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Teacher Perspective and Performance in Curriculum Prototype Implementation through the Development of Innovative Project-Based Learning Modules

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Abstrak

Banyak sekolah yang belum memahami dan siap menerapkan kurikulum prototipe dan belum pernah menerapkan pembelajaran berbasis proyek. Tujuan penelitian ini difokuskan pada cara pandang dan kinerja guru matematika dalam mempersiapkan implementasi kurikulum prototipe. Penelitian ini menggunakan metode penelitian kualitatif dengan data yang diperoleh dari observasi dan wawancara. Selanjutnya, analisis data dilakukan dengan menunjukkan bukti kinerja dan naskah wawancara tentang perspektif guru untuk meninjau kesesuaiannya dengan penelitian sebelumnya. Hasil penelitian menunjukkan bahwa kinerja guru matematika selama penyusunan modul pembelajaran berbasis proyek adalah kesulitan dalam menyusun topik proyek dan mengoperasikan aplikasi komputer sehingga tampilan modul menjadi menarik. Perspektif guru terkait dengan kurikulum prototipe adalah adanya tantangan dalam mengembangkan modul pembelajaran berbasis proyek dimana proyek tersebut merupakan integrasi dari beberapa mata pelajaran. Penyusunan soal jenis AKM juga dinilai sulit dan produk penilaian dengan soal jenis AKM yang dihasilkan guru antara lain soal pilihan ganda, menjodohkan, esai pendek dan esai lengkap.
Kata Kunci: inovatif; kurikulum prototipe; perspektif guru; performa guru; pembelajaran berbasis proyek.

Abstract

Many schools do not understand, are ready to implement the curriculum prototype, and have never implemented project-based learning. This research aims to focus on the perspective and performance of mathematics teachers in preparing the curriculum prototype implementation. This study uses qualitative research methods with data obtained from observation and interviews. Furthermore, data analysis was carried out by showing evidence of performance and interview scripts about the teacher's perspective to review its suitability with previous research. The results showed that the mathematics teacher's performance during the preparation of project-based learning modules was the difficulty in compiling project topics and operating computer applications so that the module's appearance became attractive. The teacher's perspective on the curriculum prototype is that there are challenges in developing project-based learning modules where the project integrates several subjects. The preparation of AKM-type questions was also considered problematic, and the assessment products with AKM-type questions produced by the teacher included multiple choice questions, matchmaking, short essays, and complete essays.
Keywords: innovative; curriculum prototype; teacher's perspective; teacher performance; project-based learning.

I. INTRODUCTION

The COVID-19 pandemic has forced the government to issue new policies related to improving the quality of learning in schools. The National Assessment is a policy in the form of holding limited exams for students at the middle-class level, namely grade 4, grade 8, and grade 11. This National Assessment is carried out randomly on students regarding reading and numeracy literacy. The policy regarding AKM is not yet known and understood by every school. Therefore, schools need socialization and assistance in their preparation.

In 2022 the curriculum prototype will be implemented, the latest policy from the Ministry of Education and Culture. This curriculum is implemented through an emphasis on project-based learning. The application of the curriculum prototype is an optional policy for each school. Support for student character according to the Pancasila student profile and the preparation of projects that involve local content are characteristics of the curriculum prototype (Kemdikbud, 2021). Several schools admitted they were not well acquainted with implementing the curriculum prototype. Several schools revealed that they had not received information and had never executed project-based learning.

Solving problems with problem-solving and contextual types for vocational students can improve students' conceptual understanding abilities (Amir & Kusuma W, 2018; Maf'ulah & Juniati, 2020; Nawas, Abu., 2018). The phenomenon is the focus of this research where teachers also need to develop contextual-based questions and problem-solving in the form of AKM questions, which focus on implementing government policies related to assessment. Learning mathematics is closely related to problem-solving skills. AKM, which focuses on numeracy, adapts the type of problem-solving questions as story questions (Soffa, 2022; Sulistyani & Kusumawardana, 2022). These word problems are then characterized as contextual so that students are not just daydreaming but are presented with facts in the form of infographics or real problems that are close to students' daily lives. Mathematical problems contained in AKM are often related to local culture (ethnomathematics), the application of mathematics in everyday life (contextual), giving reasons for the answers given (Hidayah et al., 2021; Ping et al., 2021; Susanta et al., 2022) and prioritizing problem-solving skills.

