

Use of Item response theory in the mathematical test

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The purpose of the study is to investigate whether Item response theory (IRT) can truly reveal students' real situation. Furthermore, we wanted to know if the middle school students can merge similar items. The subjects of the research are 7th and 8th students from the middle school in Anyang, Henan. The number of sample is 363. A questionnaire about merging similar items was used as the research tool. With the help of the IRTP software and SPSS software, we can handle and analyze the data. The main findings are as follows. The higher value of the item discrimination can differentiate more exactly between students having abilities. The value of the discrimination of IRT not only can differentiate between students having abilities, but also has additive property and the value of ability calculated by IRT can represent student's ability more reasonably. Therefore, measuring the student's ability of merging similar items, IRT can identify the differences between students reasonably, and the student's ability is not influenced by the character of the test. So IRT can really be an effective tool of reflecting the student's ability.

Key Words: Item response theory, difficulty, discrimination