

Implementation of Realistic Mathematics Education at SMKN 1 Pujer with the Theme of Online Lending

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ABSTRACT: Learning mathematics which is carried out conceptually, usually make students feel bored, less interested, less creative, their abilities do not develop, and mathematics learning achievement has so far not been satisfactory. Efforts to improve mathematics learning have been carried out for a long time in various ways and objectives, one of which is the implementation of the Kurikulum Merdeka. One of the lessons that can be carried out to support the implementation of the Kurikulum Merdeka is Realistic Mathematics Education so that a study is carried out by implementing Realistic Mathematics Education in class X BD students at SMK Negeri 1 Pujer with the theme of Online Lending. The research design is classroom action research using a qualitative approach with one cycle consisting of (1) Planning, (2) Action implementation, (3) Observation, and (4) Reflection. From the results of the study it was concluded that students' understanding of mathematics subject matter of single interest and compound interest with the theme of Online Lending increased. This is evidenced by the activeness of students during discussions, the results of simulations and accurate student calculations and students' interest in learning about the advantages and disadvantages of Online Lending other than what has been discussed.

KEYWORDS: Mathematics, Online Lending, Realistic

INTRODUCTION

Mathematics is one of the compulsory subjects studied by students ranging from early childhood education to Vocational High Schools and even to tertiary institutions. The purpose of this mathematics subject is to equip students with knowledge and understanding of concepts in the field of mathematics which can then be applied in solving problems in everyday life. Clear presentation of mathematics subjects needs to be emphasized so that concepts can be understood easily and interestingly.

So far, learning mathematics in schools is learning in the order of: (1) explaining mathematical objects, (2) giving several examples of mathematical objects that have been explained, (3) students are asked to solve questions that are similar/similar to the examples that have been given, and (4) give exercises questions. The exercises given usually vary. Starting from questions that are similar/similar to examples to the application of mathematics in everyday life.

Learning mathematics that is carried out like that usually tends to make students feel bored, less interested, less creative, their abilities do not develop, and the most dangerous thing is that mathematics learning achievement has so far not been satisfactory. Even though these students are not students who are weak in the field of mathematics, but they have been busy memorizing mathematical objects presented by their teachers. These objects can be facts, concepts, principles, formulas or operations. Because they have to memorize too much, as a result students cannot think critically and are less prepared to deal with problems that arise in everyday life.

Efforts to improve mathematics learning have been carried out for a long time in various ways and purposes. These efforts are in the form of curriculum changes along with clarified objectives, there are also renewals through the learning process in class.

Implementation of the *Kurikulum Merdeka* is one of the efforts to improve the quality of learning. Rahayu (2022) states that by using the *Kurikulum Merdeka* changes are felt in schools, teachers are more flexible to be creative in teaching as much as possible, and know more about students' interests, talents, needs and abilities.

One of the lessons that can be implemented to support the implementation of the independent curriculum is Realistic Mathematics Education. Realistic Mathematics Education is a learning approach that refers to real objects for students, emphasizing process skills, discussing, arguing, collaborating, with classmates so that they can find themselves and be able to solve problems both individually and in groups (Zulkardi, 2011). If associated with the concept of independent learning, there are five characteristics of Realistic Mathematics Education which can be described as follows: (1). The use of context in phenomenological expansion. (2). Use of models with vertical instruments. That is, the existence of models and contexts will be

Implementation of Realistic Mathematics Education at SMKN 1 Pujer with the Theme of Online Lending

able to provide direct experience to students in learning activities. (3). students' own creativity and contribution. These characteristics support the creation of freedom for students in developing their potential. (4). Interactive character of the teaching process. In this case the educator must be able to guide and be a good facilitator to develop learning. (5). Connection or interweaving of various mathematical concepts or material.

From this explanation, a study was carried out by implementing realistic Mathematics Education in class X BD students at SMK Negeri 1 Pujer with the theme of Online Lending, this was done because the phenomenon of Online Lending is currently starting to spread in society in the form of pay later.