Based on the results of the information obtained through interviews with the Principal, SMP Negeri 4 Malang has implemented project-based learning using the outing class method. The outing class activity in question is an outdoor study where the teacher outside of school gave students complete group assignments. This activity follows previous research where the outing study implements

project-based learning (Sukamti et al., 2019; Tsinajinie et al., 2021). The subjects assigned as projects are all subjects, and there are no project topics at each grade level. The school has not yet developed a project assignment module for this project-based learning.

Concerning AKM, the teacher develops contextual problems through multiple choice, complete multiple choice, matching, short essays, and essays. Following previous research, teachers will be able to provide learning at the right level of student ability through AKM, while students can have a new enthusiasm for solving problems through variations in the form of questions on AKM (Aisah et al., 2021; Andiani et al., 2021; Ismail & Zakiah, 2021). The process of implementing the curriculum prototype and developing AKM needs to be analyzed from the perspective and performance of teachers during its implementation. Perspective is a person's perspective in responding to specific situations (Yunus & Annissa Rezki, 2020). Perspectives can be in the form of people's opinions verbally or textually related to the problems given. Perspective is a person's perspective in responding to specific situations (Abdullah, 2017; Dewi, 2016). Previous studies that discussed perspective express one's opinion subjectively but are still based on fundamental theory. This perspective is analyzed to determine the teacher's response to the curriculum prototype policy and AKM; the hope is that the quality of the teacher's learning can be accurately identified. The previous statement is the novelty of this research, namely the importance of identifying the implementation of the curriculum prototype from the teacher's perspective.

Performance is an activity that can be observed during progress (Herawaty, 2016; Ummah et al., 2020). The performance measured in this study includes the extent of teacher preparation and the process of compiling project-based learning modules that contain AKM. The difference between this research and the previous one is the preparation of a project-based module that includes AKM, which measures the perspective and performance of the teacher to describe the extent to which the teacher implements the curriculum prototype. The newly implemented curriculum prototype is the main differentiator and something new to analyze its application from the teacher's perspective.

The main problem underlying this research is the teacher's perspective and performance in implementing the curriculum prototype by preparing project-based learning modules containing AKM-type questions. This research aims to describe the teacher's attitude and performance in developing AKM for junior high school students. The urgency of the study is the socialization of the curriculum prototype and the preparation of project-based modules that contain AKM-type

questions in schools that have never been implemented.

II. METHOD

This type of research is a case study with a qualitative approach. The qualitative approach is based on data in the form of narratives about the results of observing teacher performance and the teacher's perspective on implementing the curriculum prototype through interviews. The subjects of this study were 30 teachers at SMP Negeri 4 Malang, who were selected based on their excellent computational skills. The research procedure chart can be seen in Figure 2.

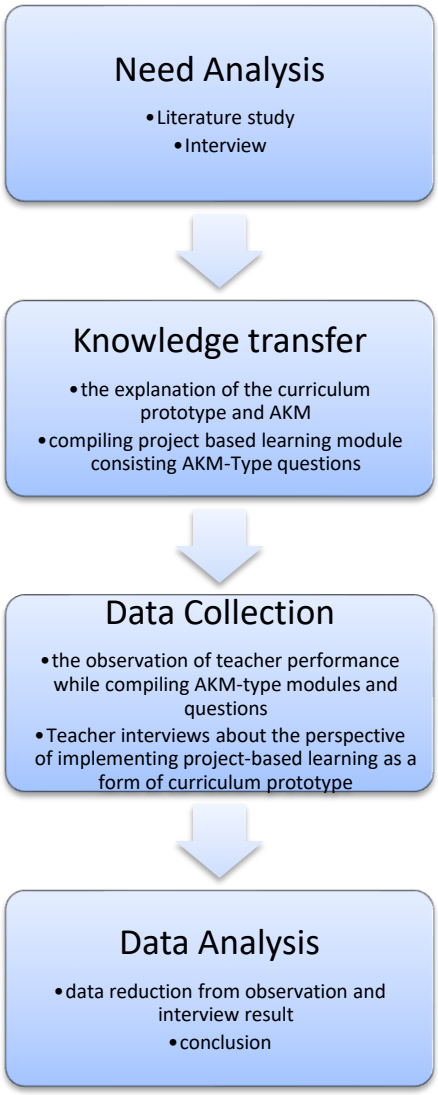

Figure 2. Research Procedures.

