Mathematical Problem Solving Ability Package A Elementary School Equivalents In PKBM Kasih Bundo Bukittinggi

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Abstract. Good learning can maximize the potential of students through various active and fun activities. No exception for equality education in the form of the package A equivalent elementary school program. But in reality learning in the Package A program still experiences various problems, especially in problem-solving abilities that apply mathematical concepts through higher levels of thinking. It can be seen from the low it results that the achievement of problem-solving ability averages less than 20%. This finding is supported by the lack of understanding of educators in terms of implementation, age diversity students, and the content standard is quite dense while learning activities are less than optimal providing meaningful experiences. For this reason, one form of learning that can be done with the right learning approach, one of which is RME. This approach will integrate mathematical problem solving abilities into its application.

1. Introduction

The ability of students to be able to achieve the expected competencies through meaningful learning must be supported by mathematical abilities that provide a stimulus in accordance with their characteristics. One of the mathematical abilities that can be developed is the ability to solve mathematical problems. This ability is very important and needed by students in solving the problems they face in everyday life so that they are able to develop themselves according to the type of education taken.

In terms of the type of education in Indonesia, it consists of formal, non-formal and informal education. These three types of education have the same recognition of student learning outcomes. Research related to improving mathematical abilities is mostly carried out in formal education, but little for non-formal education, namely the equivalent education Package A equivalent to elementary school. Whereas, in fact, equality education is an alternative and / or substitute education for students who drop out of school or continue dropping out. However, the implementation of equality education has its own distinctive characteristics where students who are in elementary schools consisting of 6 grade levels are grouped into 2, namely the initial class (equivalent to grades 1-3 elementary school) and elementary class (equivalent to grades 4-6 elementary school).

The learning carried out in Package A equivalency education requires special attention because of the number of students who are always there. If we compare the 2004 BPS data, it is known that the number of elementary school / MI dropout students for the 7-12 year old age group was 198,244 people and ages 13-15 were 583,487 people. Meanwhile, based on BPS data in 2018 it is known that...
the number of school dropouts aged 7-12 years is 1,228,792 people and the age category 13-15 years is 936,674 people. When viewed by the existing number is known that there was an increase by 5.2% for 7-12 year olds. As for the 13-15 years it is known that an increase in the amount of 0.6%.

Based on the data analysis, it is known that there has been a shift in the age at dropping out of school, which was previously dominant at the age of more than elementary school to elementary school. The implementation of learning like this requires multi-age learning that is carried out in accordance with the stages of age development by referring to the philosophical and pedagogical foundation of [1], learning in heterogeneous groups [2].

Learning that occurs in equality education is carried out based on the grade level which consists of multiple classes. This condition is of course very difficult because of the many competencies that must be delivered at different grade levels. In addition, the learning carried out also uses a different system from the formal, namely using a competency credit unit (SKK). In order to achieve the competencies that are expected to be equivalent to competences in formal education, learning is facilitated with 3 forms of activities, namely face to face, tutorials and independence with a ratio of 1: 2: 3 field implementation.

One of the implementers of equality education in the City of Bukittinggi who organizes package A is the Kasih Bundo Community Learning Activity Center (PKBM). This institution is an independent institution under a social foundation. Carrying out equivalent education package A since 2004 has been able to graduate approximately 2,000 students in total, and especially package A has graduated approximately 450 students.

The implementation of package A education based on interviews with the organizers was not only attended by students who had dropped out of school, but also by students who had never attended a formal education level. The causes of children dropping out of school based on the data obtained are mainly influenced by failing to be disciplined by students, not graduating, and cost constraints. Failure in discipline is influenced by the character problems of students, namely the lack of responsibility as a student, which causes a lack of decency in behavior and low learning outcomes. Information from students stated that they experienced less favorable treatment from educators at school, were considered naughty, were not believed to be able to follow learning well, so that in the end they lost motivation and did not want to continue their schooling. Besides that, a small proportion of students also experience economic constraints that cause them to help their parents work to earn money and require a more flexible educational path. Meanwhile, students who have never received formal education are due to a lack of administrative completeness to register at school. This opinion is in line with Joubish and Kurram suggesting that illiteracy, poverty, low motivation, lack of understanding, child labor, physical punishment, educator behavior and the school environment are factors that contribute to children dropping out of school [3].

To find out more about the implementation of package A equivalence education learning, an exploratory study was carried out as part of the development of learning designs which would later be implemented. Problems in the field are in the form of understanding content standards and process standards based on the 2013 curriculum, and learning outcomes that have been achieved by students that are focused on mathematical problem solving abilities.

