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AN ANALYSIS OF A JUNIOR HIGH SCHOOL'S READINESS IN OPTIMIZING STUDENTS' NUMERACY SKILLS TO FACE MINIMUM COMPETENCY ASSESSMENT

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ABSTRACT

In order to optimize students' literacy and numeracy skills, the Indonesian government implemented Minimum Competency Asessment or *Asesmen Kompetensi Minimum* (AKM) for students in primary and secondary school. Therefore, it is essential to investigate schools' readiness in facing the AKM. This study describes the planning, implementation, and evaluation of mathematics learning as efforts in optimizing students' numeracy skills to face the AKM at a public junior high school in Klaten Regency, Central Java, Indonesia. The numeracy components consists of content (numbers, measurement and geometry, data and uncertainty, and algebra), context (personal, socio-cultural, and scientific), and cognitive process (understanding, applying, and reasoning). This research is a qualitative study with a case-study approach. Data collection in this study uses observation, interviews, and documentation techniques. The data analysis technique used in this research is an interactive flow model through stages of data collection. The study results indicate three findings. First, teachers prepare learning media, worksheet-books, and mathematics textbooks to support learning. The tutoring program for grade VIII focuses on solving numeracy problems, which is supported by an AKM book. However, teachers still need to develop a specific lesson plan and student worksheet, which contains problems with numeracy aspects. Second, during the learning implementation, the school has provided good facilities, teachers use learning media and student worksheet-books containing problems that only partially incorporate numeracy components. Third, teachers have conducted assessments and created scoring guidelines in the learning evaluation stage. However, the evaluation shows that the practice provided does not include problems with numeracy components.

Keywords: Numeracy Skills, Mathematics Learning, Learning Planning, Learning Implementation, Learning Evaluation

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PRELIMINARY

Mathematics is one of the subjects needed by students starting from elementary school. According to Rahman et al. (2021), math is essential and should be given to students since elementary school to make students think logically, systematically, and creatively. Based on the Program for International Student Assessment (PISA) report, a unique assessment program that helps compare education systems between countries

worldwide, in 2018, Indonesia was ranked 74 out of 78 countries (OECD, 2019). PISA tests the academic performance of 15-year-old students conducted by the Organization for Economic Cooperation (OECD).

In order to optimize students' literacy and numeracy, in 2021, the Indonesian government implemented a new policy by replacing the National Examination or *Ujian Nasional* (UN) with the Minimum Competency Assessment or *Asesmen Kompetensi Minimum* (AKM). AKM is designed to measure students cognitive numeracy (Nurhikmah et al., 2021). The substitution of UN with AKM is carried out to change the education evaluation in Indonesia to map the education system in terms of input, process, and outcomes rather than assessing student achievements as previously used in the UN (Fauziah et al., 2021). Referring Han, et al. (Han et al., 2017) indicators of numeracy skills include (1) using various numbers and symbols related to basic mathematics to solve problems in various everyday life contexts, (2) analyzing information presented in various forms (graphs, tables, charts, diagrams, etc.), and (3) interpreting the results of such analysis to predict and make decisions.

Assessment is an activity that reveals the quality of the learning process and outcomes (Resti et al., 2020). According to Andiani et al. (2020), the AKM set by the government should be part of the government's target in preparing students for the 21st century with various skills that must be achieved. AKM assesses essential skills for all students to develop competencies and actively participate in society (Kemdikbud, 2020). AKM measures students' cognitive abilities, measured as reading and numeracy literacy (Novita et al., 2021). AKM is conducted at the middle levels in grades IV of elementary school, VIII of junior high school, and XI of senior high school/vocational school (Lestari, 2022). It is crucial to understand AKM, especially by all parties involved, including teachers, school principals, and students.

Numeracy skills are defined as a person's ability to use reasoning (Ekowati et al., 2019). The focus of numeracy is to help students formulate mathematics in various contexts. According to Ahyansyah (2019), numeracy skills are very important for a person to have in order to develop their mathematical abilities so that they can be used to solve mathematical problems that exist in everyday life. Numeracy skills are one of the skills measured in AKM.

