability, reliability, or stability. The reliability test of this research is Alpha Cronbach. To test the level of reliability of a measurement, and if the reliability factor or alpha is 0.6 or higher, then the instrument is reliable. Independent sample t-test is a data analysis technique because it is a hypothesis test related to differences in group mean. Researchers used SPSS 23 to analyze data and test the normality and homogeneity of the data obtained. Normality test, they are performed to verify that the distribution of processed data is expected. This test method is the One-Sample Kolmogorov-Smirnov Test. The data is usually distributed if the SPSS significance result is 0.05 or higher. Homogeneity test, this analysis is done to understand whether some variants or populations are the same or different. This uniformity test uses Oneway Anova. The data is declared homogeneous with a significance > 0.05.

3. RESULT AND DISCUSSION

Result

The result of this research is the creation of the spatial interactive e-module (EMIBARU) based on problem-solving, as well as evaluating its effect on the problem-solving abilities of 5th-grade elementary school students. One example of the display of the spatial interactive e-module (EMIBARU) based on problem-solving is show in Figure 1.

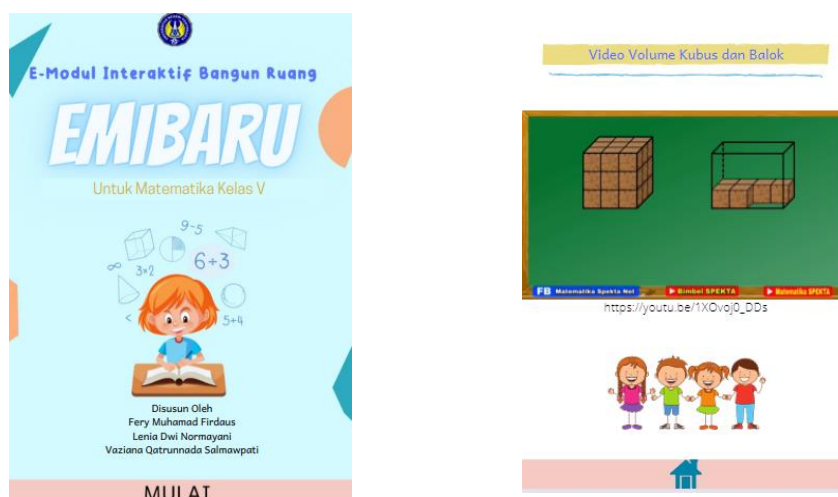


Figure 1. Display of the Spatial Interactive E-module (EMIBARU)

This spatial interactive e-module (EMIBARU) based on problem-solving was developed through planning and arrangement using the Canva application. In the planning stage, the necessary material was collected in its entirety according to the needs of the students. Next, the material was arranged on each page of the e-module. Each e-module page was designed with the selection of paper size, colors, fonts, images, music, and supporting videos that harmonize well with each other. The compatibility of each page was considered to have its own appeal to the students. After all the e-module pages were arranged, interactive buttons were added to the e-module to adapt to the main menu of the module to be presented to the students. Finally, the Canva application was set up to publish the e-module with a link for readers.

After developing the spatial interactive e-module (EMIBARU) based on problem-solving, the research continued to test the effect of the spatial interactive e-module (EMIBARU) on the mathematical competency of problem-solving for fifth-grade elementary school students using SPSS 23. The following are the results of the normality test for the problem-solving ability test for the experimental and control groups. The result of normality test is show in Table 2.

Table 2. One-Sample Kolmogorov-Smirnov Test

	Experiment (Interactive E-Module)	Control (Audio-Visual media)
N	12	9
Statistic	0.156	0.212
Df	13.78954	13.81223
Asymp. Sig. (2-tailed)	0.200	0.200
Result	Normal	Normal

Based on the SPSS analysis as show in Table 2 with the normality test using the One-Sample Kolmogorov-Smirnov test method, the posttest learning outcomes are generally distributed with a value of 0.200 ($0.200 > 0.05$) in the control and experimental groups. Then the result of homogeneity result is show in Table 3.

Table 3. Homogeneity Test Result

Variable	Sig Val.	Result
Problem-Solving	0.961	Homogeneous

Based on Table 3, the data obtained from both groups are homogenous. Homogeneous data criteria if the results of Sig. > 0.05 . Sig value is obtained. from these data $0.961 > 0.05$ so the data is homogeneous. The result of t-test is show in Table 4.

Table 4. Independent Samples Test

Problem-Solving	F	Sig.	T	df	Sig. (2-tailed)
Identical Variant	0.02	0.961	2.237	19	0.037
Non-identical variants			2.236	17.371	0.039

Based on Table 4 show the results of the t-test conducted on research data, the t value shows t 2.237, and the Sig. (2-tailed) is 0.037 while $df 19 < 0.05$. So it is stated that the spatial interactive e-module (EMIBARU) influences the competence of solving mathematical problems in geometric materials, especially cubes, and blocks.

