Rasch analysis and differential item functioning of STEM teachers instructional preparedness instrument for urban and rural teachers

ABSTRACT

STEM Teachers' Instructional Preparedness instrument (STEMTIP) was developed in this study with of 40 items and consists of 5 main constructs. Using multistage cluster sampling, 252 teachers in Malaysia was selected as sample of the study. Rasch Model analyses the psychometric properties of the STEMTIP instrument. The results indicate that 40 items of the STEMTIP are well fitted to a latent unidimensional structure, as required by the Rasch Model. There are two items (ELA1 and EVA8) that show a psychometric properties of Differential Item Functioning in STEMTIP concerning school location. Finally, psychometric implications derived from the results of the present study are discussed and suggestions are provided for future investigations.

Keyword: Rasch model; Differential item functioning; STEM; Preparedness; Malaysia