STRUCTURAL EQUATION MODELING (SEM) : CATEGORY DATA (Studies in Science Literacy and Ability Test for Seventh Grade Student Secondary School)

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ABSTRACT

Ability is a construct that has value but can not be measured directly or latent variables. Evaluation of ability to also be done on the measuring tool that is a item. Quality of items can be known by item difficulty and item discrimination that are parameters on item response theory (IRT). While relationship between test result and ability expressed in a curve called item characteristic curve (ICC). If ability is influenced other factors in this study are school accreditation and gender, analysis of ability model can be use multiple indicators multiple causes (MIMIC) model. In this research, latent variables were observed through the indicator variables with category data so structural equation model (SEM) for categorical data method can be used for analysis. While the aim of this study is to determine the best model through estimation and comparison of parameters in IRT and MIMIC models. The result of data analysis are significant difference between IRT with MIMIC models. Evaluation of model results that IRT models is the best model for the estimation of parameters showed better result and the value of and df is smaller than the MIMIC model. From the item characteristic curve is known about the item number three has a good quality because it can distinguish the ability of participants is better than any other items. From MIMIC model can be seen that for each school accreditation, the ability of female and male participants almost same although female participants was higher than male participants and for the school with low accreditation then the ability is lower.

Keywords: Item response theory, item difficulty, item discrimination , item characteristic curve , multiple indicators and multiple causes, structural equation modeling.