Figure 2 shows the entire stages of the research. The initial step was a need analysis where researchers examined perspective and performance studies, appropriate research methods, and interviews with school principals about initial knowledge of the curriculum prototype. Furthermore, literature studies on the forms of AKM include multiple choice, complex-multiple choice,

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matching, and essay. The interviews covered several aspects to explore the teacher's and principal's initial knowledge about the readiness to implement the curriculum prototype. These aspects include 1) the characteristics of the curriculum prototype, 2) significant differences between the curriculum prototype and K-13, and 3) the readiness of teachers and schools to implement the curriculum prototype.

The knowledge transfer stage provides socialization and discussion on the "curriculum prototype surgery." The ministry of education supplied teachers with the documents regarding the curriculum prototype and AKM. One of the YouTube channels that can be used as a source of information about AKM, namely https://youtu.be/vcg4TEexJuQ. Next, the teacher discusses the project plans given to students related to the project topic, the basic competencies of each subject that are appropriate to the project topic, and templates for the modules to be compiled and their assessments. Next, the teacher discusses in groups according to the grade level to develop a content framework for the project-based learning module. After the module is composed, data collection is carried out using observation and interviews.

The teacher was observed regarding the activity while compiling the module. Observations focused on 1) the teacher's verbal response to the activity of compiling AKM modules and type questions, 2) the teacher's gestures while compiling the module, 3) the teacher's difficulties while compiling the module, and the suitability of the target for completing the module preparation. Furthermore, teachers were interviewed about 1) curriculum prototype, 2) preparation of project-based modules, and 3) preparation of AKM-type questions.

The final stage is data analysis, where the data obtained from interviews and observations is reduced according to measured aspects. The data obtained is then adjusted to the limitations of the teacher's perspective and performance described previously. The last activity is concluding. The research activity, a case study, is devoted to data acquisition at SMP Negeri 4 Malang in 2021 to obtain a basic concept regarding teachers' preparation, implementation, perspective, and performance in curriculum prototype implementation activities. The flowchart of the fundamental research can be seen in Figure 3. The following data is described narratively, along with evidence of the teacher's conversations and activities while preparing modules and AKM-type questions.

III. RESULT AND DISCUSSION

Teachers have prepared a project-based mathematics learning module that contains AKM-type questions at SMP Negeri 4 Malang in December 2021. The following is an example of a project-based learning module for mathematics.

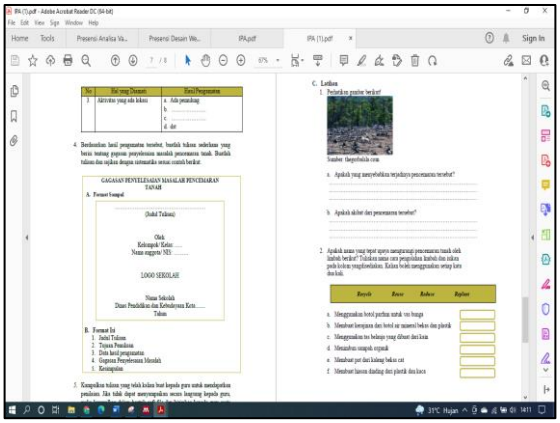

Figure 3. Example of a Project-Based Learning Module that Contains KKM-Type Questions.

Figure 3 shows that the project was developed by asking students to compile environmental pollution observation activities reports. Furthermore, the type of AKM questions can be seen in the exercises where students in answering the questions are asked to match the questions with the available answer options. The activity follows the AKM questions related to the previous studies, namely matchmaking (Aisah et al., 2021; Andiani et al., 2021). The thing that distinguishes it is mathematics in the subjects prepared for AKM questions.

A. Teacher Performance During Developing Project-Based Learning Modules Contains AKM Questions

The project begins with literacy activities about local Malang culture and infographic examples. Next, students are asked to work in groups to get Project Activity Sheets. The teacher then gives trigger questions related to the primary material of statistics.

Next, the teacher asks students to read the Project Activity Sheet, which contains the problem or project topic. The project topic is Malang's local cultural diversity to be presented in infographics based on gender and ethnic origin. In groups, students distribute questionnaires or seek student responses at school regarding the types of local Malang culture. Furthermore, the questionnaire results were made with frequency tables and infographics.

The teacher then evaluates by asking each group to present the infographics that have been made and then asking questions to the audience about the analysis of the displayed infographic data.

