Thesis title	An Application of Rasch Model to Design Test Information Curve for Mathematics Achievement Test According to the Ability Level of Prathom Suksa Six Students
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ABSTRACT

The main purpose of this study was to apply the Rasch Model to design a test information curve by arranging the item difficulty indice of the test to suit best the students' s abilities and then study its precision basing upon its standard errors of estimation and reliability coefficients. Of 10,527 Prathomsuksa 6 students in the academic year 1986, 1,429 were randomized by means of 2-stage simple sampling technique. Two 60-item mathematics achievement tests with 4 choices constructed by the author for the mentioned students were used as the instruments. The tests were administered to the students and then the data were analyzed by BICAL Program to estimate their θ' s and b' s . Based upon ranges of the standard deviation of the test, the students were catigorized into 3 groups: high ability, moderate ability and low ability. The b' s of the items that their ICC's fit the expected ICC' s of the model were used to calculate for their item and test information functions, and then a test information curve was drawn and

smoothened to fit best the ability of the groups. All of the items under the curve were administered to 3 samples of the 3 groups, 200 students each. Their standard errors of estimation and reliability coefficients were calculated. The former were compared with the ones from the achievement tests by means of Kruskall Wallis Test while the later also with the ones from such tests by χ^2-tests after they were transformed into Fisher 's Z 's. If any significant differences were found, multiple comparisons were test by z-tests.

The findings can be summarized as follows:

1. When tested by the tests that suit their ability best, the standard errors of estimation of the low and high ability groups are significantly different from those of other groups ($p < .01$) while those of the moderate ability group are insignificantly different ($p < .05$).

2. The reliability coefficient of the test that suits best the low ability group is the significantly highest of all ($p < .01$). When the test that suits best the moderate ability group was administered to the 3 ability groups, it yields significantly higher reliability coefficient for the moderate ability group than the one for the low ability group ($p < .05$), but significantly lower than the one for the high ability group ($p < .01$). In addition, when the test that suits best the high ability group was administered to the high ability group, it yields significantly higher reliability than one from the test that suits best the low ability group, but it is insignificantly different from the one of the test that suits best the moderate ability group ($p < .05$).