LITERATURE REVIEW

Realistic Mathematics Education

Realistic Mathematics Education (RME) builds deep and long-term mathematical understanding by working from contexts that make sense to students. The RME curriculum is built around contexts that have the potential to elicit powerful yet flexible mathematical models. Contexts can be taken from the real world, from fiction, or from an area of mathematics with which students are already familiar. The important thing is that students are able to imagine and engage with these scenarios. Commonly in mathematics classrooms, students are first shown a mathematical technique and then asked to apply this technique in various settings. Images in many textbooks do little to advance students' thinking. Experience shows that when students stay connected with the underlying context of a particular problem type, they are able to make sense of what they are doing, without memorising rules and procedures which have no meaning for them. Even when students move into more abstract maths—dealing with ratios, gradients or circumferences—they are able to go back to contexts that help them unpick and explain formulae. One way of visualising the RME learning experience is through an 'iceberg' metaphor. While formal mathematics is visible above the water, much more lies beneath. (rme.org.uk).

According to Gravemeijer (1994), RME has five characteristics as follows: (1) The use of real world context Realistic mathematics education emphasizes the importance of exploring the phenomena of everyday life. The informal knowledge that students gain from everyday life is used as a contextual problem to be developed into a formal mathematical concept. (2) Vertical instrument (the use of models) The development of informal knowledge of students into formal concepts of mathematics is a gradual process. The process can be supported with the use of models and symbols. The use of models is a bridge for students to create their own models from real situations to abstracts or from informal to formal situations. (3) Students' contribution (the use of production and construction) Students actively construct their own mathematical materials based on facilities with the learning environment provided by teachers, actively solving problems in their own way. (4) Interactive activity (the use of interactivity) Interaction between students with teachers, students with students, and students with learning tools is important in Realistic mathematics education. Consequently, interactive learning activities will enable communication, negotiation, explanation, ask and respond to questions and reflections to achieve form of formal knowledge. (5) Topic relatedness (the use of relatedness) The learning of a mathematical material is related to various mathematical topics in an integrated manner. Mathematical structures and concepts are interrelated, usually a topic discussion should be explored to support meaningful learning.

A few things to note from the characteristics of the approach to Realistic Mathematics Education above are RME belongs to: a) 'active students' way of learning' since the mathematics learning is conducted by 'learning by doing'; b) student-centered learning since the students solve their problem themselves according to their ability—in this case, their teacher merely serves as a facilitator; c) guided inquiry-based learning since the students are required to invent and reinvent mathematical concepts and principles; d) contextual learning since the starting point of mathematic learning is contextual matter—which includes students' problem in their everyday life; e) constructivist learning since the students are guided to reinvent their knowledge of mathematics by themselves by solving problem and discussing.

Online lending

Online lending is the provision of financial services to bring together lenders/lenders with loan recipients/borrowers in the context of entering into loan agreements in the rupiah currency directly through an electronic system (OJK, 2022). The Financial Services Authority (OJK) emphasized that the official online loan interest in Indonesia is a maximum of 0.4% per day for multipurpose and short-term loans. Short-term loan interest means that it is less than 30 days old. The productive loan interest is between 12% - 24%. This interest rate is an agreement from the Indonesian Funding Fintech Association (AFPI) (Dewi, 2022).

The advantages of Online Lending are (a). Fast disbursement process One of the things that attracts users is the fast disbursement process. Usually disbursement of funds takes about 1-2 days. There's even liquid immediately on the same day. This is very suitable for those who need an emergency fund. What's more, submissions can be made anytime and anywhere. (b). Easy requirements In addition to fast disbursement of funds, the submission requirements are also easy. Unlike applying for a loan to a conventional bank or other financial institution that requires a lot of documents to collateral. Online Lending generally only require a KTP, self-portraits, and payslips to support credit limits (there are also several Online Lending that do not require payslip documents). (c). Can be used for various needs Loans from conventional banks or Islamic institutions usually must be

