THESIS TITLE : COMPARISON OF THE FOUR DIFFERENT ITEM BIAS DETECTING METHODS FROM TEST ABOUT SEX EDUCATION FOR MATTAYOMSUKSA IV

AUTHOR : MISS PRAKITTIYA TUKSINO

THESIS ADVISORY COMMITTEE :

Samphan Phanphruk Chairman

(Associate Professor Dr. Samphan Phanphruk)

Boonchom Srisa-at Member

(Associate Professor Dr. Boonchom Srisa-at)

## ABSTRACT

This Purposes of this research were to study item sex bias, to compare the detecting results of Type I error and Type II error, to compare accuracy rate and error rate of item bias detecting results, and to find the consistency of items which had sex bias detected by four item bias detection method : Transformed Item Difficulty (TID) , Analysis of Variance (ANOVA), Chi-square Method (CHI) and One-Parameter Item Characteristic Curve (ICC1). The results of item sex bias detected by the four method mentioned were compared to those detected by Judgmental Method (JUD) and Three-Parameter Item Characteristic Curve (ICC3) which were wed as criteria to judge the item sex bias. The samples of this research were 1,720 Mattayomsuksa IV student, 860 boys and 860 girls from secondary schools in Khonkaen Province under the secondary level division, department of general education. The sampling method was Two-Stage Stratified Random Sampling. The instrument used for collecting data

was researcher made four-choice Sex Education Exam In sum of 22 items, there were 9 items biased against males, 5 items biased against females, and 8 item nonbiased. All of the 22 items had been detected item sex bias by Judgmental Method (JUD) and Three-Parameter Item Characteristic Curve (ICC3). Statistical used in this research were frequency, percent, Chi-square, Analysis of Variance and Cochran-Q Test

The results of this study could be summarized as follows :

1 The method which were most detecting item bias were Chi-Square (CHI) and One Parameter Item Characteristic Curve (ICC1) which both could detect the biased items at the same number. Then there were Analysis of Variance (ANOVA) and Transformed Item Difficulty (TID) respectively.

2. According to the comparison of item sex bias detecting results of Type I error and Type II error, it was found that in detecting Type I error there were no significant differences at the .05 level of the four methods. Moreover, the method which gave the lowest Type II error in item sex bias detecting was CHI where as the method which gave the highest Type II error was TID. The other two methods which were ANOVA and ICC1 gave the exactly same number of Type II error.

3. The methods which gave the bias detecting result at the highest accuracy rate were ANOVA and CHI which gave the same number of accuracy rate. Then there were TID and ICC1 respectively The results of the comparison between the accuracy rate and error rate(of item sex bias detecting results) revealed that there were no significant differences at the .05 level among the four item bias detection methods.

4. Concerning the consistency of item sex bias detectig results in each method detecting items biased against males and those against females, there were consistence at the .05 level. Considering the item sex bias detecting results of items which were nonbiased, it was found that there were no consistence at the .05 level. Besides, it was found that all four method were most consistent in detecting the 8

nonbiased items (36.36%) There were two method most consistent in detecting 3 item biased against males, (13.64%) were ANOVA and CHI. Two methods most consistent in detecting 10 items biased against females (45.44%) were ANOVA and CHI.