THE DEVELOPMENT OF OBJECTIVE TEST FOR CONCEPTUAL KNOWLEDGE ON ROTATIONAL DYNAMICS TOPIC IN HIGH SCHOOL

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ABSTRACT

This research is aimed to develop an objective test for conceptual knowledge on rotational dynamics topic in class XI SMAN 7 Medan academic year 2020/2021 that meets good test qualification standards in terms of validity, reliability, level of difficulty, discrimination index and distractor efficiency. The type of thisresearch is Research and Development (R&D), using the ADDIE (Analysis, Design, Development, Implementation and Evaluation) model. The population is all student of SMAN 7 Medan which had attended and learned Rotational Dynamics learning material, the samples are three classes, XI MIA 2 as small group (n=36) and large group is XI IPA 4 (n=36) and XI IPA 5 (n=35). The instrument used in this study was a multiple-choice test of 50 items to measure conceptual knowledge. The analysis stage in the form of needs analysis and curriculum analysis as the initial stage of researchers in analyzing gaps in learning and the need for test development. The design stage includes develop indicators, designing a blueprint for preparing questions, and designing the question format along with an assessment rubric. The development stage is the stage of the question framework is transformed into a product, instrument validation to 3 experts with 36 acceptable items and 14 revised with an average value of 3,75. Limited field testing also carried out in this stage with result 40 items valid and 10 items invalid. The reliability value is 0,899. The difficulty level: 11 items easy, 37 items moderate and 2 items difficult. The discrimination index: 39 items very good, 2 items good, 2 items enough and 7 items bad. The effectiveness of distractors, 18 questions very good, 19 items good, 6 items enough, 7 items not good. Implementation stage include larger field testing showed that the reliability value is 0,894. The level of difficulty, 3 items easy and 37 items moderate. The discrimination index of 23 items are very good, 13 items good, 3 items enough and 1 items bad. The effectiveness of distractors, 12 items are very good, 23 items good and 5 questions enough. Evaluation stage obtained have not all valid test instruments meet the criteria of a good test so that there are questions that are accepted and there are questions that are rejected. Furthermore, the questions that have been evaluated are stored in the Conceptual Knowledge question bank on the Rotational Dynamics material.

Keywords: *Conceptual Knowledge, Validity, Reliability, Difficulty Level, Discrimination Index, Distractor Efficiency*