CHAPTER 1

INTRODUCTION

In the modern world education is considered as an investment. Profitable outcomes of the investment depend on planned programmes of education which include the techniques of education also. Testing is also one of the techniques of education that had its origin in very early years as far as third or fourth century B.C., of course in a very primitive form.

The early psychologists of the nineteenth century were not, in general, concerned with the measurement of individual differences. The principal aim of learned men of that period was the formulation of generalised description of human behaviour. Its application during the first world-war that accelerated its growth has now become an accepted part of everyday's life. The outstanding success in scientific measurement of individual differences has been that of general mental test.

Galton invented ways of measuring physical characteristics, keenness of the senses and mental imagery. In addition Galton (1869) demonstrated that outstanding intellectual achievement often occurred in certain families. In the United States Cattell (1890) took to the study of individual differences
out of sheer curiosity, but he very quickly became excited about the practical value of superior individuals in responsible jobs. In about 1890, Alfred Binet became interested in studying an individual's ability in judgement, attention and reasoning. The Binet Scale was first published in collaboration with Simon in 1905. Wechsler prepared the 1939 Wechsler-Bellevue Scale to provide intellectual evaluation of clinical cases. Recently in 1978, British Ability Scales containing 24 scales, based on the Rasch-Model were published in England.

In India a great number of individual and group tests have been devised in various languages. In Gujarat the first individual test was standardized by N.N. Shukla. He adapted the Stanford-Binet test in Gujarati and standardized it on about one thousand Gujarati children and published it in 1949. The other noteworthy tests are M.C. Bhatt's Gujarati adaptation of Wechsler's Intelligence Scale for children, J.H. Shah's adaptation of 1960 Stanford Binet Scale and N.N. Shukla's revised adaptation of S.B. Scale. Peena Sheth and M.L. Joshi are working on Wechsler's Adult Intelligence Scale and Wechsler's Preschool and Preprimary Scale of Intelligence. Thus many verbal as well as non-verbal group tests have been made available for Gujarati children.
An individual test can be applied to only one person at a time and therefore, when a large number of individuals are to be tested, it cannot be used. Group tests have, therefore, been devised for large scale testing.

The present experiment is designed to construct an original non-verbal group test of intelligence and to standardized on a large number of secondary and higher secondary pupils of Gujarat State.

An outline of the experiment:

Psychological tests are like tests in any other science in so far as observations are made on a small but carefully chosen sample of an individual's behaviour. The fact that measurement in psychology cannot reach the definiteness and accuracy found in physical sciences is accepted. However, care and caution in designing the instrument are thought to be absolutely necessary.

The first step taken in this direction was to define the term intelligence. Reference materials and manuals of verbal and non-verbal tests were studied. Various theories of intelligence given by different psychologists were considered. Different types of non-verbal tests mentioned below were then selected to measure mental functions usually involved in intellectual tasks.
The applicability of the tests was restricted to pupils of Grade VIII to XII of higher secondary schools.

To construct the test 150 items were prepared. During the first try-out, the original form of the test was administered to 30 pupils, 3 boys and 3 girls from each of the five standards to know the mental processes involved in solving the items and to check the adequacy of directions. The first pilot testing helped in checking the correct answers and in selecting distractors. From this try-out 140 items were given place in the preliminary test and the remaining ten were discarded. The test was then printed for the second preliminary run.

The second try-out of the tests supplied the item analysis data. The tests were administered to 400 pupils, out of which 370 answersheets were taken for item-analysis. They were arranged in order of their scores and 100 answersheets each from the top and the bottom were taken in order to get 27 percent of both
the extreme groups. With the help of item analysis, the facility value and the discriminating index of each item in each sub-test were found out. The time taken to complete the test was also noted during the preliminary try-out and the limit was fixed up for the final test.

Out of 128 items, 90 items in 25 to 85 difficulty range were selected. The test items were then rearranged in the spiral omnibus pattern according to their facility values in 15 sets, each containing six items one of each sub-test. A practice test was also added to the final test.

In selecting the sample for the final try-out, stratified random sampling method was followed. Gujarat was divided into eighteen strata. The test was then administered to 3262 boys and 2322 girls of sixty schools of urban, semiurban and rural areas of Gujarat State.

The sexwise and age wise means and standard deviations of scores were calculated. Pupils of each grade were divided into three age-groups. It was checked with a view to finding out if there was any significant difference between the performance of the two adjoining age-groups. In most of the cases, it was found that there was no significant difference between them. So all the three groups in each grade were combined. Thus the group
finally formed represented a model age-group for the grade and the norms were based on the same. The level of significance of the difference between the mean scores of boys and girls for each age group was also calculated. For the most part, they were not significant even at .05 level. So the means and standard deviations of the combined groups of boys and girls for all ages were calculated.

To indicate the individual's relative standing in the normative sample and to provide comparable measurement, it is necessary to express the raw scores as transformed scores and as such PR and IQ were calculated. Deviation IQs with a mean of 160 and standard deviation of 15 were calculated.

Retest reliability by administering the test after an interval of about six months with the same form was calculated. The split-half reliability based on a single administration of the tests is also calculated.

For the purpose of validation the scores on the present test were correlated with Desai-Bhatt Group test and Bhavsar Non-verbal Group Test.
The correlation of the IQs obtained by this test with the total marks scored in academic subjects at the Annual Examination was also studied.

The following material was prepared for inclusion in the manual of the test.

1. Standardized instructions for the test administration
2. Scoring-key
3. Ready-reckoner for calculating the IQs
4. Classification of IQs.