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Mathematical Creative Thinking Skills Of Students Junior High School In Kendari City

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Abstract

The students' skill to think creatively is one of the main goal given in middle school mathematics. Students' creative thinking skills have not been as teacher focus to teach mathematics in schools. Students' mathematical creative thinking skill of students is still low. This study describes an overview of creative thinking skills junior high schools students in Kendari city. Data was collected using a test instrument's skills to think creatively and interviews with students and teachers. The results of the data analysis conclude that the mathematical creative thinking skill of students is still low with an average of 41.19 and a standard deviation of 9.30. The skills of students in aspects of flexibility is very low with an average of just 33.45 , aspects of fluency 39.39, and aspects of elaboration 51.02. Results of interviews with teachers and students show that the use of context and problems creative thinking in mathematics learning is still lacking. The results are less-attractive learning and do not challenge students' thinking skills.

Keywords: context in teaching mathematics, creative thinking skills

Success in implementing learning math teacher can be seen from the success of the students understand, apply, and develop good material taught in mathematics itself, other subjects, and in everyday life. The success of these students can not be achieved with a good teacher if learning is less meaningful and less encouraging innovation and creative thinking to every student. Learning mathematics should have interesting and challenging students 'thinking processes so as to train the students' ability in creative problem solving. The use of contextual issues related to the daily life of students and the development of technologies that can be understood students at every learning will affect the students in learning activities. In addition, the use of examples and exercises that are not routine will also train students to think critically and creatively in solving mathematical problems.

Facts on the ground indicate that the learning of mathematics in a variety of educational units in the city of Kendari use textbooks as the only referral and very rarely associate mathematics with its use in the real world or to solve everyday problems both on the economic, environmental, social, or culture and technology. The questions used by teachers in general just using simple math problems. Such questions can not train potential students thinking at a high level mathematical thinking (high-order mathematical thinking skills). Simple math problems can only be used on certain aspects of mathematics.

Kadir research results (2011) indicate that the problems are still the dominant routinely used teacher junior mathematics. The results of these studies indicate that mathematics teachers are less able to design or modify the math problems that exist in textbooks into contextual issues that are more related to daily life or the real world or

the more challenging the thinking of students. In fact, questions like these are very attractive to enable students in learning and to challenge students' mathematical thinking pattern.

The use of contextual problems are very interesting and can provoke communication skills to interact with other students or the teacher. That is, the presentation of contextual issues and problem solving will be interesting to follow the students' learning process and challenge the thinking of students to creatively solve a given problem or both faces inidividu and in groups through effective communication and facilitated by the teacher in the classroom. The ability of the trained students interact during learning mathematics meaningful and contextual will make students able to adapt, giving and receiving in harmony. Skills like this is known as social skills (social skills). Effective mathematics learning situations must-interactive always strived to be a teacher in Kendari Kendari potential problematics become known and as far as possible be solved by mathematical methods studied. Unfortunately this lack of social skills trained teacher in the classroom so that some preliminary studies researchers show that low student social skills.

Lack of use of everyday contexts students when teachers teach mathematics increasingly distanced impact on students of mathematics and the low ability students in solving math problems in the form of a story or solving problems. Low ability junior high school students' mathematical problem solving can be seen from the results of research Kadir 2008, 2009, and 2010 in class VIII and class IX Junior High School in Southeast Sulawesi province. Although the research Kadir (2011 and 2012) show that the results of mathematical problem solving ability of students can be improved but the coast has been teaching materials used are of potential coastal-based teaching materials. Potential coastal just one of the many potential problems and should also be solved by the method presented in mathematics or mathematics teaching materials. Even in Kadir study (2012) on the use of palm context (palmae) such as coconut, palm, sago, rattan, betel nut, palm oil, and palm plants in the context of learning mathematics shows that the palm is less well known that students needed other contexts. Though Indonesia is the world's center of palm diversity (Witono, 2005). The results of the study Kadir (2012) also showed that mathematics teachers desperately need contextual teaching materials that directly relate to the real world and students' problems. Mathematics textbooks that have been used by teachers not directly related to real-world problems and the impact on the students' lack of participation of students in learning mathematics in the classroom.

