Chapter - 8

SUMMARY AND RECOMMENDATIONS

1. As there was no instrument available in Gujarat for testing the intelligence of pupils of Std. V, VI & VII, the present researcher devised this test.

2. It comprised three verbal sub-tests and three non-verbal sub-tests arranged in an omnibus pattern.

3. The three verbal sub-tests are -
   i) Odd-man-out
   ii) Following directions
   iii) Verbal analogies.

   The three non-verbal sub-tests are -
   iv) Mirror images
   v) Picture sequence
   vi) Progressive matrices

4. A pre-pilot test on six pupils of Std. V, VI and VII was carried out to know the reactions of the pupils to the test items and their responses. A preliminary run of the test was carried out to determine the facility value and discrimination index of each test-item.
5. A number of items were coined for the six sub-tests which were given one after the other without any time limit. Item analysis was done using 27% method, i.e. using the difference between responses of upper 27% and lower 27% of 370 pupils.

6. Using Harper's method, facility value and discriminating index were calculated for each item and the best items were selected for making 13 blocks of 6 items each. A liberal time limit of 35 minutes was fixed from the time noted during the preliminary run.

7. For the selection of the sample for the final testing for determining norms, Gujarat State was divided into five zones, viz. (1) North zone, (2) South zone, (3) East zone, (4) West zone and (5) Central zone. Then from each zone one urban, one semi-urban and one rural area were selected and one school from each of these areas was selected at random. From each school, one division of Std. V, VI and VII were administered the test as clusters. Thus it was a multi-stage stratified random cluster sample.

8. The booklets of all pupils in the sample were scored giving one mark for each correct answer and zero for a wrong one. As there are 78 test items, the total score would make 78. As some pupils particularly of Std. V from some rural areas mostly were found not able to read or write to the desired level, and
consequently scored less than 20 marks out of 78, about 150 booklets of such pupils whose score was less than 20 were rejected. The remaining sample comprised 1,300 boys and 1,283 girls.

9. Age averages were calculated for each of the age groups 9, 10, 11, 12, 13 and 14 and above. As no significant difference was found between the average scores of boys and girls, the age averages were calculated for the aggregate groups.

10. A curve of mental growth was drawn from the age averages and was smoothed. Age norms were determined using this growth curve. Graphs were drawn for showing the frequency distribution of scores for different ages.

11. Grade norms, area averages and zone averages were also calculated. It was observed that the rural area averages were found to be significantly lower than those of urban and semi-urban areas.

12. South zone and central zone samples showed higher average scores than the other zones, particularly in the case of rural areas.

13. A scheme to convert raw scores on the test into IQs and PRs was prepared by converting the SD of scores (13) into SD of IQs (15) keeping in view the average norms of each age group. A ready-reckoner of IQs and PRs from scores on the test was prepared.
14. IQs of all the 2,583 pupils of the sample were calculated and a frequency distribution of the IQs was prepared which showed a little negatively skewed distribution as expected. The distribution shows negative skewness, because many pupils of the age 9 to 13 still do not go to school and among those who attend school, there are many who profit much less from schooling.

15. The reliability of the test has been determined by (1) test-retest method, (2) split-half method, corrected by Spearman Brown Prophecy Formula, (3) Kuder-Richardson Formula, (4) Rulon's Formula, (5) Cronbach’s Formula, and (6) Analysis of variance method. All these methods show different results, but they indicate a good reliability.

16. Different types of validity of the test were checked. They are - (1) Face validity, (2) Concurrent validity by comparing the test scores with (i) Scores on Ajay Pandya's test (which is in the making) (ii) Scores on Desai verbal-non-verbal Group Test of Intelligence, and (iii) by correlating scores on verbal and non-verbal items of the present test, and (3) Construct validity by comparing the test-scores with (i) the Teacher's opinion about the intelligence of their pupils and, (ii) Annual examination marks. (4) Factorial validity by using the Principal Component Analysis. The factorial structure showed (1) General Factor, (2) Perceiving lateral inversion, (3) Perceiving similar patterns, (4) Following directions, (5) Perceiving sequence and (6) Perceiving similar relations.
RECOMMENDATIONS

The test is now ready for using to determine the intelligence of young pupils of Std. V, VI and VII. It can be used for the following purposes.

1. To determine the average intelligence of various groups, viz. of (i) different divisions of the same class in the school, (ii) different standards, (iii) different schools, (iv) schools in different areas like urban, semi-urban and rural.

2. To determine gender differences, if any, in various classes. If significant difference in scores of boys and girls is found in a certain group, the reasons for such a difference can be found out and the defects or limitations can be eliminated.

3. If a general census of the intelligence of school pupils is to be carried out, it can be done with this test.

4. For searching talented children for awarding scholarships, this test will be immensely useful.

5. For admission to Navodaya schools, this test can be used to select intelligent pupils and weed out those who have come for other non-academic reasons.

6. In the study of high achievers and low achievers, intelligence of the pupils can be assumed with the help of this test.
7. If some pupils are found to be scoring much less in examinations inspite of good
efforts on the part of the teachers, they can be the factor of physical or social
heredity operating in their case. Particularly first generation learners sometimes
have home environment which is not favourable for learning. In such cases this
test can be used as a diagnostic instrument.

8. This test can also be used to detect backward or retarded pupils who would not
profit by academic schooling. They can then be advised to pursue vocational
courses.

RECOMMENDATIONS FOR FURTHER RESEARCH

1. Since it has been observed that zonal differences in average scores on this test are
visible, separate norms may be fixed for different zones. Alternatively, tests using
different local dialects should be devised.

2. This test is half verbal and half non-verbal. A fully verbal test is also being
standardized at another place. So there remains a need for a fully non-verbal test
which may not have language disadvantage in some areas.