To ensure that AKM measures the competencies needed in life, AKM questions assess topics or content, various contexts, and several levels of cognitive processes (Kemdikbud, 2020). In numeracy, content aspects are divided into four groups, namely

numbers, measurement and geometry, data and uncertainty, and algebra. The cognitive level indicates the thinking processes required to solve problems or questions. Cognitive processes in numeracy are divided into understanding, application, and reasoning. Contexts indicate the life aspects or situations for the content used. AKM's contexts are divided into personal, socio-cultural, and scientific.

Several studies have examined numeracy. For example, Patriana et al. (2021) concluded that the cultivation of literacy and numeracy in elementary schools is carried out through monitoring from the planning, implementation, and evaluation stages. This habituation of numeracy literacy is related to and influences students' mathematics learning outcomes (Oktaviana et al., 2022). Furthermore, Rohim et al. (2021) stated that implementing AKM is expected to improve elementary school students' literacy and numeracy skills.

Fauziah et al. (2021) concluded that AKM needs to be socialized more to teachers so that they can implement providing examples of similar problems as an effort to improve the quality of student learning outcomes. Meanwhile, Cahyanovianty & Wahidin (2021) stated that students' numeracy skills at a junior high school in Bekasi Regency were dominated by moderate numeracy skills. From various previous studies that examine numeracy skills, research has yet to be found that examines school readiness in optimizing students' numeracy skills, primarily based on planning, implementation, and evaluation of learning at the junior high school level. The results of the research are expected to serve as benchmarks for improving and developing the quality of education. Additionally, they will also serve as a foundation for schools in developing numeracy literacy skills to equip students in completing the AKM.

Based on the description above, the objectives of this study are: (1) to describe learning planning to optimize students' numeracy skills to face AKM in a junior high school, (2) to describe learning implementation in an effort to optimize students' numeracy skills to face AKM in a junior high school, and (3) to describe learning evaluation in an effort to optimize students' numeracy skills to face AKM in a junior high school.

METHODS

This study is qualitative research with a case study. It examines the school's readiness to optimize numeracy skills to face AKM in junior high school mathematics learning. This research was conducted in a public junior high school in Klaten Regency,

Central Java, Indonesia. The subjects of this study were the principal, mathematics teachers, and grade VIII students in the 2022/2023 academic year.

This study employed a comprehensive range of data collection methods. Interviews ere conducted to gather detailed information from a school principal, a mathematics teachers, and two students. Observations were made to directly witness the learning implementation. Documentation was used to support data obtained from interviews and observations, including learning tools, student learning outcomes, and photo documentation during the learning implementation process. Table 1 describes the interview protocol.

Table 1. The Interview Protocol

Learning Stages	Respondents	
	The School Principal and Mathematics Teacher	Students
Planning	1. How does the school policy ensure that every teacher produces comprehensive lesson plans for each lesson? And are these lesson plans oriented towards AKM? 2. How does the school prepare specific AKM Numeracy-oriented lessons for students? 3. What teaching models and instructional media does frequently use? How do these teaching models and instructional media contribute to optimizing students' numeracy skills? 4. How does the student worksheets created by include content, context, and cognitive levels within AKM?	-
Implementation	1. How do the facilities available at the school support Numeracy-oriented learning? 2. What teaching methods/models/ approaches does frequently use in teaching? 3. Does teacher's presentation of material align with the lesson plans and include aspects of content, context, and cognitive processes in AKM Numeracy? 4. How is the use of student worksheets implemented during lessons? 5. What challenges does the school face in optimizing Numeracy AKM in mathematics education? How does the school address these challenges?	1. What teaching methods do teachers use during lessons? 2. What mathematics topics are taught in school? Do teachers provide materials relevant to daily life? 3. During classroom instruction, do teachers use student worksheets or other media? 4. What types of problems/questions are included in the student worksheets or media used by teachers?

Learning Stages	Respondents	
	The School Principal and Mathematics Teacher	**Students**
Evaluation	1. What policies does the school establish to ensure that every teacher conducts assessments of students? 2. How do teachers determine the types of AKM-oriented questions given to students? Do these questions incorporate aspects of content, context, and cognitive processes in Numeracy AKM? 3. After conducting assessments, do teachers provide feedback to students based on the results? 4. What policies does the school have regarding teacher and principal reflection/evaluation activities related to the implementation of teaching?	1. When do teachers typically conduct assessments/exams/ tests for students? 2. What types of questions do teachers provide in each assessment? Are they essay questions or short answer questions? 3. Are there test questions related to everyday life issues? 4. After assessments are conducted, how do teachers provide feedback?

