

ABSTRACT

Sonia Fitri Anggraini: Development of Interactive Multimedia Based On Cognitive Conflict to Improve Understanding Concepts and Skills of 4C Students On Elasticity and Hooke's Law Material

21st-century learning demands the competence of students to have 4C skills (communication, collaboration, critical thinking, and creativity). Besides that, in learning physics, students also need to understand the principles and concepts of physics as one of the objectives in the 2013 curriculum. The fact is that in the field, students' understanding of concepts and 4C skills is relatively low, including elasticity and Hooke's law. One solution to this problem is to develop interactive multimedia based on cognitive conflict as an effort to improve students' understanding of 4C concepts and skills on elasticity and Hooke's law. The purpose of this study was to determine the characteristics, validity, practicality, and effectiveness of interactive multimedia at the small group stage.

This research is a Development/Design Research using the Plomp development model. The research is limited to the Develop or Prototyping Phase, that is, to small group trials. The object of this research is interactive multimedia based on cognitive conflict. Validity data were obtained from three experts who are physics lecturers at the Faculty of Mathematics and Natural Sciences UNP, the results of practicality and effectiveness were obtained from class XI students of SMAN 13 Padang in the one-to-one and small group stages. The data collection instruments in this study were validation instrument sheets, practical instrument sheets, and effectiveness instrument sheets in the form of concept test sheets and 4C skill sheets. The technique used to analyze the validity and product data is using V Aiken, the practicality of the product is using the percentage technique, and the effectiveness of understanding the concepts and skills of 4C using the Wilcoxon test.

Based on the needs analysis in the preliminary research, an interactive multimedia product is produced with the characteristics: consisting of 4 cognitive conflict-based learning model syntax, integrating 4C skills made using the adobe animate CC 2019 application. The self-evaluation results were obtained with very good criteria. The results of the validity test were obtained with an average of 0.79 which was in the valid category. The practical results at the one-to-one and small group stages are in the very strong or very practical category with values of 0.89 and 0.83 respectively. The use of interactive multimedia based on cognitive conflict can improve students' understanding of 4C concepts and skills at the small group stage. So, it can be concluded that interactive multimedia based on the cognitive conflict on elasticity and Hooke's law is valid, practical, and effective in improving students' understanding of 4C concepts and skills at the small group stage.

Keywords: Interactive multimedia, cognitive conflict, misconceptions, elasticity, and Hooke's law.