The description above shows the need to devise a mathematical learning that can benefit directly to the formation of the mindset of the students in an orderly, logical, and creative. Lessons like these can be created if teachers use instructional materials that can facilitate and encourage students to think. Teaching materials should be interesting and challenging students' thinking process. Teaching materials can be packaged as a good utilization of various problems associated with day-to-day lives of students, as well as those related to mathematics itself, other knowledge, public interest, social, economic, political, and cultural. Utilization of context and problems in learning to teach mathematics mengemasnya the material is the right step to train creative thinking ability in mathematics, social skills of students, and instill the importance of knowledge about the issues each context.

LITERATURE REVIEW

Use of Context in Curriculum and Learning Mathematics

Learning math curriculum as trustee should be able to create students that a problem solver, logical thinking, systematic, productive, reflective, critical, creative, character, and skilled socialize. This generation can only be established through meaningful learning (learning meaningfull) supported by appropriate teaching materials, teacher professionalism, and quality education system.

Various studies show that the integration of the activities of the values of life and culture and environmental potential in learning mathematics is an activity that must be done in-class teacher. According to Adam (2004), a class is part of a community that defines its cultural practices. When students enter a school, they bring a wide range of values, norms, and concepts that are part of their development. According to Bishop (1994), some of which they take is math (Adam, 2004). Adam continued, unfortunately, the mathematical concept of the school curriculum is presented in a manner that is not related to the student's mathematical culture. But the cultural aspect to the vital contribution to improving the ability of mathematics students in the class. This opinion is in line with the opinion of Bishop (1988), Boaler (1993), and Zavlasky (1991, 1996), that the cultural aspect contributing to recognize mathematics as part of their daily lives, to develop the skills for meaningful connections, and deepen understanding of mathematics (Adam , 2004).

According to Kadir (2011), when students solve a contextual problem, enthusiasm, attention, motivation, and knowledge used to solve problems with understanding, compare, describe, analyze, create mathematical models, complete the model, answer the problem, explain the answer, the answer maintains, and negotiating process and the results of solving the problem. According to English (2002), a familiar context is marked internally as a configuration representation in the form of words, images, formal notation, strategy, and operations, as well as influence and ideally have a fun effect. This opinion shows that through the use of proper context, students interested in following the process of learning, challenged to solve a given problem, and can express it into words, pictures, mathematical formal notation, solving strategies, and convincing operation to solve a given problem.

The use of context appropriate to the condition and location of students come students, students can construct knowledge into precise mathematical representation and can be used to solve problems creatively. Through contextualization students learn to construct a special case, see the special things in general, stated the concrete situation into a new representation of the situation, and make those steps are spontaneous and flexible. According to English (2002), through abstraction, students learn to generalize, to see the generality specifically, moving from an insignificant detail to the representation of the concrete situation, and do it spontaneously and flexibly. According to Matsumoto and Juang (2008), if students come from different cultural backgrounds can look at things with a different perspective, it is not surprising that they feel the comfort of the perceived world. When this information is coupled with information related to psychological processes such as attributes, emotions, and personality, the influence of culture on individual psychology is very admirable. That is, the use of specific geographic contexts such as in mathematics learning can enhance students' creativity in thinking.

According to Brenner (1998), through the activity of the student discussions with teachers, students are expected to achieve a better understanding of the

mathematical concepts and become a better problem solver. The use of appropriate context, students can practice making logical abstractions or generalizations. According to McGregor (2007), this is called "Bridging", ie an acceleration of cognitive learning phase in which abstraction and generalization of reasoning or logical thinking is applied in the context of learning associated with the real world. Context of the real world can be taken from a variety of sources related to the students' everyday lives or the location where the learning is implemented.

Mathematical Prior Knowledge

As the science of patterns, mathematical concepts are arranged hierarchically. A mathematical concept can not be learned as common knowledge. In general, the mathematical concepts can be learned sequentially and continuously. A mathematical concepts can not be learned is good if the material requires the material has not been completely ruled (mastery learning). Cognitive processes will occur when students have prior knowledge of what is learned. That is, each learner should learn math early mathematical knowledge required to learn an advanced math material.

Mathematical prior knowledge is defined as the mathematical knowledge of the students and has become a prerequisite to be learned mathematics. This initial knowledge is also known as basic knowledge of mathematics despite having differences. The difference is basic mathematical knowledge is more directed to all the basic math knowledge. For example, the school is divided into mathematical knowledge of decimals, fractions, integers, percentages, operations, algebra, geometry, measurement, coordinate geometry, data analysis, and the set. While knowledge of early mathematics to mathematics what it takes to learn a mathematical concept to be taught or learned.