Furthermore, based on the interview and observation results, it shows that there is an influence of the spatial interactive e-module (EMIBARU) developed on the mathematical problem-solving competence in the material of spatial building, especially cubes and blocks. After the implementation of the E-Module in class V of SD N Cacaban 1 in Magelang City, the students became more enthusiastic about learning mathematics. The use of interactive buttons encouraged students to participate in learning, not just to observe and listen to the teacher's explanation. The interesting presentation of the material in the E-module made it easier for students to understand what they were learning. Moreover, the students no longer felt difficulty and confusion with the problems presented in story problems. As a result, students have better problem-solving skills compared to learning that uses instructional videos in the material of spatial building, especially cubes and blocks.

Discussion

Mathematical problem solving abilities are important to examine in this study referring to the development of potentials can be reflected in the mastery of mathematical competence in learning, namely problem-solving competence. Problem-solving is an attempt at the cognitive aspect to solve the problem (Gunadi et al., 2022; Haataja et al., 2019). Previous study revealed that providing/explaining students' understanding to solve problems/problems is the primary goal of learning mathematics (Daulay & Ruhaimah, 2019). Individual efforts at problem-solving competence use their knowledge, skills, and understanding to find solutions to problems. This ability is developed optimally and will help students have

the ability to solve problems and be able to overcome the problems they face. This statement indeed confirms that in mathematics learning, the emphasis is on problem-solving competencies, which are necessary for the development of student learning (Rostika & Junita, 2017). Students are said to have problem-solving competence if they can understand problems, determine strategies to solve them and apply them in solving problems.

Based on the results of research showing that there is a high level of mathematics learning activity in the use of Building Interactive E-Modules (EMIBARU), it can directly improve students' mathematical problem solving abilities. Polya stated that problem-solving is an essential aspect of intelligence which is an important character for individuals and can be learned by imitating or experimenting. The problem solving ability, as one aspect of the higher order thinking ability, is a very important ability (Nurkaeti, 2018; Ulandari et al., 2019). The type of mathematical problem given will direct students to carry out problem-solving procedures.

The level of achievement can identify mathematical problem-solving competence through competency indicators. In this study, the problem solving competency indicators used refer to Polya's theory, are: 1) Understanding the problem, 2) Planning a settlement, 3) Performing calculations, and 4) Re-examining the results (concluding) (Daulay & Ruhaimah, 2019; Khasanah et al., 2021). Researchers in the study used all of the indicators above, totaling four, where all of them can be measured by the material of cubes and blocks. The initial indicator understands the problem. Students are intended to get to know the elements known to be stated in the required aspects of the questions that are understood. According to previous study, the reading process is needed in problem-solving consisting of understanding the reading and using their mathematical knowledge and mathematical operations (Yuwono et al., 2018). Students need to pay attention and understand the issue being discussed to understand the problem. Students must also know what is unknown and whether these conditions determine the known or contradictory data. Students in the experimental group obtained a mean score of 7.08, while the control group received a mean score of 2.8 with a maximum score of 10. This statement proves that students in the experimental group understood the problems correctly.

In contrast to the experimental group, the average result of the control group is still far from the maximum score, proving that students do not understand the problem. In this study, the experimental group received action as an interactive spatial e-module (EMIBARU) presenting issues related to contextual spatial shapes. The example at the beginning of the module shows problems related to objects around students in the form of blocks or cubes. Meanwhile, the control group who was given action in the form of learning videos also tried associating problems with life close to students. In solving the problem, the indicator of understanding can be shown by writing the known and asked steps. Understanding the right questions is essential to solving problems (Hayyulbathin et al., 2011; Isnaini et al., 2021). If there is an incorrect understanding of the question, it will impact the inaccuracy of the work on the situation. The results in the field in this study indicate that the spatial interactive e-module (EMIBARU) can improve competence in understanding issues as an indicator of competence in solving mathematical problems.

The next indicator is planning a settlement. Students identify appropriate problem-solving plans to solve and formulate problems/build their mathematical models. The second indicator is greatly influenced by an understanding of the material being studied. Good conceptual knowledge will make choosing alternatives easier and predict the completion of mathematical problems. In applying questions or issues, students decide or select the appropriate formula to solve existing problems. At this stage, students can determine unknown data and data students can determine useful theorems and whether students can plan a solution. If they cannot solve the problem, students can find ways with similar issues (Argarini, 2018; Hayyulbathin et al., 2011). In this study, students in the experimental group obtained a mean score of 8.6, while the control group received a mean score of 7.7 with a maximum score of 10. This result proves that students in both groups can plan a solution by determining the formula according to their problem, in line with study that revealed that using audio-visual media in the form of learning videos could affect mathematical problem-solving abilities (Harefa & Laia, 2021). Even so, the experimental group with the spatial interactive e-module action (EMIBARU) had a mean superior score than the video action. The above proves that the experimental group could plan problem-solving well. The data also shows that the spatial interactive e-module (EMIBARU) can better understand concepts that encourage students to plan problem-solving well.

