Thesis Title The Computerized Pyramidal Testing in Chemistry for Mathayom Suksa V

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ABSTRACT

The purposes of this study were to construct and to evaluate the computerized pyramidal tests in topic of Chemical reaction in chemistry course of Mathayom Suksa V. The study was devided into two phases. Construction of the pyramidal test and the computer program development were in phase I, while phase II was to evaluate the computerized pyramidal tests and the computer program.

The sample utilized in determining of the item parameters using LOGIST V program consisted of 1,912 Mathayom Suksa V students in the second semester of acaddemic year, 1988.

In phase I, 111 items out of 172 items were selected to form the three tests. The Pyramid 1 was an 8-stage pyramidal test with constant step size of up-one/down-one branching rule. The Pyramid 1 consisted of 36 items. The item difficulties ranged from -1.7187 to 1.7656 with the average was -0.0076. The Pyramid 2 was an 5-stage pyramidal test with 3 items per block in each stage and constant step size of up-one/down-one

branching rule. The Pyramid 2 consisted of 45 items. The item difficulties ranged from -2.1866 to 2.0654 with the average was 0.0079. In addition, another 30 items with difficulties ranged from -2.4242 to 2.1994 were selected to form a conventional test. The computer programs for administering the two pyramidal tests were developed using the dBASE III programe. The Thai 25 lines of Thai Industrial Standard code was used for displaying the results on the monitor.

In phase II, an opinionnaire towards the feasibility of the computerized pyramidal test was concurrently administered along with the pyramidal and the conventional tests to 40 Mathayom Suksa V students in the second semester of academic year, 1988 in order to determine the operational effectiveness of the computerized pyramidal test and the computer program. Data were analyzed to determine the criterion-related validity of the pyramidal and the conventional tests : the relationships between grade in chemistry and test scores from the pyramid 1, the pyramid 2 and the conventional tests. In addition, descriptive statistics and percentage were computed to determine the efficiency of the computerized pyramidal tests.

Results showed that the reliability coefficients of the pyramid 1, the pyramid 2, and the conventional test were 0.84, 0.98 and 0.88, respectively, which were statistically significant higher than the criteria at .05. The results also indicated that the reliability coefficient of the pyramid 2 was the highest of the three tests but there was no statistically significant difference between the reliability coefficients of the pyramid 1 and the conventional test at .01. The criterion-related validity coefficients of the pyramid 1,the pyramid 2, and the conventional test were 0.363, 0.416, and 0.360, respectively, which were statistically significant difference from 0 at .05. The criterion-related validity coefficients of both pyramid 1 and pyramid 2 were not statistically significant difference from that of the conventional test. Furthermore, the students had good impression

positive attitude in dealing with the computerized pyramidal
For the cost effectiveness, the computerized pyramidal test gave
benefit than the conventional test. It also found that the computer
gram was effective.