This research uses data analysis techniques with an interactive flow model through the stages of data collection from data sources, namely principals, mathematics teachers, and supporting documents. Data was reduced by eliminating irrelevant information, saving the necessary data, and categorizing the data as needed. In data reduction and categorization, it is crucial to use indicators relevant to the context, content, and cognitive level related to numeracy skills, as stated in the AKM design. Data presentation is done by presenting the results of observations of learning implementation to optimize numeracy skills to face AKM in the form of a summary description. Furthermore, conclusions are drawn based on new findings found through the results. Figure 1 shows the summarize of the research procedure of this study.

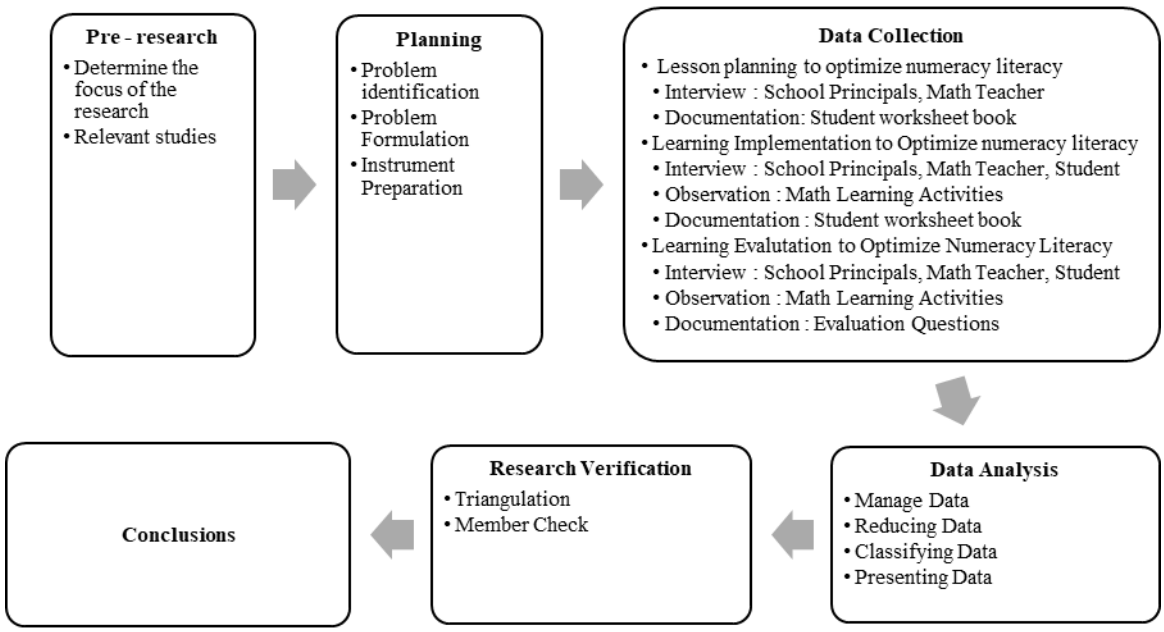


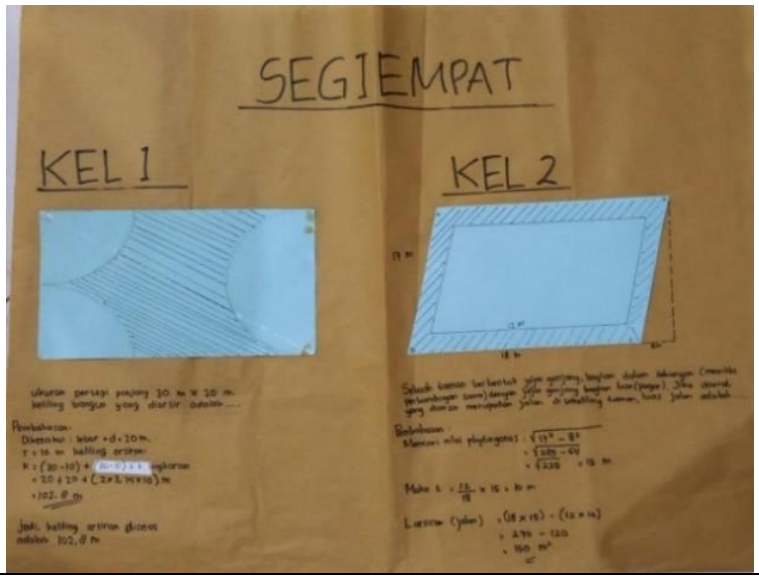
Figure 1. Summarize of Research Procedure of this Study

