

Teacher readiness to teach quantum physics (TRQP): An instrument for form five physics teacher in secondary school

ABSTRACT

This study aims to determine the validity and reliability of Teacher Readiness to teach Quantum Physics (TRQP) instrument using Rasch Measurement Model. The TRQP was developed to measure the level of teacher readiness to teach quantum physics in secondary schools. TRQP consisted of 41 items containing three constructs namely: content knowledge, attitudes, and readiness. The research sample consisted of 30 Form Five Physics teacher from secondary schools in Sabah. The results of the validity analysis found that the polarity of the items through the PTMEA-CORR values showed that all 41 items were $> 0.00 (+)$. Through item fit analysis, all items were retained because they met the requirements in one of the MNSQ, Outfit ZSTD, and PTMEA-CORR outfit ranges. In the Principal Component Analysis (PCA), the Raw Variance Explained by Measures value of 40.6% and the Unexplained variance value in the first to fifth contrast below 15% indicates that the instrument has a strong dimensional dimension and has high construct validity. The reliability of Cronbach Alpha (KR20) showed a value of 0.87 (high), item reliability of 0.88 (very good), and person reliability of 0.81 (good) with separation item value of 2.73 (good) and separation person value of 2.04 (good). In conclusion, TRQP has good validity and reliability in measuring the level of teacher readiness to teach quantum physics in terms of content knowledge and attitudes among Form Five Physics teachers in secondary schools.