2. Methods

This research is a research development or Research and Development (R&D) using the ADDIE model development method consisting of Analysis, Design, Development, Implementation, Evaluation by Endang [4] which aims to develop learning designs. At this stage the results presented are still at the analysis stage which consists of curriculum analysis and student analysis. The instrument used was an observation sheet and a list of open interview questions.
3. Results and Discussion

3.1. Curriculum 2013

3.1.1. Standard Content. Standard content in equality education is given in a curriculum structure containing the total competency credit unit (SKK) for each group of subjects. Each education unit carries out its own development by considering context analysis, student analysis and learning module analysis. The results obtained in the SKK mapping be distributed into lesson hours arranged in the lesson schedule in the education unit. Arranged schedules are map in the form of activities consisting of face-to-face, tutorials, and independently taking into account the competencies that students must master. In 2018 the author has done riset that generate SKK mapping equivalency Package A, Package B and Package C using the curriculum in 2013, so the PKBM Kasih Bundo already have a schedule implementation of learning that can guided in the academic year 2019-2020.

![Figure 1](image)

**Figure 1.** Mapping of the Equality Education SKK Package A PKBM Kasih Bundo Bukittinggi

Based on the information obtained in interviews with mathematics educators, it is known that in the odd semester students in grades 4, 5 and 6 elementary school are combined at the basic level. However, in the even semester, grade 6 students are separated because they will be focused on preparing for the national exam. At the time of learning with the multi-class material that is given, it is done in turns. For example, in the first meeting of class 4 material, the second meeting of class 5, and meeting 3 of class 6 material, and so on the rotation. This is with the reason while repeating the material needed by grade 6 students for national exam preparation. Educators also stated that they were overwhelmed to prepare multi-class material because they did not have a basis for it, because elementary level mathematics educators in Package A were mathematics education graduates who had never studied multigrade learning. Based on the research results, it is known that there are two concepts of multiclass curriculum development that the researchers pay attention to. Curriculum general schedule by Cornish [5] by showing that there are differences in certain material in curriculum rotation and delivering the same material on a general schedule with different instructions and activities according to grade level. Multiclass learning is carried out with the same content as a grouping system, both cross-class and peer groups [6].

Regarding multi-class learning, the results of research by Eeva Kaisa [2] state that multi-age learning is carried out according to the stages of age development by referring to the philosophical and pedagogical foundation of Montessori (learning in heterogeneous groups). Multi-class learning practices based on this research vary widely and are related to the personality of the educator, subjects, and teaching situations. Learning is done in groups with subject organizing. The research, which was carried out in Fireland and Austria, conducted mathematics learning for multi-class classes using a parallel curriculum, in which both classes were taught the same material but were given different assignments. This subject is challenging to be mastered by students with a multi-class system so that educators make work plans. Researchers suggest in the results of the study that educators apply spiral curriculum practices by developing individual learning in order to increase the social cohesion and
cooperation of students. This will later be able to optimize the potential of students with a variety of existing knowledge. The need for the availability of teaching materials that support multiclass learning, which of course cannot be designed by the educators themselves. However, so far there has been no curriculum development specifically to support existing multi-class learning. So that the tendency of learning is only carried out as much as educators so that the material according to competencies is conveyed properly.

3.1.2. Process Standard. Based on the results of the author's research in 2016 [7], when examined from the material to be conveyed, the difficulties faced by educators are the absence of material references to be taught through face-to-face, tutorials, and independently. In 2017, the author conducted independent research on a study of content standards and non-formal curriculum process standards [8]. The result of the research in the form of the mapping of SKK which was reduced to a lesson schedule has been used by one of the PKBM in Bukittinggi as a development of the Non-Formal KTSP.

Obstacles were found and are of particular concern is the competence of teachers of mathematics in Package A is not a graduate of School Education or Education Educators Elementary School. The educator has a mathematics educator background and admits that he does not yet have a good understanding of equality education. Mathematics educators do not know the SKK system well and the teaching is multi-class. Mapping of SKK has been carried out but it is not implemented properly due to the limited time allocation and the conditions of students (attendance, ability, activeness, etc.) which affect the ongoing process. This is in line with the results of research by Raharjo & Suminar [9] which states that the majority of educators have not been able to prepare lesson plans, have not implemented references properly in terms of grouping students by age and have not been able to properly assess the process.

Learning that has been carried out by education tends to use face-to-face activities with the lecture method. Tutorial and independent learning is not going well. Tutorial activities are not supported by the active learning of students, while independent activities are also not equipped with a good study contract. This is because learning is monotonous and does not vary in applying various learning methods that are in accordance with the characteristics of students. In addition to time constraints that a p-face and tutorials is also a problem, which is supported also by the presence of learners who are less consistent. So that in the end learning often repeats the material and the overall mastery of competencies is not optimal.