Implementation of Realistic Mathematics Education at SMKN 1 Pujer with the Theme of Online Lending

clear about their use (for business capital or financing) when submitted accompanied by special conditions according to their use. Meanwhile, funds from Online Lending can be used as emergency funds or other consumptive needs. (d). Some companies do not require a good credit history. If borrowing at a conventional bank requires a good credit history and a long survey, Online Lending don't require that. (e). On line. The whole process is done online, no need to face to face. Borrowers can apply for loans anywhere and anytime. Just have a smartphone. (f). Flexibility of tenors. Online Lending introduce a credit tenor of 30 days. This short tenor is much sought after because it is considered suitable for the employee's pay cycle. While banks ask for a minimum tenor of 6 months, not everyone needs a loan that long. (g). Small ceiling. Banks rarely provide small loan ceilings. The minimum is IDR 5 million in KTA. Online Lending offer loans starting from IDR 500 thousand. People who need a small ceiling, are well suited to online loan offers. (h). No credit card. Online Lending do not require a credit card in submission. This is a big relief for many people because banks require credit card submissions. (i). No warranty. No collateral is submitted to be able to apply for a loan. This is also a big relief for many people who want to borrow but without having to surrender assets as collateral (Harahap, 2019).

Disadvantages of Online Lending are, (a). Small loan nominal Online Lending are famous for their easier conditions, so with fast disbursement of funds and fewer complete documents, of course the credit limit given is not as big as borrowing from other financial institutions. Especially with no guarantees. The average loan funds provided range from IDR 500 thousand to IDR 3 million. (b). Short loan tenor. The time tenor usually ranges from 7 days (1 week) to 12 months. (c). High interest. Every conventional loan, either through banks or other institutions, will generally be subject to loan interest. This also applies to illegal Online Lending. Apart from considering the loan repayment tenor, another thing to pay attention to is the loan interest. The interest set is usually in the range of 0.7% to 1% per day, which if accumulated reaches 30% per month. But there are also those who apply fixed interest rates ranging from 5-12% per month. Please note that the interest does not include late fees. (d). Risk of data theft Every time you access an online loan application, potential illegal online loan customers will be asked to allow access to their cellphones, including galleries, contacts, and others. This is the possibility of data leaks or even the data being sold. In addition, cell phone tracking including contacts and galleries is usually used by legal debt collectors as a weapon to humiliate their customers to pay off their debts immediately. Even though the OJK has protected its customer data, it is not impossible that there will still be data leaks. (e). Limited Area Coverage One of the objectives of developing digital financial services is to equalize financial inclusion, so that all people can experience easy access to financial services. However, currently online loan companies only serve big cities, not remote areas (Harahap, 2019).

RESEARCH DESIGN

This type of research is classroom action research using a qualitative approach. This method was chosen because in this study it is more concerned with the process of students in solving a problem they face than the results obtained. This research uses a type of case study research, namely research in which the researcher carefully investigates an activity and process that is collected in full using various data collection procedures based on a predetermined time (Creswell, 2009). Classroom action research is a form of reflective study that is carried out to improve rational abilities, carry out tasks, deepen understanding and improve the conditions in which learning practices are carried out. The qualitative approach is descriptive, and directly uses natural data. This study uses a research model with reference to the classroom action research flow model developed by Kemmis and Taggart (Arikunto, 2010) but only uses one cycle. Each cycle in this study consists of (1) Planning, (2) Action implementation, (3) Observation, and (4) Reflection.

This research was conducted for one month, on November 2022. With a schedule following the mathematics lesson at SMK Negeri 1 Pujer. Research subjects or respondents are parties who are sampled in a study. The research subjects is students of CLASS X BD.

Data collection is carried out to obtain accurate and relevant materials. The methods used have different characteristics. In this study, data collection was obtained using test methods, interviews or interviews and observation. The research instruments used in this classroom action research were, 1) observation guidelines to check student and teacher activities based on previously determined indicators, 2) notes on events that occurred during the action given, both positive and negative, 3) sheets test to see student learning outcomes. Data analysis is carried out to produce conclusions that can be accounted for.