RESULTS AND DISCUSSION

This study used observation, interview, and documentation methods to plan, implement, and evaluate mathematics learning and optimize students' numeracy skills in facing AKM. In lesson planning, observations were made on teacher activities in preparing for learning. The teacher prepares teaching models, media, and uses *Student Worksheet Books or Lembar Kerja Siswa* (*LKS*) to support learning activities. During the observation, the teacher did not present the lesson plan used in teaching. Teachers also participate in the "mathematics subject teacher consultation" or *Musyawarah Guru Mata Pelajaran* (MGMP) forum at the regional level, which oversees several sub-districts. There is a tutoring policy for eighth-grade students scheduled every Thursday (literacy guidance) and Friday (numeracy guidance). Additionally, the school has also prepared a School Budget Plan to purchase books focusing on AKM.

During the implementation of learning, the school has prepared good facilities such as computers and soft files of questions geared towards AKM. Teachers implement the Project-Based Learning (PjBL) teaching model. This learning model, which focuses on contextual learning through complex activities, has proven to be a successful tool. The teachers use learning media according to the material and learning objectives. The teacher utilizes this learning model to explain the topic of quadrilaterals, involving activities to draw various types of quadrilaterals, mention their properties, calculate their area and

perimeter. To ensure that students become more proficient in numeracy skills, the teacher provides new learning materials by merely linking geometric shapes with representations in everyday life. However, they do not address the problems existing in everyday life. The teacher has not used worksheets which are uniquely made for the specific topic. Instead, use the LKS. Figure 2 shows students' product in the PjBL learning. According the numeracy components, the project involves geometry (content), applying (cognitive process) and does not involve any contexts.



Translate Figure 2:

Group 1

The dimensions of the rectangle are 30 m × 30 m. The perimeter of the shaded figure is…

Discussion

Given: width = d = 20 m
r = 10 m shaded perimeter
K = (30 – 10) + (30 – 10) + circumference of the circle**
= 20 + 20 + (2 × 3.14 × 10) m
= 20 + 20 + 62.8 m
= 102.8 m
Therefore, the perimeter of the shaded area is 102.8 m.

Group 2

A park has the shape of a parallelogram, with the inner part similar (having the same ratio) to the outer parallelogram (the fence). If the shaded area represents a path around the park, the area of the path is…

Discussion

Find the value using the Pythagorean theorem $=\sqrt{17^2 - 8^2} = \sqrt{289 - 64} = \sqrt{225}$ = 15 m

Then t = $\frac{12}{18} \times 15$ = 10 m

The shaded area of the road = (18 × 15) – (12 × 10) = 270 – 120 = 150m^2

Figure 2. Students' Product in the PjBL Learning

During the learning evaluation, teachers provide problems and exercises to students before and after explaining the material. Teachers give exercises to measure students' learning competence. The teacher creates questions in various forms. Teachers also prepare appropriate scoring formats and guidelines to measure students' learning competence

fairly. After assessment, teachers provide constructive feedback to students so they understand the final assessment results.

Lesson planning is structured as a meaningful learning design. According to the school principal, there is a scheduled study guidance policy every Thursday (literacy guidance) and Friday (numeracy guidance) for Grade VIII. In addition, the school has also prepared a school budget plan to purchase books focusing on AKM. The transcript below is a quote from an interview with the school principal.

Researcher : *"How does the school prepare special numeracy-focused AKM learning for students?"*

Principals : *"Because Grade VIII students are the ones implementing AKM, the school has already included a special schedule, for example, tutoring program for Literacy is scheduled for the first hour on Thursdays and for Numeracy is on Fridays. In addition to that policy, the school has already considered supportive books in the School Budget Plan to prepare for AKM."*

According to the mathematics teacher, all teachers in the school must adjust their teaching models, instructional materials, and student worksheets that lead to AKM. Teaching models and instructional media used also vary, tailored to the material, which can be through visual aids or out-of-classroom learning. By using teaching models and instructional media, students are more engaged in learning and can better understand when the teacher is explaining. The transcript below is a quote from an interview with the mathematics teacher.

