

The Development of Daily Exam Question with Local Content for Mathematics Lesson Junior High School

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Abstract—Teachers in the 2013 curriculum must be able to compare the application lesson that is local, national and international. The teacher should also be able to make questions for daily exam that have local, national and international content. It is not easy to make questions with local content. Making questions with local content has its own difficulties such as exploring ideas, integrating local content and material, and adjusting questions that are suitable for students. This research aims to develop question with local content. The research method used is the development research with model analysis, design, development, implementation and evaluation (ADDIE). This research was conducted in four classes in one of the junior high schools in Serang city with pythagoras material. The questions that have been made can be used well but need further evaluation. Teachers can use local content questions with the benefit that students will know and love the area where the school is located.

Keywords: *daily exam, local content, ADDIE*

I. INTRODUCTION

The 2013 curriculum instructs teachers to motivate students by providing examples of teaching materials in local, national and international comparisons [1]. The teacher must be able to look for examples of the material being studied in daily use. The example used should compare local, national and international knowledge so as to open students' insights. There are many factors of mathematical success in a country and not only are the factors in a textbook but the teacher must also read a lot and learn for knowledge in teaching [2]. In addition to looking for examples, teachers should be able to make examples of usage in life from the material being studied. In addition to usage examples, local content should be used in daily tests. Education will develop by making innovations in education by the government [3]. Creating local content problems is not easy, teachers need to learn and copy from existing problems. The government and policy makers should improve the examination system for the achievement of educational goals [4]. Teacher should be able to make examples from the material and the teacher can make questions that contain local knowledge.

Local wisdom is the local traditional arts and culture as well as the diversity of tourist attractions in the area [5]. Local content can also be interpreted as cultural heritage, places, objects and buildings. Exam questions generally contain national content and international content so

mathematics questions containing local knowledge are still rarely found. Local content is still very rarely found in mathematics textbooks [6]. Problems at school include teachers not yet accustomed to making questions with local content. The purpose of this study is how to make daily test questions that contain local content. We can use ADDIE model to development models, learning strategies, learning methods, media, and teaching materials [7]. Examples of questions that have been made can be used in learning, project learning or daily tests. The application of local content is a good way to preserve and preserve local potential [8]. Questions containing local content will make students know more about the potential that exists in the school environment.

II. METHOD

This study is research and development. There are five phases in the ADDIE model which involves Analysis, Design, Development, Implementation and Evaluation [9]. This study uses analysis, design, development, implementation and evaluation (ADDIE) approach. Making teaching materials can use the ADDIE approach with the stages of analyzing, design, development, implementation and evaluation [10].

Analysis was carried out on the curriculum that needed questions containing local content. Analysis is also done to find local content that is suitable and can be used as a problem. Design, the next stage is to design questions that contain local content. Development, development is done by creating questions that contain local content with concepts that have been prepared at the design stage. Implementation was carried out in one of the junior high schools in Serang city, Banten. After implementation, the results obtained from student work. Many students can do well. This research was conducted at one of the junior high schools in Serang city on the pythagoras theorem material.

III. RESULT AND DISCUSSION

A. Local content

Local content is a form of cultural heritage, places, buildings, objects that exist in the area. Language is one of a variety of local content [11]. Local content referred to in this study is the use of buildings or historic objects to be used as a discussion in the matter. Local content in Banten, among

others, Bojong lighthouse tower in Anyer, Anyer Panarukan street, Banten grand mosque area and Keraton Kaibon.

B. Analyze

The first stage in developing a problem is analyzing. First analyze the needs in school. Teachers in the 2013 curriculum must be able to seek use of the material being studied. The use of material can be in the form of local content or something that is commonly used in local communities or historic buildings/places. However, the questions used are still very rarely use local content. Teachers are allowed to make daily test questions to use in the classroom where they are taught. The teacher should also be able to make test questions that contain local content.

In making questions the teacher must analyze the local content that can be used as a matter in accordance with the material being studied. This research was conducted at the time of the Pythagorean theorem material so researchers must find local content that is in accordance with the Pythagorean material. Banten mosque tower is famous local content in Banten province. Most people do not yet know the height of the Banten mosque tower. Banten mosque tower has a height of 24m. It is interesting if students calculate the height of the Banten mosque tower.

C. Design

Make a design of the questions with making questions and drawing. Making questions must be in accordance with existing rules. The ability to think high level, medium level and low level in problem solving is different [12]. The teacher in making questions must be able to find numbers that are appropriate for students. The teacher must pay attention to the picture that will be made to be an attachment in the problem.

D. Development

The concept of questions that have been made in the design process is then developed according to needs. In developing questions must look at the needs of the questions and the time available to answer.

Jika jarak kaki ke menara Banten adalah 70 meter dan jarak kaki ke puncak adalah 74 meter
Berapa tinggi menara banten?

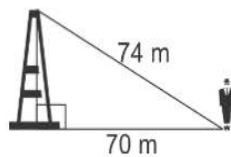


Fig 1. Sample question with local content

Figure 1 is the result of developing test questions that have local content. Local content used is the Banten mosque tower with the height of the tower as the object in question. The concept of the question is made as in general by imagining there are people with a certain distance from the tower. This problem illustrates the distance from people's feet to the tower is 70 meters then the distance to the top of the tower is 74 meters. Asked how tall Banten mosque tower. The choice of 70 meters and 74 meters is because the height of the banten mosque tower is 24m if it is raised then 70, 74 and 24 will form a triple Pythagorean.