Mastery of the mathematics prior knowledge would enable a learning process becomes more smooths so that there is a cognitive process. According to Mayer (1996), effective learning and knowledge of construction of the cognitive load a process for selecting, organizing, and integrating information. That is, if the learning process is going well, then the student will be able to demonstrate the cognitive process of selectively, organize, and integrate all of the information.

Cognitive processes can run smoothly if students can understand and connect all of the information that has been learned. This is where the importance of students' prior knowledge of mathematics used to be selected, organized, and integrated with other math materials so that new knowledge arises as a result of cognitive processes.

The use of context and the adequacy of the mathematics prior knowledge which has been owned by the students will be able to make students learn math effectively. According to Ormrod (1996), the reasons why students do not learn effectively is because students do not have enough prior knowledge of the material they learn to determine what information is important or what questions will they ask about the material. This opinion suggests that the creativity of the students think mathematics is influenced by the adequacy of the mathematics prior knowledge that students have about a mathematical concept.

Mathematical Creative Thinking Skills

Creative thinking in mathematics refers to the notion of creative thinking in general. Bishop explained that a person requires two complementary models of different thinking in mathematics, namely the creative thinking that is both intuitive and analytical thinking that is logical (Pehkonen, 1997). This understanding shows that creative thinking is not based on logical thinking, but more as a thought that suddenly

appears, unexpected, and unusual. Pehkonen (1997) looked at the creative thinking as a combination of logical thinking and divergent thinking which is based on intuition but still in consciousness. When a person applies creative thinking in a problem-solving practice, the intuitive divergent thinking to generate new ideas. It is useful to find a solution to a problem. This understanding explains that creative thinking and intuitive thinking logically regard to generating ideas. That is, the two parts of the brain creative thinking will be required so that the balance between logic and intuition are very important. Placement of logical deduction would ignore too many creative ideas.

To bring creative thinking needed freedom of thought. A person who is free thinking means thinking not under the control or pressure. According Krulik and Rudnick (1999), creative thinking is the thinking that is original, reflective, and produces a complex product. Thinking involves the synthesis of ideas, build new ideas and determine its effectiveness. Moreover, it also involves the ability to make decisions and produce new products.

In this research, creative thinking is viewed as a single unit or a combination of logical thinking and divergent thinking to produce something different (novelty), which is one indication of the emergence of mathematical creative thinking abilities of students. Another indication is associated with the ability of logical thinking and divergent thinking. In addition to novelty, someone who thinks creatively also bring flexibility in solving a problem. According to Haylock (1997), creative thinking is considered almost always involves flexibility and smoothness as well as in the context of mathematics, smoothness criteria seem less useful than flexibility. Flexibility also emphasizes the many different ideas were used. So in mathematics to assess the divergence can use the product flexibility and novelty criterion. Another is the eligibility criteria (appropriateness). Mathematical response may indicate that high novelty, but it is useless if it does not fit in the general mathematical criteria. So, based on some opinions that creative thinking skills can be shown of flexibility, fluency, originality, feasibility or usability. This indicator can be simplified or combined with common sense look into suppleness, smoothness, and novelty. While the feasibility or utility is included in these three aspects.

Referring to the general understanding of creative thinking and creative thinking abilities mathematical indicator used by Krutetskii (1976), Balka (Silver, 1997), Silver (1997), Haylock (1997), Getzel & Jackson (in Silver, 1997), it is thought creative mental activity is defined as a person who is used to construct new ideas or ideas that are smooth and flexible in solving mathematical problems appropriately.

Research Method

The subjects were Junior High School eighth grade student in Kendari in Southeast Sulawesi province can be divided into two school levels (medium and low). The division is based on the combined school level school accreditation and national math test results in the last five years. The selection of both the Junior High School in Kendari is based on the consideration that the analysis of learning needs math problems, and social skills students should represent the common problems that occur in Secondary Schools in Kendari. Therefore, at every level of school chosen at random one schools to be used as the sample schools. Differences in characteristics of students both school levels considered in order to know the exact context in teaching mathematics to students with a wide range of mathematical abilities.

