

Thesis Title : Relationship between Memory Abilities and Mathematics Learning Achievement of Mathayom Suksa 1 Students

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Abstract

The purposes of this study were to investigate the relationships between each and combination of the four memory abilities (visual memory ability, auditory memory ability, symbolic memory ability and semantic memory ability) and mathematics learning achievement (mathematics reason, mathematics computation and mathematics problem solving); to construct prediction equations for predicting students' achievement; and to construct memory ability tests and mathematics achievement tests. 338 Mathayom Suksa 1 students in Lamphun province were sampled to take the 4 memory ability tests and 3 mathematics achievement tests. The data were analyzed by using SPSS/PC⁺ Computer Program (Multiple Regression Analysis), the results were as follows :

1. Both each and the combination of those 4 memory abilities positively and significantly, at the level of .01, correlated to mathematics achievement (mathematics reason, mathematics computation

and mathematics problem solving). The combination of visual memory ability, semantic memory ability and symbolic memory ability; the combination of visual memory ability, symbolic memory ability and semantic memory ability; and the combination of semantic memory ability, visual memory ability and symbolic memory ability, ranked by Beta-Weight, were most appropriate for prediction of mathematics reason, mathematics computation and mathematics problem solving.

2. The combination of visual memory ability, symbolic memory ability and semantic memory ability can be used to predict about 39.723 percents of mathematics reason, 35.751 percents of mathematics computation and 33.921 percents of mathematics problem solving respectively.

3. The quality of tests :

3.1 Every memory ability test used was at moderate difficulty ($p = .515-.602$), high reliability ($r_{tt} = .7112-.7421$), auditory memory ability test was at moderate discrimination ($r = .384$) and the other 3 tests had high discrimination ($r = .416-.445$). The construct validity of those tests ($\bar{X} \geq .80$) were determined by specialists in evaluation.

3.2 Every mathematics tests used was at moderate difficulty ($p = .548-.590$), high discrimination ($r = .537-.636$), mathematics reason test had high reliability ($r_{tt} = .8614$) and the other 2 tests had very high reliability ($r_{tt} = .9104-.9390$). The content validity of those tests ($\bar{X} \geq .80$) were determined by mathematicians.