3.2. Problem Solving Skill

Overall, the ability of students in general who take the package A equivalency education is still low and requires ongoing guidance. This is evidenced by the low learning outcomes of students, wrong, as well as in mathematics. Although mathematics is a very important subject in formal education and is closely related to human life, mathematics is not a topic of interest to students and many students face difficulties in solving mathematical problems due to the inability to acquire many mathematical abilities and a lack of cognitive learning abilities [10]. This is supported by the results of research by Rahmawati et al. [11] with the results that each expected problem solving indicator has not been achieved properly. On the indicators of understanding the problem, some students can answer correctly, the indicators of planning the solution that not one student has been able to answer correctly, while the indicators of solving problems, most of the students are unable to solve them correctly. Likewise, in the final indicator of interpreting the results, students do not write down conclusions from the results of the solutions made to the problem.

Based on the results of the field, the difficulty of students in solving mathematical problems is in understanding the problems presented in math problems. Students are accustomed to routine problems that are not problem solving so they are unable to solve problems given in the form of story problems. This is evidenced by the results of low problem solving abilities. This is known from the test questions carried out on students, it is known that the indicator of the ability to understand problems can only be
met by 25% of students, planning to solve it can be done by 20% of students, completion can be done by 40% of students, and no students who are able to provide an interpretation of the results that have been obtained.

Learning in equality education with three forms of learning implementation options offered by the government has been supported by complete learning modules that can be obtained online. The modules used are limited to each class and do not facilitate the implementation of learning that should be multigrade. Based on the analysis of the module, it is found that the module does not use a learning context that utilizes students' daily life experiences that can help understanding in mastering mathematics learning competencies.

Based on field facts and scientific studies, it is necessary to carry out a study to develop learning using the Realistic Mathematic Education approach to be applied to multigrade classes effectively by integrating problem-solving abilities. Realistic theory was first introduced and developed in the Netherlands in 1970 by the Freudenthal Institute. This theory refers to Freudenthal's opinion that mathematics must be linked to reality and mathematics is a human activity. This means that mathematics must be close to students and relevant to real life every day. Mathematics as a human activity means that humans should be given the opportunity to rediscover mathematical ideas and concepts with adult guidance [12]. This effort is made by exploring various “realistic” situations and problems. Realistic in this case is meant not to refer to reality but to something that can be imagined by students. The principle of reinvention can be inspired by informal solving procedures, while the process of reinvention uses the concept of mathematicalization.

Research on RME has been carried out in many previous studies. Using RME, learning starts from contextual (real world) problems for students who emphasize ability, discussion, and provide arguments so that students can use mathematics to solve problems with a more meaningful process [13]. The use of real experiences in the daily activities of students will make mathematics learning more meaningful and successful. The previous statement corroborated by RME provides opportunities for students to act actively. To carry out mathematics learning with a realistic mathematics education approach, learning materials are needed that are in accordance with the approach. This is confirmed by Fauzan & Yerizon [14] which states that the RME approach wants to build students' understanding of mathematical concepts through understanding students' mathematical concepts through their informal knowledge.

Supporting the previous statement Budiarsih, Agung & Wibawa stated that based on the results of their research, problem solving-based RME has the potential to be developed so that students are able to link learning with real life, activate students in learning, discover mathematical concepts themselves, are able to increase cooperation, dare to express opinions, and able to increase responsibility in learning. It is hoped that this can create fun mathematics learning so that students are enthusiastic about learning activities in multigrade classes.

4. Conclusion

The implementation of package A equivalency education at PKBM Kasih Bundo has not used a varied learning method so that it is difficult to create active learning. Learning is only limited to transverting knowledge by pursuing competency attainment according to the demands of the 2013 curriculum so that it does not pay attention to the meaning of the learning activities carried out. This results in low learning outcomes of students. This is evidenced by the results of students' mathematical problem solving abilities that cannot meet the problem solving indicators properly. The causes of this include the lack of understanding of educators on the curriculum, mastery of learning methods that are not yet good, students are not trained enough with questions in the form of problems, time constraints and contexts that do not support teaching materials.

The solutions offered is RME learning based on problem-solving abilities. Students are trained to learn contextually based on the facts that have been experienced and are easily found in the environment of everyday life. To arrive at good problem solving, students are provided with
meaningful learning activities where students try to find their own concept of the material to be studied. This considers the RME principle.

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