Data was collected using a survey study, interviews, documented, and observation of the way teachers teach and students during the learning activity. The data

were analyzed by descriptive narrative to check students' social skills. This paper presents the results of preliminary studies on the characteristics of learning mathematics and analysis of various Problems in particular the use of problem-based contextual potential Kendari city.

RESULTS AND DISCUSSION

Quality of Mathematics Learning in Schools

Based on the analysis of observations and interviews with teachers of mathematics secondary school found some conditions studied mathematics learning process. Mathematics teachers who were interviewed as many as five people qualified scholars. Observations and interviews are presented as follows.

a. Teachers have not been up to use contextual problems in learning.
b. contextual problems only arise spontaneously without any planning, and are not included in the lesson plans and worksheets.
c. The quality of the interaction and activity of students in learning to be better when teachers use contextual problems in learning.
d. Teachers only using contextual issues to attract the attention of students, not to take advantage of contextual issues to further develop thinking skills.
e. Context commonly used by teachers is the problem of fish, guava, mango, and coconut. Context of urban problems, port, economic development, geographical conditions, watershed, island, ocean, mountains, the environment, and the technology is not used.
f. The use of contextual issues is helpful to realize the teacher to draw the attention of the student but low proficiency students so that students have difficulty understanding or translating the problem into a mathematical model.
g. Learning teachers have not enabled the students to interact harmoniously with teachers and other students.
h. The ability of students in solving word problems is low.
i. Students are less able to perform basic math arithmetic operations especially with regard to fractional and negative integers.
j. The teacher is still dominant in guiding and directing students to actively interact in the classroom and actively solve the given problem.

Above results indicate that teachers have work towards effective learning though still needs much improvement. It is recognized that mathematics learning becomes better if presented in the form of contextual examples of the problems associated with issues or objects that students often encounter or use. However, this context is only to attract the attention of students because its appear spontaneously without any planning. The books used by teachers are also not optimally contains a variety of contexts and problems that can help teachers plan lessons, make examples or problems that can make students interested in learning, actively interact, communicate mathematics, build character, and train alternative thought patterns. The material on mathematics textbooks are still the main reference. Some of the issues presented are not contextual. This reduces the quality of interaction between the components of the learning in the classroom and thus inadequate to train students' thinking skills and social skills of students. This means that the use of context to draw the attention of students in the classroom is very important in learning mathematics.

Statistical Analysis Testing Requirements

Based on test results data normality using the Kolmogorov-Smirnov test in SPSS 20 concluded that mathematical prior knowledge (MPK) data and mathematical creative thinking skill (MCTS) for each school level are normally distributed. It can be seen from all Asymp. Sig. (2-tailed) value is greater than the significance level of 0.05. Therefore, by using statistical parametric testing can proceed.

Knowledge Early Math Students

In general, the value of MPK students in middle category with an average of 64.37 and a standard deviation of 8.02. With an average of only this, it is necessary that more effort should be made to improve the ability of the teacher or the students' prior knowledge of mathematics before proceeding to higher mathematics. This is important because prior knowledge of mathematics is a prerequisite or basic knowledge for students to study mathematics further. If these materials are not or poorly understood it is feared math learning process will be hampered. Teachers must continue to remind the students back to the concept of a mathematics support during the learning process.

If associated with school-level hypothesis test results seem indicate that there are differences between the two levels of MPK school. Mathematical prior knowledge average student at the school level is at 67.00, significantly higher than the average of MPK lower school level students with an average of only 61.38. This confirms the fact that the level of a school is also demonstrated by the ability of their students on a variety of cognitive abilities early when students went on an educational institution. Schools that provide a better level entry requirements of new students is higher than the school level below. In smaping it, this result also confirms that the learning process is carried out while maintaining students' initial conditions at the cognitive level, especially when seen from the beginning of their mathematical knowledge.

Mathematical prior knowledge also contribute positively to MCTS students with determination coefficient of 43.8%. Closeness of the relationship between MPK with MCTS marked with a correlation coefficient of 0.662. This means that to increase MCTS students, teachers need to improve students' ability MPK first. The higher MPK students, the higher the student MCTS achieved.

Students' Mathematical Creative Thinking Skills

In general, the value MCTS students are on the low category with an average of 41.11 and a standard deviation of 9.32. With an average of only this, it is necessary that more effort should be made to improve the teachers' creative thinking ability of students. This is important because creative thinking skills is one indicator of the success of learning mathematics mandated by the curriculum. Indonesian human development must be directed to realize the human resources of creative thinkers to Indonesian people can catch up with other nations. One effort that must be done is to increase student MPK and learning by utilizing real-world contexts problems students are interesting and challenging students' thinking processes.

