## CHAPTER VIII

OBSERVATIONS, MAJOR FINDINGS AND SUGGESTIONS

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CHAPTER VIII
OBSERVATIONS, MAJOR FINDINGS AND SUGGESTIONS

8.1 REVIEW

The problem under study is "CONSTRUCTION AND STANDARDIZATION OF VERBAL AND NON-VERBAL GROUP TEST OF INTELLIGENCE FOR SOUTHERN THAI STUDENTS BELONGING TO AGE GROUP 14-17." The construction means to construct the items for the test. Standardization means norms of the test should be given. Intelligence means ability to think and problem solving organization of the mind. Southern part of Thailand means the part of area for present study. Students means the students belonging to age group 14-17 of Grade X to XII of higher secondary schools in Southern part of Thailand.

There were five objectives of study; they are (1) Construction and standardization of intelligence test for the students of Grade X to XII of higher secondary schools of age groups 14-17 of Southern part of Thailand. (2) To study sex differences with reference to their intelligence. (3) To study age difference with reference to their intelligence. (4) To study grade differences with reference to their intelligence. and (5) To study area differences with reference to their intelligence.

The present study was confined to only students belonging to age group 14-17 of higher secondary schools of Southern part of Thailand. The total number of the respondents (students) was 6,995. The Multi Stratified Random Sampling Method was applied for selection of the sample.

The study was mainly on construction and standardization of intelligence test for Thai students belonging to age group 14-17 in Southern part of Thailand. The other objective was to find out the relationship between the students belonging to different variables i.e. sex, age group, grade level
and area of schools, on mean scores of intelligence test. In order to obtain the data to arrive at proper results of the study, the investigator had decided to adopt the descriptive survey technique, which was considered appropriate method of obtaining specific information for study.

The investigator decided to construct group test of intelligence. There are two sections; (i) Section I (Verbal Test), it contains three parts i.e. (1) Verbal Ability Part, (2) Reasoning Ability Part and (3) Numerical Ability Part, and (ii) Section II (Non-verbal Test), it contains two parts i.e. (1) Information Ability Part and (2) Reasoning Ability Part. The investigator described the step of construction and standardization of intelligence test.

The first step, with the help of experts, the investigator could coin 175 items in the present test. They were circulated to the experts like School Principles, Heads of Department, Head Masters, Psychiatrists, School Teachers, Sociologists and Psychologists etc., with a view to getting them judged. After judges' agreement 163 items were selected and after that pre-pilot try-out was done. Then 120 items were selected for pilot test. Out of 120, 76 items with example items in every part were finally selected for the inclusion in final form. The item analysis work was carried out meticulously. Distractor analysis, Chi-Square, Item Difficulty and Item Discrimination were the major techniques used for the item analysis work. All necessary steps in this direction have been reported in Chapter V.

The second step, after this the final form was printed and it was widely administered to the representative unbiased sample of 6995 from students of Grade X-XII which were studying in academic year 2001-2002 of Southern part of Thailand. The different kinds of norms were established. They were presented in Chapter VI.
The third step, after establishing norms, the reliability and validity were established which have been reported. Various methods have been used to study the reliability. The reliability coefficients are ranging between 0.848 to 0.952. Thus, the test has a good reliability. An attempt is also made to study validity of the present test. The concurrent and concept validity have been studied and reported in Chapter VI. The concurrent validity has been established by various methods. The validity varies from 0.610 to 0.693 respectively which are high. Hence it could be said without exaggeration that the intelligence test has a good concurrent validity.

The data yielded by the intelligence test was analysed according to the hypotheses. The mean, standard deviation t-test and ANOVA (F-test) were employed to analyse the data. The results obtain from analysis of the data were presented in four parts i.e. (1) The relationship between the mean scores of intelligence test of students belonging to different groups of sex i.e. boys and girls. (2) The relationship between the mean scores of intelligence test of students belonging to different groups of age i.e. 14, 15, 16 and 17 years. (3) The relationship between the mean scores of intelligence test of students belonging to different groups of grade level i.e. Grade X, XI and XII. and (4) The relationship between the mean scores of intelligence test of students belonging to different groups of area of schools i.e. urban and rural area.

8.2 OBSERVATIONS

During the process of standardization, the observations have been made as follows:

1) Sex Differences

It was observed during fixation of the norms that there are no significant sex differences among the students belonging to age group 14-17
of higher secondary schools of Southern part of Thailand. This supports that the test is free from any typical culture. It seems to have no role of sex in determining one's intelligence in the present study.

2) Age-Groups Differences

From the data of age-wise distribution of the total population, it was observed that there is no significant difference between the mean scores of age-group 17 and 18 years. Hence, while computing PRs. and IQs., the age group of 18 years has been discarded at the time of further computations. The other reason of discarding age-group of 18 years is that very less number of students have been found studying in Grade X-XII.

3) I.Q. Distribution

From the study of the intelligence distribution, the I.Q. classification and normality by Chi-Square technique, it was observed that the population under testing program is normally distribution.

4) Reliability & Validity Estimate

In the process of standardization one of the essential step was to establish the test reliability and validity. The following observations have been made during the process:

(1) When interval between the test and retest is short, reliability coefficient of the test is .891, S.E ± .015 and when the interval is long the reliability coefficient is .876, S.E ± .017. From this, it can be concluded that reliability coefficients of the test decreases with the increase in retest-time-intervals and that memory and practice play their roles in achieving the scores on retest.

(2) The standard error of measurement for the test ranges from 2.381 to 4.238. Therefore, the score of an individual will fall within ±2.381 to ±4.238 of his true score.
(3) The reliability coefficients, computed by various methods ranges from .848 to .952. The comparison of test reliability indices with some well-known tests of intelligence suggests that the present test is highly reliable.