The results of the recapitulation of the questionnaire conducted by the teacher are related to the teacher's performance in learning mathematics. Performance is measured based on the mathematics teacher's activities before, during, and after learning. As for the description of the aspects calculated for the teacher performance variable, namely:

Table 1.
Aspects of Mathematics Teacher Performance in Learning

No	Aspect	Measurement Indicator
1	Pre-learning	1. Preparation of Learning Implementation Plans 2. Preparation of learning media 3. Preparation of teaching materials 4. Preparation of learning evaluation instruments
2	During Learning	1. Compatibility of lesson plan with implementation in class 2. Use of learning media 3. Use of teaching materials 4. Use of learning evaluation

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			instruments
3	Post Learning	1.	Preparation of Learning Reports
		2.	Learning Reflection

Based on Table 1, it can be seen that the performance measurement of junior high school mathematics teachers during learning is divided into activities before, after, and after learning. Measurement indicators are based on the preparation and use of learning instruments consisting of lesson plans, learning media, teaching materials, and learning evaluation. Meanwhile, after learning takes place, the teacher's performance is identified in the reflection activity.

The research subjects consisted of 38 junior high school teachers in Malang City. The results of identifying teacher performance in learning are:

1. Pre-learning

Teacher performance before learning occurs measured when the teacher prepares the lesson plan. The preparation of lesson plans is done before learning. Middle school teachers arrange lesson plans as shown in the following diagram.

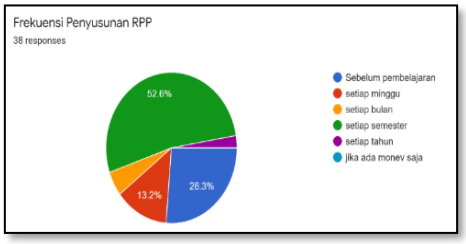

Figure 3. RPP preparation frequency diagram.

Based on Figure 3, most teachers prepare lesson plans every semester with a percentage of 52.6%, and some teachers prepare lesson plans every year with a portion of less than 10%.

The learning model that is often applied in schools is Problem-Based Learning. Problem-based learning was chosen because the teacher emphasizes the concept of numeracy through problem-solving in groups and individually.

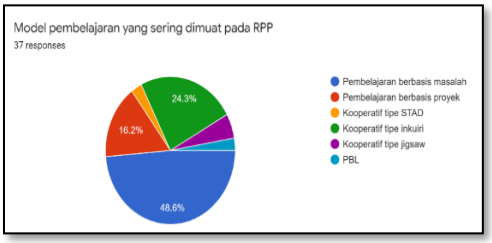

Figure 4. Diagram of the Learning Model Used in Lesson Plans.

Teaching materials prepared by the teacher before learning often use PowerPoint, which does not include voice recordings as a form of explanation. In learning mathematics, teaching materials made by teachers are in the form of printed worksheets, online quizzes, and YouTube. The percentage distribution of the teaching materials created by the teacher can be seen in Figure 4. According to the mathematics teacher, preparing printed worksheets is easier to load equations for writing mathematical formulas.

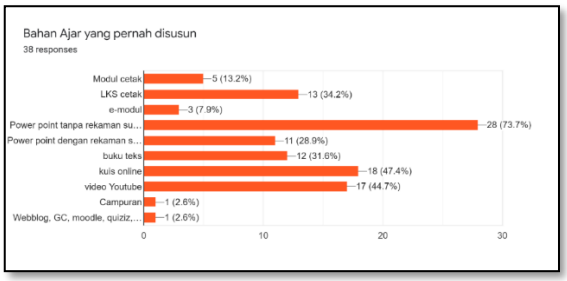

Figure 5. Types of Teaching Materials Prepared by Teachers.

Online quizzes and PowerPoint dominate mathematics teachers' learning media without animation. Teachers apply the results of training and workshops on interactive learning media so that they are used as preparation for learning. The results of the distribution of the types of instructional media created by teachers can be seen in Figure 5. Powerpoints compiled by mathematics teachers mostly use screenshots from books and online references. This kind of media is created because the teacher thinks writing math formulas takes quite a long time, namely utilizing the insert equation. The math teacher also believes that writing math formulas using LateX also requires a long time and an internet connection for the conversion.

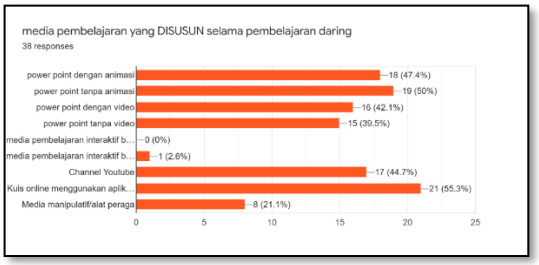

Figure 6. Learning Media Used by Teachers.