Furthermore, the third indicator is doing calculations. Students are asked to do calculations based on the plans prepared in the second stage. Students calculate the problems in the problem according to a predetermined mathematical formula. Thus, students can use the formula that has been planned to work on the questions. When students do calculations for each number, students need to be careful in calculating it from start to finish so that the results can be correct. Students calculate by adjusting the type of problem, whether it is an applicative problem of cubical or rectangular shapes. Students develop problem-solving

competence. So, students solve problems through high-level cognitive operations, visualizing, associating, abstracting, understanding, manipulating, reasoning, and analyzing (Argarini, 2018; Ghulam Behlol et al., 2018). The results of students in the experimental group got a mean of 17, while the control group got a mean of 16.5 out of a maximum score of 20. In line with study state interactive e-module research using proven software to positively impact the output/outcome of learning mathematics (Aspriyani & Suzana, 2020). In doing calculations, the experimental group is slightly superior to the control group. Both groups can already perform calculations, but the experimental group using interactive spatial e-module media (EMIBARU) will be more meaningful because the nature of the media is interactive and equipped with materials, videos, and practice questions, in contrast to video media which is only one way.

The fourth indicator is re-examining the results (concluding). At this stage, students are meant to be able to check or check their answers, whether what is obtained is correct and correct or not. In addition, students can also check the results to see if there are other ways and answers to the problem. After completing the calculations, students are expected to be able to check back the answers to the questions that have been solved. Whether students can check the results or not, whether students can check arguments or not, and if the results are not to the original plan, it is necessary to re-check for relevant results (Apriani, 2018; Hayyulbathin et al., 2011). From the research that has been done, the results of the indicators re-examine the results in the experimental group to get a score with a mean of 3.08. At the same time, the control group got a mean score of 2.4. The actions given by the experimental group using the interactive spatial e-module (EMIBARU) had a more positive impact on students. Like other research, e-modules can increase students' mathematical problem-solving abilities. Utilization/use of interactive e-modules in delivering material is arranged systematically (Aisy et al., 2020). Unlike the video media in the control group, students can only pay attention by watching the cube and block material explanation. Therefore, the ability of students when checking back in the experimental group is superior to the scores obtained by the control group.

The analysis results of testing the effect of using the spatial interactive e-module (EMIBARU) with the help of the SPSS application show an impact of using the geometric interactive e-module (EMIBARU) on the mathematical problem-solving competence of fifth-grade students at SD Negeri 1 Cacaban. The analysis was carried out with a T-test with a t value of 2.237 and a Sig. (2-tailed) is 0.037 at $df\ 19 < 0.05$, so the null hypothesis (H_0) indicates that "There is no significant difference in the mathematical competence of solving geometric material problems (cubes and blocks) of fifth-grade students between the use of interactive e-modules space (EMIBARU) and video," was rejected. Whereas hypothesis 1 (H_1) shows that "There is a significant difference in the mathematical competence of problem-solving on geometric materials (cubes and blocks) of class V students between the use of interactive spatial e-module (EMIBARU) and video" is accepted. So the discussion obtained from the data results shows a significant difference between using interactive spatial e-modules (EMIBARU) and learning videos for fifth-grade students.

The importance of mathematics for students, especially in solving this problem, is needed in learning media. A spatial interactive e-module (EMIBARU) is a computer-generated media. One of the strategies to convey it more effectively is to use ICT-based mathematics learning media (Bernard et al., 2019; Juandi, 2021). When students learn mathematics by utilizing electronic modules based on problem solving, then high-order thinking and understanding abilities are seen as being able to equip students to face change and solve daily problems that are increasingly complex, so they need to be prepared from the start.

The teaching of mathematical competence is essential and meaningful. Developing mathematical competency beliefs for students is vital in everyday life at the career level. The development of mathematical competence can positively influence student development (Oludare Jethro et al., 2012; Weidinger et al., 2018; Widodo et al., 2020), especially in problem-solving competence. Problem solving raises various conclusions obtained through active inquiry by students and enable advanced high-level thinking by learners. Mathematical issues faced by students can train the development of students' thinking (Ghulam Behlol et al., 2018; Ismiyati et al., 2019). In this case, the teacher plays an important role, facilitating students to think and reflect.

The advantage of this type of interactive media is that it is problem-based and to be solved by students according to their needs and conditions. In addition, it can increase student motivation because students can access the material they need. Interactive multimedia helps students in learning. The teaching and learning process, supported by interactive multimedia, attracts students' interest. Interactive learning shifts the focus from a passive, teacher-centered model to one that is active and learner centered, offering a stronger learning stimulus.

4. CONCLUSION

The development of the spatial interactive e-module (EMIBARU) based on problem-solving can significantly influence students' problem-solving abilities in mathematics learning in 5th grade of elementary school. Furthermore, the development of the spatial interactive e-module (EMIBARU) can also enhance students' activity in learning mathematics as they prefer learning mathematics using interactive multimedia.

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