Research : "*How do you often use teaching models and instructional media? What is the contribution of these teaching models and instructional media in optimizing students' numeracy skills?"*

Mathematics Teacher : "*The models and media I commonly use vary depending on the material. The media I usually use can come from the surrounding environment. When I use teaching models and instructional media, students become more active and engaged in learning".*

The implementation of learning is carried out by teachers in managing learning in the classroom. In facing AKM, the school has prepared good facilities such as computers and soft files of questions that lead to AKM. The teacher provides new learning materials by merely linking geometric shapes with representations in everyday life. During the

interview, the teacher explained that LKPD was used during learning and that lesson plans were prepared during learning. However, during the observation, the teacher did not use LKPD or prepare lesson plans.

According to the school principal, the percentage of numeracy learning outcomes had decreased, and the decrease occurred in almost all schools. Despite the decline, the numeracy results were still reasonable compared to the national, provincial, and district averages. After the percentage decreased, the school made more efforts in the learning community. Later, teachers with numeracy must have a way to solve it so that numeracy does not go down. The transcript below is an excerpt of the interview with the principal.

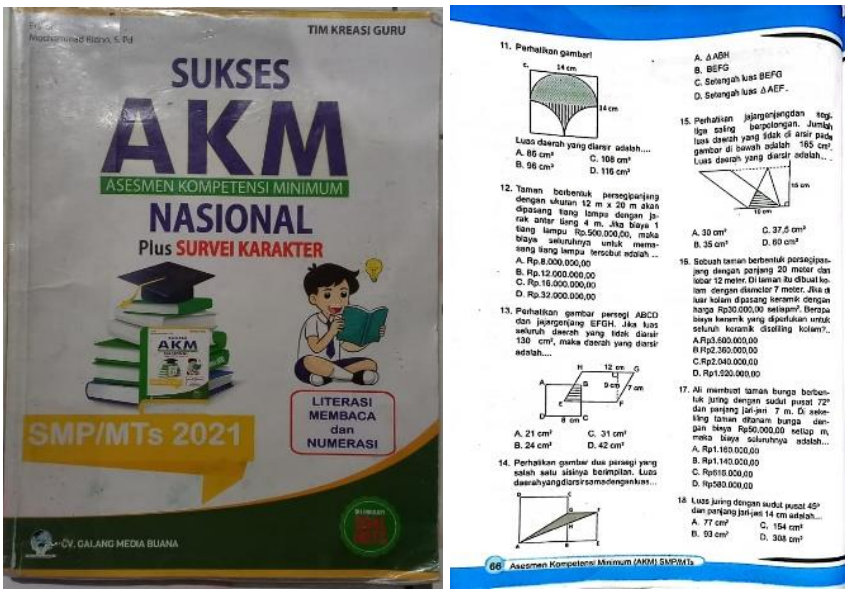
Research	:	*"What are the obstacles experienced by schools to optimize AKM Numeracy in mathematics learning?"*
Principals	:	*"The percentage achievement of numeracy learning outcomes had decreased and the decline occurred in almost all schools. Although there was a decrease, the numeracy results were still fairly good. After the percentage decreased the school made more efforts in the learning community."*

In learning evaluation, to optimize numeracy skills in facing AKM, teachers conduct assessments on students to obtain certainty of student learning outcomes. According to the mathematics teacher, for learning evaluation, the teacher conducts assessments, including tests, and the forms of questions given also vary according to the material. The transcript below is an excerpt from an interview with a math teacher.

Research	:	*"How do you evaluate learning and what form of questions are given to students?"*
Mathematics Teacher	:	*"The learning evaluation carried out is by conducting a test assessment to measure student learning outcomes. The form of the questions given varies and adjusts to the material. However, the questions given to students are more often in the form of description questions because from the answers students can later find out how much the child understands the material."*

School policy for evaluation activities for principals and teachers is usually carried out every semester. This reflection/evaluation activity aims to discover what has been achieved in learning and what has not been achieved. Then, the school will follow up on what has yet to be achieved so that the learning plan can be achieved.