The learning evaluation instruments the teacher arranged before for learning mathematics were quizzes and post-tests. The test consisted of 20 multiple-choice questions and five essay questions. However, most of these questions were taken from UN questions. The evaluation of learning mathematics has not yet emphasized the AKM practice questions. The math teacher stated that there were not many references to AKM questions, and the teacher had not mastered them enough; this resulted in the teacher placing more emphasis on UN questions. Mathematical problem-solving is often provided by adopting college entrance exam questions.

2. During Learning

Mathematics learning at SMPN 4 Malang is carried out by applying lesson plans, teaching materials, learning media, and learning evaluation instruments that have been prepared previously. The AKM-type questions have also never been designed by the teacher. Teachers also do not understand the types of AKM questions and their characteristics. After the lesson took place, there were 78% of teachers did not implement the lesson plans that had been made. What's more, online learning makes teachers improvise to fulfil learning hours. Online learning shows that there are obstacles in the form of application jams in learning media and teaching materials so that time is reduced to improve applications and run well.

3. Post Learning

After learning takes place, the teacher rarely reflects on learning and compiles learning reports. Some teachers carry out learning reflection when there is a need for promotion or PPG. Learning outcomes related to testing scores are recapitulated when going to UTS and UAS. Test results are summarized in excel form and

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submitted to the deputy head of curriculum.

Based on the results of teacher performance during online learning at SMP Kota Malang, it can be said that lesson plans are prepared every semester consisting of two pages and using a format designed by the school. Furthermore, learning media prepared by mathematics teachers use more PowerPoint applications and online quizzes. Teaching materials prepared by the teacher also use PowerPoint without animation and sound recordings to be broadcast later during online learning. The math teacher explains the entire material verbally and conducts questions and answers with students online. Next, the teacher asked the students to do the post-test. After learning occurs, the teacher does not report learning outcomes and reflections with fellow subject teachers.

B. The Teacher's Perspective in Implementing the curriculum prototype

The following is the opinion of the mathematics teacher at SMP Negeri 4 regarding project-based learning.

"Project-based learning has been implemented in schools with an outing class system. Students complete a project on questions from several subjects that are not related. The project contains a collection of questions of the description type and is a practicum. For the preparation of project-based modules, our school has never made one. So far, a collection of questions has been loaded on worksheets purchased from book publishers. Therefore, we have not yet gained experience in compiling project-based modules and AKM-type questions."

The teacher's perspective in project-based learning was initially a compiled question collection that was put together as a module. However, the module does not yet have a specific theme. Based on the teacher's experience, the teacher carries out an outing activity class where students are given modules containing various questions from all subjects that can be completed at the outing class location. For example, outing classes are held at outbound locations in Pasuruan. Students are asked to complete questions as detailed in Table 4.2 below

Table 2.
Distribution of Project Learning Indicators

	Subjects	Learning Indicators
1	Indonesian	Making Observation Results Reports
2	Mathematics	Presenting data in the form of diagrams
3	Science	Distinguish the structure of dicot and monocot leaves
4	Social Science	Classify visitor data from the aspect of revenue and arrival frequency
5	Civics	Explain the norms that apply to tourist sites
6	Local language	Identify the use of regional languages by visitors to tourist sites

Based on Table 2, it can be seen that the module does not refer to one big theme. Students are asked to fill in the module in the answer column provided. Furthermore, the modules are submitted to the subject teachers and assessed by the respective subject teachers. The

module processing time is carried out during the outing class activities.

The results of the analysis of the performance and perspective of the mathematics teacher while compiling the AKM instrument, which is inserted through project-based learning, show that the teacher has not been able to collect project topics. The lesson plan already has a template created by the school, and the teacher assumes that the project-based learning device inserted with AKM questions takes a long time to prepare. Teachers also have not been able to create interactive learning media. The preparation of lesson plans as a learning planning stage is carried out by the teacher independently. The result is consistent with previous research on teacher performance, which states that teachers can independently prepare lesson plans and learning media (Anshori, 2020). Implementation of learning evaluation is limited to the end-of-semester assessment in the form of exams. The teacher does not carry out the students' process during learning. The result is also in line with previous studies that emphasize the end-year-end assessments (Anshori, 2020).

IV. CONCLUSION

Project-based mathematics learning that emphasizes AKM-type assessment results in a mathematics teacher's perspective that this AKM-type question has challenges in terms of making alternative answers for teachers. Future research can adopt a project-based mathematics learning syntax specifically designed with interactive learning media to be interesting. Projects should not require students to study outdoors. Projects can be developed for further research in virtual reality or learning videos.

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