(4) The results of cross validation in chapter VI, indicates that the test bears the ability of discriminating students with respect to intelligence test.

(5) The inter correlation coefficient between the scores on verbal ability part, reasoning ability part, numerical ability part, information ability part and reasoning ability part, of intelligence test are .667, .693, .610, .681 and .627 respectively, which are fairly high. It shows that all the parts have in common one fundamental function. The factorial validity study supports this viewpoint, it has been scrutinized that there is one common factor in the test.

8.3 MAJOR FINDINGS

The study was devoted to the analysis of data and interpretation of data according to the objectives. The major findings concerned with the present investigation described in the study belonging to group of sex, age, grade level and area of schools, on the scores of intelligence is presented as follows:

1) The analysis of sex differences of students belonging to age-group 14-17 on the mean scores of intelligence test.

In comparison of the mean scores on intelligence test of students in different groups of sex, it was found that there was no significant difference between boys and girls of Southern Thai students belonging to age-group 14-17. It supports that the test was free from any typical culture. The reason for this can be also be ascertained that which equality of educational opportunities, boys and girls as well as girls from all strata of society have started taking education.
According Harry Ruja states¹: "Biologically sex difference is genetic difference, no significance different in intelligence between the sexes has been demonstrated".

The result of analysis of the present study indicates that sex seems to have no role in determining one's intelligence.

2) The analysis of age differences of students on the mean scores of intelligence test.

In comparison the mean scores on intelligence test of students in different groups of age i.e. 14, 15, 16 and 17 years, it was found that there were significant differences between the mean scores on intelligence test of students belonging to different groups of age. The result of analysis indicates that the mean scores on intelligence test of students belonging to 17 years obtained greater value than that of the mean scores on intelligence test of students belonging to 16, 15 and 14 years. The difference between the mean scores of the pairs mentioned of students belonging to age- group 14 years, 15 years, 16 years and 17 years were significant at .05 and .01 level of confidence.

3) The analysis of grade level differences of students on the mean scores of intelligence test.

In comparison of the mean scores on intelligence test of students belonging to different groups of grade i.e. Grade X, XI and XII, it was found that there were significant differences between the mean scores on intelligence test of students of different grade at .01 level. The mean score on intelligence test of students belonging to Grade XII has greater value than the mean score on intelligence test of students belonging to Grade X and Grade XI. The mean score on intelligence test of students belonging to Grade XI has

grater value than the mean score on intelligence test of students belonging to Grade X. The obtained F-value, the pairs mentioned of mean score on intelligence test of students between Grade X and Grade XI was significant at .05 level and the pairs mentioned of mean score on intelligence test of students Grade X, Grade XI with Grade XII were significant at .01 level. The difference between the mean scores of the pairs mentioned of students of Grade X to Grade XII are significant at .05 and .01 level confidence.

4) The analysis of area of schools differences of students on mean scores of intelligence test.

In comparison of the mean scores of intelligence test of students belonging to different groups of area of schools i.e. urban and rural area, it was found that there was no significant difference between the mean scores of intelligence test of students belonging to urban and rural area. The result of analysis of the present study indicates that area of schools seem to have no difference in intelligence.

8.4 SUGGESTIONS

8.4.1 Suggestions for Using of The Test

The present test was constructed for Southern Thai students belonging to age group 14-17 and these students were studying in Grade X to Grade XII of higher secondary schools. It may be useful for several purposes which are as follows:

1) For Educational Guidance

The Thai schools felt need of up-to-date maintenance of students' Cumulative Record Card. This test will be useful in recording the level of intelligence of Thai students. It will be more useful at the time of planning individual guidance for them, especially Southern Thai students belonging to age group 14-17.
2) For Counseling and Vocational Guidance

The knowledge of Thai students' intelligence would enable the teachers to advise their students who have to think about particular career. It has been known fact that certain profession needs person with superior intelligence and certain profession needs person with normal intelligence, which may be fit in several vocations. Thus the Thai students may be guided in choosing a career befitting their abilities.

The higher secondary school stage is a particular stage wherein guidance given to students on the basis of their intelligence will have enough scope for brightening their future. After they completed secondary schools, some of Thai students will enter to university and some of them will be in job. So the knowledge of their intelligence is very useful for them.

3) For Classification of Students

The present test can help in classifying the Thai students belonging to age group 14-17 of higher secondary schools of Southern part of Thailand. The differences of students in their capacities to learn makes difficult for the teacher to teach. The teaching method and material suitable to the average class would bore the bright and confuse the dull. To remedy this, homogenous groups of the students may be formed wherever possible. This test is useful to classify Thai students on their intelligence.

4) Guidance to Under-Achievers

The scores on intelligence test may be compared with those on achievement test to identify Thai students whose achievement is inconsistent with their intelligence. It is hypothesized that Thai students who scores higher on intelligence test than on achievement test are under achievers. Research studies on such under-achiever may be undertaken and individual instruction program may be planned for them and according guidance may be given.
5) Class-Room Survey

If the educator was to be effective in the class he should know the educant. The educator can administer the intelligence test and study all the students entrusted to him. The present test can help the educator to administer a class-room survey for Thai students.

8.4.2 Suggestions for Future Research

The following suggestions may be useful to the enthusiasts in research. They are as follows:

1) They may develop tests to study intelligence of Thai students belonging to other age groups.
2) The norms may be established of the test useful in other parts of Thailand.
3) Establish the part score norms of intelligence test and to study their predictive implications.
4) Initiate individual case study of Thai student who have poor academic achievement but have comparatively better performance on intelligence test.