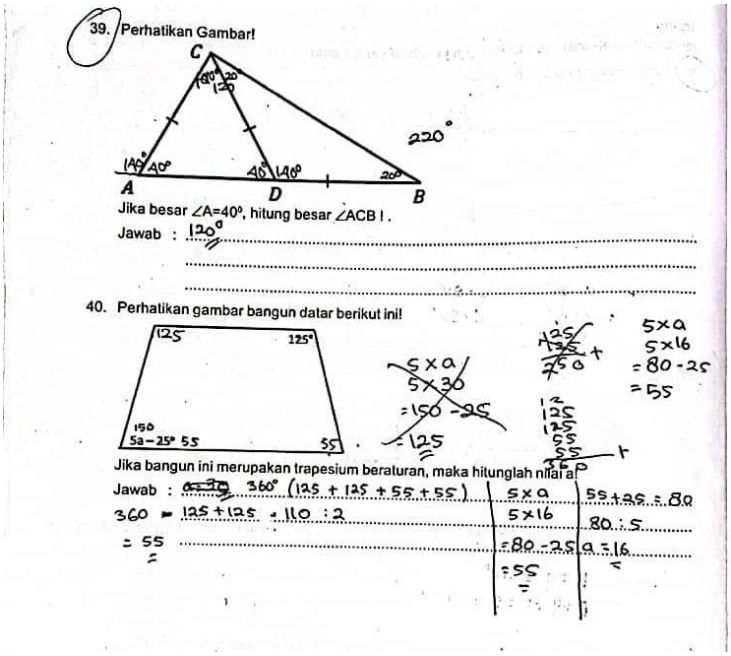
There is no documentation of RPP or LKPD designed by teachers for the planning stage. However, there is an LKS to support students' learning activities, although it does not contain numeracy problems. Yet, the school provides AKM books to support the tutoring program for literacy and numeracy. Figure 3 shows the AKM Book and examples of the problems inside.



Translate Figure 3:	
The first figure on the left cover book:	**The second figure on the right some of:**
Success akm (minimum competency assessment) national plus character survey smp/mts 2021 reading litetracy and numeracy	The questions that will be used from that book, one of them: A rectangular garden measuring 12m x 20m will have lamp posts installed with a distance of 4m between each post. If the cost of one lamp post is rp. 500,000.00, then the total cost for installing all the lamp posts is…

Figure 3. AKM Book for Junior High School Students

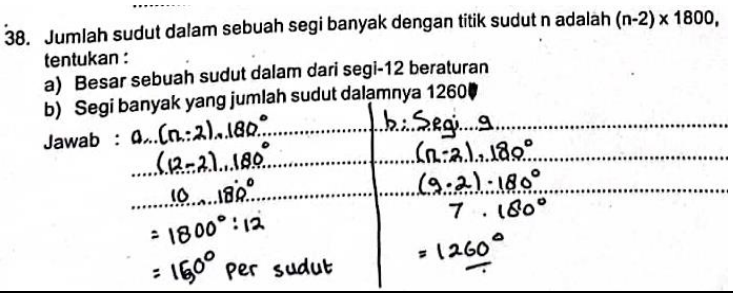
In the learning implementation, the teacher used an LKS. Students were asked to study the examples and solve the problems provided in the LKS. Questions 4 and 5 contain geometry and measurement content at the application level. However, both questions do not yet include contextual aspects in numeracy AKM. The examples and problems in the LKS are described in Figure 4.



Translate Figure 4:	
Question number 39 & 40.	**Answer number 39 & 40.**
39. Observe the picture! If the measure of angle A is 40 degrees, calculate the measure of angle ACB. 40. Observe the following plane figure! If this figure is a regular trapezium, calculate the value of a!	39. 120° 40. => 360° (125 + 125 + 55 + 55) = 360 – 125 +125 = 110 : 2 = 55 => 5 × a = 5 × 16 = 80 – 25 = 55 => 55 + 25 = 80 = 80 : 5 = a = 16

Figure 4. Student Worksheets Book

In the learning evaluation, the teacher also used problems in the LKS to assess the student's achievement in mathematics learning for that day. Referring to the AKM aspects, Figure 5 shows a problem with geometry content and the cognitive process of reasoning, but there needs to be a numeracy context. In general, the problems for evaluation do not include contexts as AKM does.



