Developing Geometry Material for Improving Mathematical Problem Solving Skills and Disposition

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ABSTRACT

Problem-solving abilities and mathematical dispositions are essential abilities and characteristics of individual success tools in life. Dispositions related to confidence, persistence, interest, and open mind to explore problem-solving strategies. This ability can be developed through contextual based learning process. Contextual learning is a learning that links material with relevant context through productive activities called REACT, ie relating (relating learning materials to the context), experiencing (exploring to find concepts or knowledge), applying (applying constructed knowledge), cooperating to solve problems), and transferring (applying knowledge to new situations or problems). Efficiency and effectiveness of contextual learning depends on the quality of teaching materials used. However, the availability of such teaching materials is still very limited. Therefore, it is considered very important to develop contextual based teaching materials, especially in geometry material, to improve problem solving abilities and mathematical disposition of students.

This study aims to develop context-based geometry teaching materials to improve problem-solving abilities and mathematical dispositions. In detail this study aims to: (1) describe the development and quality of contextual-based geometry teaching materials to improve problem solving and mathematical disposition and (2) to describe the problem solving and mathematical disposition of students after following the learning with contextual based teaching materials.

This research is a development research with ADDIE model, which includes 5 stages, namely Analysis, Design, Development, Implementation, and Evaluation. The instrument of this research is teaching material validation sheet, observation sheet of contextual based learning activity, mathematical problem solving test, mathematical disposition scale, and field notes to record and describe in more detail learning activities with contextual based geometry materials. The output of this research is in the form of articles of national seminar proceedings and teaching materials of context-based, high-quality contextual geometry in terms of validity, practicality, and effectiveness.

The instruments used in this research are the textbook score sheets, the learning result test, the observation sheet of the learning activity, and the questionnaire of the students response to the learning using the developed textbook.

The data obtained in this study will be analyzed quantitatively and qualitatively. Quantitative techniques are used to analyze student learning outcomes, student response questionnaires, and textbook rating sheets. Qualitative techniques are used to analyze observations from the observation sheets. Further data analysis results will be used to determine whether the developed teaching material is valid, practical, and effective.

Based on the result of the research, it is concluded that the developed textbooks meet the valid, practical, and effective criteria. Targeted teachers can use this textbook or develop a similar textbook based on contextual learning to improve students' mathematical understanding.

Kata Kunci: *Disposition, geometry, material*