Measuring Students' Science Achievement in Middle Grade Students by Vertical Linking Approach

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Abstract

Tests can offer students how much they have achieved on their learning and academic performance as well as how to improve their learning progress. Since the main purpose of the study was to construct vertical linking tests in order to measure the students' growth and development in a particular domain or construct across years of study, vertical linking tests were used. To achieve the purpose of the study, three science achievement tests were constructed by using IRT common item linking design. The tests were based on the curriculum of Middle-Grade Science in Grade 5, Grade 6 and Grade 7 according to the table of specifications. Each test contained 35 multiple-choice items including 10 common items for each grade. The data were randomly collected from Yangon Region by using quantitative survey research design. The sample size of totally 912 students from Grade 5, Grade 6 and Grade 7 participated in this study. According to the results, it can be assumed that the tests were neither too easy nor too difficult for corresponding students. Then, it can also be assumed that students have achieved the basic concepts of each grade. Moreover, based on the results of common items, it can be confirmed that students become developed in their cognitive level from one grade to the next although they may not code some information or knowledge in the content of previous years.

Key words: vertical linking, spiral curriculum, spiral progression, item response theory (IRT)

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