

DEVELOPMENT OF HOT MEASUREMENT INSTRUMENTS IN MASTERING SCIENTIFIC METHODS FOR HIGH SCHOOL STUDENTS IN BIOLOGY SUBJECTS

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ABSTRACT

This research aims to develop an instrument for measuring HOTS in mastering scientific methods for high school students in biology subjects.

This type of research is instrument development research with a focus on activities in the form of developing instruments to measure high school students' mastery of scientific methods in biology subjects. The product developed was validated by experts and then validated empirically with high school student subjects. The instrument used is an expert validation instrument. The data that has been obtained is in the form of quantitative data resulting from expert validation and empirical test results as well as quantitative data in the form of input provided by experts. The data resulting from expert validation was analyzed descriptively because the expert's assessment of the instrument was in the form of a qualitative assessment both on each assessment component and on the input provided. And the empirical test results were analyzed using the Rasch model with Program Quest software. Each item is seen to see how it fits (fits/does not fit) to the Rasch model. If fit, these items can be used to retrieve primary data. And conversely, if it doesn't fit, the item can be revised for the next data collection or the item can not be used at all.

Preparing instrument grids and developing items and scoring guidelines. The instruments created refer to the steps of the scientific method, including formulating problems, determining variables, and concluding/generalizing.

Kata Kunci: *Measurement Instruments, Higher Order Thinking Skills, Scientific Methods*