

Rasch Analysis of Entrepreneurial Science Thinking Test in Primary STEM

ABSTRACT

The Entrepreneurship Science Thinking Test (ESTT) Instrument was developed to measure entrepreneurial science thinking in primary school STEM Education. This study means to decide the the quality of ESTT instruments through the validity and reliability of ESTT instruments using the Rasch Measurement Model. ESTT comprises of ten open ended questions with five constructs namely: observation, new ideas, innovation, creativity and value. The sample consisted of 166 students aged 10 to 11 years from urban schools in Tawau district, Sabah. Validity analysis found that the polarity of the items through the PTMEA-Corr value indicated that all ten items were >0.00 (+). Through item suitability analysis, all items are still retained as they meet the requirements in one of the MNSQ, Outfit ZSTD and PTMEA-Corr outfit ranges. In the Principal Components Analysis (PCA), the Raw Variance Explained by Measures, 66.8% (excellent) and the Unexplained variance value in the first contrast below 15% indicate that the instrument has a strong dimensionality and has high construct validity. The reliability of Cronbach Alpha (KR-20) demonstrated a value of 0.91 (very high), item reliability of 0.98 (excellent) and respondent 0.89 (good) with an isolation value of item 7.97 and respondent 2.83. In conclusion, ESTT has good validity and high reliability in measuring entrepreneurial science thinking among year five students in primary schools in Sabah.