Translate Figure 5:

38. The sum of the interior angles of a polygon with n vetrtices is (n – 2) x 1800, Determine:
    a) The measure of an interior angle of a regular 12 – sided polygon.
    b) The polygon whose sum of interior angles is 1260.

Answer:

a) (n – 2) . 180° (12 – 2) . 180° = 10 . 180° = 150° per angles	b) Nonagon (n – 2) . 180° (9 – 2) . 180° = 7 . 180° = 1260°

Figure 5. Problems for Learning Evaluation

Based on the research results regarding schools' readiness to optimize numeracy skills to face AKM, the subsequent discussion focuses on the analysis of research results related to planning, implementation, and evaluation of learning in efforts to optimize numeracy skills to face AKM in junior high school. The following is the discussion based on research results.

1. Learning planning to optimize numeracy skills to face AKM

Based on the research results regarding learning planning in efforts to optimize numeracy skills to face AKM, it was found that teachers still need to prepare an RPP designed as a guide for conducting learning that aligns with the set learning objectives. Teachers should prepare the RPP as a reference for learning to prepare in equipping numeracy skills. As stated by Mawardi (2019), using the RPP is expected to ensure that the learning process practiced by teachers can experience optimal implementation in line with the established learning objectives.

Teachers also prepare teaching media and methods to achieve learning objectives. The purpose of creating teaching media is to support learning to be more optimal. As Bernard & Senjayawati (2019) explained, teaching media should be designed according to the learning process. In the interview, the teacher explained that to facilitate learning activities, they usually use LKPD, but during the researcher's observation, the teacher did not use LKPD and instead used worksheets from the Student LKS during teaching. LKPD is one of the essential teaching materials to support the learning process (Kinanti & Rejeki, 2023). Using LKPD leads to effective interaction between students and teachers in discussions to enhance students' activities and learning outcomes. This statement is in line with the view expressed by Ulfah & Rejeki (2022) that LKPD stimulates interaction between students and teachers in the form of discussions to improve students' learning outcomes.

There is a policy for Grade VIII, which consists of study guidance scheduled every Thursday (literacy guidance) and Friday (numeracy guidance). This study guidance is the school's effort to help students develop and achieve their learning potential. Study

guidance is one of the efforts to enhance students' learning potential (Muzaqi et al., 2021). The school has also prepared a School Budget Plan to purchase books focusing on AKM. The mathematics teachers of Grade VIII are also part of the regional-level MGMP forum overseeing several districts.

Based on the discussion above, it can be concluded that the stages of learning planning to optimize numeracy skills to face AKM, the teacher prepares learning methods, learning media, and uses LKS to support learning activities. Moreover, the school schedules a tutoring policy for literacy and numeracy guidance, and provides a book of AKM numeracy problems. Teachers have also joined the MGMP forum. However, teachers still need to make lesson plan documents and have yet to develop LKPD which contains numeracy problems with various aspects of content, context, and process cognitive.

2. Learning implementation to optimize numeracy skills in facing AKM

Based on the research results, the researcher obtained information regarding the implementation of learning in optimizing numeracy activities to face AKM. It was found that the school had prepared good facilities, such as computers and soft files of questions that lead to AKM. Teachers use the Project-Based Learning (PjBL) learning model. This learning model focuses on student activities by solving problems and applying knowledge while working on projects.

Teachers utilize learning media by adjusting students, learning materials, and learning objectives. The utilization of learning media can improve the quality of learning. Research by Murtado et al. (2023) explains that using learning media can improve the quality of learning, optimize student understanding, and increase student involvement in learning.

To ensure that students become more proficient in numeracy skills, the teacher provides new learning materials by merely linking geometric shapes with representations in everyday life. However, they do not address the problems existing in everyday life. The teacher does not use worksheets LKPD but uses LKS containing material and problems that do not optimally include numeracy. The importance of relevant contextual learning materials in enhancing understanding of mathematical concepts (Vitoria, 2024). In specific lessons, teachers invite students to learn outdoors. The activity aims to provide opportunities for students to be directly involved and learn material through tangible objects. This finding follows the research of Suryantika & Aliyyah (2023), which explains that students are invited to learn by paying attention to the surrounding environment to

improve their thinking skills. In addition, students are more independent because they find what is being learned independently, and the teacher only acts as a facilitator.

