A Study on the Evaluation of Mathematical and Science Vocabulary Ability for GiftedStudents in Junior High School Students

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Abstract

The purpose of this research is to construct a vocabulary database related to mathematics and science for gifted students in junior high schools, and to select relevant vocabularies from the vocabulary database to form a mathematics-related English vocabulary ability assessment paper, and then to explore the performance of mathematics-related English vocabulary skills for gifted students in mathematics and science. This research adopts a mixed research method and collects data by file analysis and examination paper survey. The vocabulary database and assessment test paper construction are analyzed by document analysis. The text source is recommended by the research expert group for reading popular mathematics and science articles for middle school students. After the article is written in python to calculate the high frequency words, the relevant English reference books are compiled Mathematical vocabulary to form a vocabulary library. Afterwards, the expert team retrieved and screened out the high-frequency and high-importance vocabulary from the vocabulary database to form the evaluation test paper. The mathematics-related English vocabulary ability assessment is conducted using test papers and surveys. 294 middle school mathematics and science gifted students from New Taipei City and Taipei City are used as subjects. After the test, an independent sample t test is used to explore the mathematics-related English vocabulary ability of gifted students from different backgrounds. Difference situation. The conclusions of this study are as follows:

1. This vocabulary database has compiled 1,170 mathematics and science-related vocabularies that junior middle school gifted students should acquire, of which 202 vocabularies are the standard 2,000 reference vocabulary tables in the syllabus.

2. The difficulty of this assessment paper is 0.573, the degree of discrimination is 0.639,and the correlation coefficient between each question and the total score is significant at 0.1, which is a moderately difficult and excellent degree of discrimination.

3. The average score of junior high school mathematics and science gifted students in mathematics-related English vocabulary ability is 74.88 points, and the standard deviation is 14.50. The overall score is medium to high, and the degree of dispersion between them is not large.

4. Students who have passed the relevant English test have significantly better

performance in mathematics and related English vocabulary skills than those who have not passed the test. Students who have performed well in the school's English section test have significantly better performance in vocabulary ability than students in the middle section of the English section test. Whether there is a record of winning prizes in related mathematics and science competitions has no significant effect on students' English vocabulary performance.

Based on the above research results, provide relevant suggestions for English teachers and gifted educators, which can be used as a reference for the teaching and ability assessment of the middle school gifted classes in mathematics and science.