Learning is an exciting and challenging teacher must always be pursued in order to attract the attention of the student learning process. Learning the teachers as they relate to the world mnarik nayata students. Utilization of real-world context should also be used to train students to become potential thinking creative problem solvers. So, the context is not only used at the beginning of learning, but the learning process so that students stay focused. If the learning process is no saturation due to the lack of challenging problems, then the problems that the teacher needs to be improved depth

and vastness that challenges the thinking of students. These activities can make students think alternatives with the potential gather all the knowledge they already possess. This is where the importance of all the mathematical concepts they have learned it is used. Teachers must be able to bring the students are able to link all of the mathematical concepts that students do not quickly forget and differences among students due to differences in the factors that impact learning outcomes can be minimized.

Hypothesis test results show that there are differences between the two levels MCTS school. MCTS average student at the school level is at 44.97, significantly higher than the average MCTS lower school level students with an average of only 36.72.

Discussion

In addition to attract the attention of students, the use of contextual problems in learning should also challenge students' thinking processes. According to Hughes & Hughes (2003), students try to learn through practical activities that are intrinsically interesting, giving them a challenging problem to be solved, and choosing subject matter that has appeal to their natural interest. This can be realized through the use of various models or approaches learning approaches such as CTL (Contextual Teaching and Learning) and a model of problem-based learning through discussion activities. According to Brenner (1998) through the activity of a discussion with the teacher and her partner, students are expected to gain a better understanding of the basic concepts of mathematics and be a creative problem solver. According Muijs and Reynolds (2008), after completing the task group, the results need to be presented to the whole class and a debriefing that focused on group process should be implemented.

In this group activity, the cultural aspects should be considered a teacher. According to Adam (2004), contributing to recognize the cultural aspects of mathematics as a part of everyday life, the ability to develop meaningful connections, and deepen understanding of mathematics. Such communication can facilitate the process of solving problems and planting mathematical concepts to students.

Based on the description of the importance of the use of context in learning it is essential to develop teaching materials and develop contextual learning model that combines Problem Based Learning with contextual learning approach. Merging of both called model of Contextual Problem Based Learning (CPBL).

Contextual teaching materials are instructional materials, which presents mathematics contextually. Context used is the context that is already known to the students as they relate to students' daily lives, is needed, known, or can be understood students. The context in addition used to attract the attention of students, as well as to train the students' language and communication skills in understanding problems, interact with others in a skilled, creative problem solving, and obtain information about the problems associated with the context. The use of context in these materials is important because students become more familiar with the benefits of mathematics for life and to establish patterns of logical thinking, alternative, productive, systematic, critical, and creative. The use of context as this would reduce the tedium of students studying math symbols that during this round, dry of meaning and benefits for life. The use of mathematical symbols in the teaching materials presented significant contextual so that students become familiar and understand the meaning of each symbol or mathematical models generated to solve a problem.

Contextual problem-based learning is a contextual problem-based learning model. Learning with this model using the steps or syntax problem-based learning

(PBL) but the problem is the use of contextual problems. The steps are: (1) the orientation of students on contextual issues; (2) organize the students to learn; (3) guiding the investigation group; (4) develop and present work; and (5) analyze and evaluate the problem-solving process. Step-by-step learning emphasizes the importance of contextual issues in mathematics learning. The CPBL learning steps are generally divided into three main activities, namely the preliminary activities, core activities, and closing activities. All three of these activities are described as follows.

A preliminary activity

At this stage, a teacher convey learning model used and the rules of the game, the tasks will be given, and judgment. In addition, teachers also expressed learning goals and provide motivation and apperception, ie asking oral questions to the students to explore the potential of the beginning related to mathematical concepts that will be studied.