From the discussion above, schools have prepared good facilities for implementing learning to optimize numeracy skills to face AKM, teachers use varied learning models, and learning media used by teachers adjust to the material and learning objectives. Teachers explain the material by representing it in everyday life, but does not solve the problems. The student workbooks used by the teacher contain material and problems that do not yet incorporate numeracy.

3. Learning evaluation in optimizing numeracy skills for AKM

Based on the research results related to learning evaluation in an effort to optimize numeracy skills for AKM, teachers have conducted assessments and will usually conduct assessments at the beginning and end of the material, summative assessments, and end-of-semester assessments. The teacher creates questions in various forms. Teachers make scoring guidelines with more description scores than others because, from the description questions, the teacher can determine the extent to which students understand the material. As Fasha & Triyastuti, (2021)expressed, numeracy AKM questions require high-level thinking skills and can gauge students' problem-solving abilities. Student worksheet book are used by teachers as guides for materials and student practice questions. However, the questions in the worksheets do not fully incorporate the AKM components.

The school implements assessments based on the 2013 Curriculum Guidelines for grades nine and Merdeka Curriculum Guidelines for grades 7 and 8, including cognitive, psychomotor, and affective assessments in the learning process. One of the purposes of evaluation is to determine the extent of success achieved during learning. As Bahri (2023) revealed, learning evaluation determines how students understand the material and the learning objectives achieved. School policy for evaluation activities for principals and teachers is usually carried out every semester. This reflection/evaluation activity aims to discover what has been achieved in learning and what has not been achieved. Then, what has yet to be achieved, the school will follow up so that it can be achieved following the learning plan.

From the discussion above, it can be concluded that in learning evaluations to optimize numeracy skills in facing AKM, teachers have conducted assessments and created scoring guidelines. They use worksheets as student practice exercises and materials. Teachers and principals reflect every semester to determine what has been achieved during learning, evaluate planning, and implement learning to strengthen students' numeracy

literacy. However, the questions in the worksheets do not fully incorporate the content, context, and cognitive processes aspects of AKM.

CONCLUSION

Based on the data analysis of the research results, the efforts to optimize numeracy skills to face AKM in mathematics learning in junior high school have been carried out well and smoothly. (1) learning planning to optimize numeracy skills; the teacher prepares learning methods and media and uses LKS to support learning activities. Moreover, the school schedules a tutoring policy for literacy and numeracy guidance and provides a book on AKM numeracy problems. Teachers have also joined the MGMP forum. However, teachers still need to make lesson plan documents and have yet to develop student worksheets, which contains numeracy problems with various aspects of content, context, and cognitive process. (2) Implement learning by optimizing numeracy skills; teachers use varied learning models and learning media teachers use to adjust to the material and learning objectives. Teachers explain the material by representing it daily but do not solve the problems. The student workbooks used by the teacher contain material and problems that do not yet incorporate numeracy. (3) Evaluation of learning to optimize numeracy skills: Teachers have conducted assessments and created scoring guidelines. They use worksheets as student practice exercises and materials. Teachers and principals reflect every semester to determine what has been achieved during learning, evaluate planning, and implement learning to strengthen students' numeracy literacy. However, the questions in the worksheets do not fully incorporate the content, context, and cognitive processes aspects of AKM.

Teachers have been instrumental in enhancing students' numeracy skills, employing a comprehensive approach encompassing learning planning, implementation, and evaluation. Researchers are optimistic about the potential impact of their recommendations, including preparing detailed lesson plans as a roadmap for learning. The development of student worksheets, which encapsulates the content, context, and cognitive processes of AKM, is a promising tool for further improvement. The questions given to students should also ideally cover all aspects of AKM.

While this study was limited to a specific population in a public junior high school in Klaten Regency, Central Java, Indonesia, its findings are still significant. The observation was conducted during a specific learning session, providing valuable insights into mathematics learning. However, it's important to note that future studies could build

upon these findings, involving a more significant number of respondents and a longer observation period, to further enrich our understanding of mathematics education.

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