E. Implementation

After being considered sufficient in the design process, the questions were tried to be used in daily tests. The questions developed are used in four different classes. Daily tests using local content problems ran smoothly.

F. Evaluation

There are several things that need to be considered in making problems such as making pictures and using numbers.

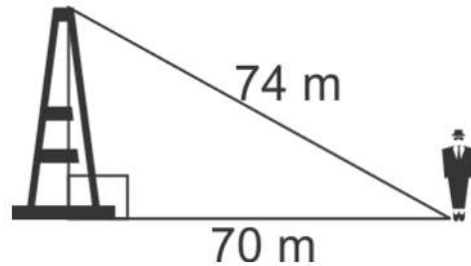


Fig. 2. Clear picture

Figure 2 above shows distance of the foot to the center of the tower because Pythagoras was used to calculate a right triangle. If you draw the distance of the foot only to the tower, then what happens is that the triangle becomes non-right-angled. The image of a right triangle must match the concept. The results of this study found that not all students can solve these problems.

Fig 3. Sample excellent answer

Fig 4. Sample correct answer type 1

Fig 5. Sample correct answer type 2

Fig 6. Sample Incorrect response type 1

Fig 7. Sample Incorrect response type 2

Fig 8. Sample Incorrect response type 3

Figure 3 is an example of excellent answer. The answers show the exact count results and are accompanied by conclusions. The conclusion is that the tower height is 24m. Figure 4 and Figure 5 results are correct, but do not have the conclusion that Banten mosque tower height is 24m. Figure 6, figure 7 and figure 8 are examples of the wrong type of answer. The answer was wrong because of a calculation error and did not get the result of the calculation. Making materials for learning must pay attention to the level of difficulty of the content that is tiered so that students are more challenged [13]. Numbers, question makers must be wise in the selection of numbers. As in junior high school students who are more emphasized students understand the concept. In making this problem the researchers used triple pythagoras figures.

IV. CONCLUSION

This research resulted in the test having a local content. Local content used in this study is the Banten Mosque tower with the tower height as the content in question. The choice of Banten mosque tower height as a problem is due to the Pythagorean Theorem material. Making questions is done into several stages of analyse subject, finding suitable local content, making questions, testing questions and evaluation. The making of questions must consider local content that matches the material, choice of numbers according to the level of students and making drawings that are accordance with the concept. It can be concluded that this research succeeded in making a matter of local wisdom

content. The advantage of having local wisdom content is that students become more enthusiastic about learning local knowledge and students become more loving in the area of study.

REFERENCES

- [1] Peraturan Menteri Pendidikan Dan Kebudayaan Nomor 22 Tahun 2016 About Standard Process of Primary and Secondary
- [2] U Kul, E Sevimli, and Z Aksu 2018 A comparison of mathematics questions in Turkish and Canadian school textbooks in terms of synthesized taxonomy *Turkish Journal of Education* 7 3 pp 136-155
- [3] A Fauzi and Habullah 2016 Pre-Eminent Curriculum in Islamic Basic School Integrated Comparative Studies in Islamic Basic School Integrated Al-Izzah Serang and Al-Hanif Cilegon, Banten, Indonesia *International Education Studies* 9 4 pp 124-131
- [4] Rahman MDM 2019 Secondary School Students' Attitude Towards Junior School Certificate (JSC) Examination In Bangladesh *International Journal of Education* 11 2 PP 158-168
- [5] C Juditha 2015 Local Television and Local Wisdom Content (Case Study in Sindo TV Kendari) *jurnal penelitian komunikasi dan pembangunan* 16 1 PP 49-64
- [6] Abadi M K, E C M Asih and A Jupri 2018 The Development of Interactive Mathematics Learning Material Based on Local Wisdom with .swf Format *Journal of Physics: Conference Series* 1013 012131
- [7] Risnawati, D Andrian, M P Azmi, Z Amir, and E Nurdian 2019 Development of a Definition Maps-Based Plane Geometry Module to Improve the Student Teachers' Mathematical Reasoning Ability *International Journal of Instruction* 13 3 pp 541-560
- [8] S Hadi, D Andrian, and B Kartowagiran 2019 Evaluation Model for Evaluating Vocational Skills Programs on Local Content Curriculum in Indonesia: Impact of Educational System in Indonesia *Eurasian Journal of Educational Research* 82 3 pp 45-62
- [9] MN Hasan, AH Abdullah, N Ismail, SNA Suhud and MH Hamzah 2019 Mathematics Curriculum Framework for Early Childhood Education Based on Science, Technology, Engineering and Mathematics (STEM) *International Electronic Journal of Mathematics Education* 14 1 pp 15-31
- [10] Abadi M K, E C M Asih and A Jupri 2018 The Development of Interactive Mathematics Learning Material Based on Local Wisdom *Journal of Physics: Conference Series* 895 012086
- [11] Maryono 2016 The implementation of schools' policy in the development of the local content curriculum in primary schools in Pacitan, Indonesia *academic journals* 11 8 pp 891-906
- [12] Bakry and MD Nor Bin Bakar 2015 The Process of Thinking among Junior High School Students in Solving HOTS Question *IJERE* 4 3 PP 138-145
- [13] Abadi M K A, Pujiastuti H, Assaar L D 2017 Development of Teaching Materials Based Interactive Scientific Approach towards the Concept of Social Arithmetic For Junior High School Student *Journal of Physics: Conf. Series* 812 012015