A core activities

(a) At this stage, students are directed to a group (group members is predetermined by the teacher based on the data prior knowledge of mathematics and information from teachers about the characteristics of students in the class). Heterogeneous group members pursued with a membership of 4-5 people depending on many students in the class
(b) Students sit together in their own group.
(c) The teacher provides worksheets for each student, which is presented in a contextual problems and exercises that should be discussed.
(d) The teacher asks students to read one of the problems in the worksheets and other students pay attention.
(e) The teacher asks the things that have not understandable to students related assignments in worksheets that will be done.
(f) The teacher directs students to understand the material in LKS prior discussion with other group members.
(g) Students solve problems independently. The results are discussed together in the group to share ideas related to the tasks that exist in LKS.
(h) When students solve problems on worksheets and discussion, the teacher around to each group and provide assistance as it is in the group that had difficulty. Assistance given to a group of teachers who are having trouble in the form of scaffolding techniques, which gives the teacher guiding questions orally to lead the group in achieving a solution. Teachers provide just enough assistance to students when students are having trouble.
(i) The results of the work of students in the group are presented in front of the class under the direction of teachers.
(j) Each group had the opportunity to present their work in rotation. The first opportunity is given to the group who are ready. If no group is ready, the teacher pointed to one of the groups at random (which is considered to be) to write his work on the board.
(k) When a student writes his work to the board, members of the group and other groups to observe and compare the results of work that was written by the group's work.

(l) Prior to class discussion, the teacher also asked other groups to write the answers on the board if in principle different from the answer to the first group of presenters. Maximum group renderers are three groups with different answers.
(m) Answer another group (who did not present the answer) discussed during class discussions to be adjusted with the answers that have been presented so that the renderer group obtained the correct answer, effectively, and efficiently to the problems discussed.
(n) After all of the answers presented on the blackboard, the teacher leads a class discussion.
(o) The other group (other than the renderer) to respond to what is presented. Group presenters respond and answer questions from students or from other groups. Similarly, if there are other groups are welcome who want to help answer or add a reply.
(p) The discussion carried out by discussing them one by one serving each group that has been written on the board.
(q) During the discussion, the teacher acts as a facilitator and moderator of the discussion so that students can discover and construct knowledge related to the problem being studied.
(r) The teacher with students to reflect, analyze and re-examine the problem-solving process that has been presented.
(s) If the process of solving the problem is correct, then the teacher asking questions to the students, for example: "What if ...? Is there another way? Of the three answers, which is more efficient? Why? ".
(t) The results of the discussion is the perception of students on the concepts contained in the issues discussed can be applied in order to complete the practice questions. Through exercises, each student can make the process of self-reflection on the process and the way of solving the problem that has been done.

An activities cover

(a) The teacher reviews the mathematical concepts that have been studied, then directs the student to make a summary of the material that is considered important.
(b) Teachers also constantly remind students about the importance of conservation and utilization of the various contexts that are presented in a responsible manner for the continuation of life and the importance of learning mathematics to train the ability to think.
(c) The teacher provides information of what will be studied at the next meeting and said that the next meeting will always be given the questions to be done in groups and one member of the group will come to the front of the class. For that each student must prepare.
(d) The teacher gives practice questions to be done in home individually.

Thus the outlines implementation steps of learning models CPBL. Learning is implemented through group activities were preceded by activity student individually to solve contextual problems. In addition, the contents of the existing curriculum appears that in junior high mathematics in general can be taught by using a variety of real-world contexts students. Nevertheless, to improve creative thinking skills siswajuga important to strive for improved student knowledge of early mathematics. The results of this study indicate that students 'prior knowledge of mathematics sufficient members a significant impact on students' creative kemampuanberpikir of 43.8%. In general, students' prior

knowledge of mathematics which is still a problem is the lack of ability in geometry and algebra operations involving negative numbers and fractions.

CONCLUSION

Based on the results of this study concluded that: the ability of teachers to use in the context of learning mathematics is still lacking. Context is only used at the beginning of learning to draw the attention of students of mathematics, but has not been used to build a mathematical concept and has not been used to enhance the students' ability to think creatively. Improved mathematical creative thinking abilities should be preceded by an increase in students' knowledge of early mathematics.

Based on these conclusions suggest that: more creative teachers develop instructional materials contextual problems or innovate either with itself or modifying the model or the problems or issues that exist in textbooks creatively so that learning becomes more interesting and challenging process of students' mathematical thinking. One alternative learning models that can be used by teachers is a contextual problem-based learning model (Contextual Problem Based Learning). Through this model, the teacher needs to take advantage of students 'interest in participating in the learning process to train the students' social skills and the ability to creatively solve mathematical problems.

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