RESULT AND DISCUSSION

The first step is planning. Planning is done by making teaching modules and learning materials. The learning materials discussed are related to Online Lending and paylaters.

The next step is implementation and observation. This time the mathematics lesson lasted 4 hours and began with a prayer led by the class leader, followed by filling in the attendance list. Then proceed with conveying the objectives, models and learning steps.

Learning is continued by grouping students so that groups of two students are formed. Learning is continued with core activities that follow the RME learning model which includes (1) Understanding daily problems/context, (2) Explaining contextual problems, (3) Solving contextual problems, (4) Comparing and discussing answers, (5) Drawing conclusions.

Implementation of Realistic Mathematics Education at SMKN 1 Pujer with the Theme of Online Lending

In detail the learning activities based on the steps of the RME learning model are as follows. (1) Understanding daily problems/ context, in this step the teacher and students discuss Financial Technology, Online Lending, and paylaters. This activity is classical in nature so that all students are directly involved in the discussion. Discussion material was taken from several sources, both from the news, online newspapers and blogs. (2) Explaining contextual problems, in this step students begin discussing with their groups discussing legal and illegal online loan providers. legal in this case has a permit from the OJK. In addition, students also discussed interest rates from each online lender found. Most student discussion about Online Lending named *Adakami* and *shoope* paylater. This is because the two platforms often appear as advertisements on social media. (3) Solving contextual problems, in this step students simulate loans and the amount of interest and length of the loan. Students calculate the amount of installments and the total installments that must be paid during a certain loan period. Because online loan interest applies daily, the majority of students simulate a maximum loan length of one month. (4) Comparing and discussing answers, in this step students present the results of the simulation and calculations and then compare them with the simulations and calculations of other groups. (5) Drawing conclusion, in this step students and teachers draw conclusions from the results of simulations and calculations from Online Lending and paylaters and discuss the advantages and disadvantages of the simulation results.

From the observation results of the implementation of the RME steps can be seen in the following table.

Table 1. Observation of RME Steps

No	RME Steps	Execution
1	Understanding daily problem/ context	Yes
2	Explaining contextual problem	Yes
3	Solving contextual problems	Yes
4	Comparing and discussing answers	Yes
5	Drawing conclusion	Yes

From the results of observations about Student Activity of RME with the theme Paylater/Online Lending, it can be seen in the following table

Table 2. Student Activity of RME with the theme Paylater/Online Lending

No	Students Activity	Completeness
1	Understanding contextual issues (Paylater/Online Lending)	100 %
2	Analyze loan interest	100 %
3	Associated with interest rules from the OJK	100 %
4	Determine the amount of the total payment	100 %
5	Analyze the advantages and disadvantages of using paylaters/ Online Lending	100 %

The final step is Reflection. In this step there are several findings, namely, (1) students are interested in learning that directly touches their lives, especially those that are in accordance with the marketing major, (2) the use of technology to search for information is in great demand by students who are currently always in contact with smartphones, (3) . When discussing trending things, students are very enthusiastic and even simulate shopping activities at emmers, (4). The desire to learn mathematics increases with a clear and real motivation.

CONCLUSIONS

From the results of research on the Implementation of Realistic Mathematics Education at SMKN 1 Pujer with the theme of Online Lending, it can be concluded that students' understanding of the mathematics subject matter of single interest and compound interest with the theme of Online Lending has increased. This is evidenced by the activeness of students during discussions, the results of simulations and accurate student calculations and students' interest in learning about the advantages and disadvantages of Online Lending other than what has been discussed.

From the results of interviews after learning, it was found that students were interested in learning with the Realistic Mathematics Education model for the following mathematical materials.

ACKNOWLEDGEMENT

This study uses respondents from students using one concept of learning material, namely rank numbers so that it does not fully provide an overview of students' ability to understand Realistic Mathematics Education. Further research needs to be supplemented with various learning material concepts so that students will be familiar with Realistic Mathematics Education.

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