CHAPTER II

THE PROBLEM

The problem of the present investigation is to prepare a test for assessing the 'Scientific Aptitude' of pupils. The test will be a standardized test which will measure quantitatively the scientific aptitude of pupils and will thus assist in locating and fostering the science talent.

Before proceeding with the actual work, it is necessary to clarify the concepts like 'Aptitude', and 'Scientific Aptitude'.

MEANING OF APTITUDE:

Educationists and psychologists do not agree to a single definition of the word 'Aptitude'. The term is generally used rather loosely both by laymen and vocational psychologists. A survey of literature reveals that the meaning of the term 'Aptitude' varies not only from one user to another but its meaning differs from one
time to another even by the same user. The present investigator, therefore, studied the variety of definitions of the term 'Aptitude' given by different educationists and psychologists.

Good, in his dictionary of Education, defines aptitude as 'a pronounced innate capacity for or ability in a given line of endeavour such as a particular art, school subject or vocation.'

Warren defines aptitude as,

"A condition or set of characteristics regarded as symptomatic of an individual's ability to acquire with training some (usually specified) knowledge, skill or set of responses, such as the ability to speak a language, to produce music, etc."

According to Seashore and Van Dusen, "An aptitude is a measure of the probable rate of learning which results in interest and satisfaction."

Hahn and Maclean refer to aptitude as, 'latent potentialities, undeveloped capacities to acquire abilities and skills and to demonstrate achievements.'

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According to Bingham,

"Aptitude is a condition symptomatic of a person's relative fitness, of which one essential aspect is his readiness to acquire proficiency - his potential ability - and another is his readiness to develop an interest in exercising that ability." 5

A study of the above definitions reveals the use of following terms in describing the meaning of the term 'Aptitude':

1. Innate capacity
2. Innate ability
3. Ability to acquire with training
4. Rate of learning resulting in interest and satisfaction
5. Latent potentialities
6. Undeveloped capacities to acquire abilities and skills and to demonstrate achievements.
7. Readiness to develop interest in...

It is interesting to see the use of various terms like 'Ability', 'Capacity', 'Potentiality', etc. in the various definitions of the term 'Aptitude'.

Ability means power to perform responsive acts whether simple or complex, manipulative or intellectual.

Capacity means potential ability, the upper limit of the power to perform responsive acts. 'Capacity' can be equated to 'latent ability'. Potentiality is also synonymous with capacity or latent ability.

The use of terms like 'Latent Capacity', 'undeveloped potentiality' points to the intrinsic difference between the terms 'Aptitude' and 'Achievement'. The use of phrases like '....ability to acquire with training', '.....capacities to acquire abilities' can be considered to point to the innate nature of 'Aptitude' and also the admission of the environmental influences so needed for its optimum development.

Two characteristics inherent in the concept of 'Aptitude' are clearly evident. They are:

(i) Aptitude refers to the latent ability as differentiated from the status achievement.

(ii) The latent capacity develops under favourable environmental conditions.

If this is accepted, it resolves to a considerable extent, the familiar conflict of the innate or the acquired nature of 'Aptitude'. It is innate but its full realization is subject to the presence of a favourable environment. Even a small degree of innate capacity can work wonder in an exceptionally favourable environment whereas a large
amount of innate capacity would not be potent in an exceptionally unfavourable environment.

Controversial issue regarding the innate or the origin of 'Aptitude' is not very important when we measure the 'Aptitude'; what we want is the facts about a person's aptitude as they are. We want to know such characteristics as would indicate his future potentialities. Whether this was innate or acquired is not of importance to a guidance worker though its theoretical importance cannot be denied.

Based on the above line of thinking. Bingham's definition is more acceptable compared to other definitions. Bingham considers aptitude as innate as well as acquired. His is an eclectic solution. The investigator has, therefore, accepted Bingham's definition for the present work. The definition is repeated below:

"Aptitude is a condition symptomatic of a person's relative fitness, of which one essential aspect is his readiness to acquire proficiency - his potential ability - and another is his readiness to develop an interest in exercising that ability."

SCIENTIFIC APTITUDE:

By 'Scientific Aptitude', the investigator means the aptitude for science, just as musical aptitude means the aptitude for music.

WHAT IS AN APTITUDE TEST?

An aptitude test is a test designed to discover what potentialities a given person has for learning some particular vocation or acquiring some particular skill. In other words, aptitude test measures abilities and interests. A test of aptitude samples certain abilities and characteristics of an individual as he is today and it helps to find out what he can do now and how well he can do it.

According to Bingham, "They ascertain what an individual actually does in standardized situations, and from these measurements the estimate of capacity for future accomplishment is an inference—a statistical probability, not a certainty."7

According to Stuit, "The term aptitude test is being applied primarily to tests which measure abilities or accomplishments which are not direct result of specific environmental experiences and which are used to predict success at some future time."8

NEED OF APTITUDE TESTING:

If a person's capacity can be measured or at least estimated before he begins a course of training, much wasted effort can be spared. Most of the pupils aspire to become


engineers, doctors or scientists, but many of them fail miserably even during the early years of studies. If their aptitudes are known well in advance and they are given proper guidance in the beginning, much time, money and effort can be saved. Similarly, a huge wastage of time, money and labour could be saved by right placement of personnel in different vocations with the help of aptitude tests. Thus the importance of aptitude testing cannot be questioned in any way.

PURPOSE OF THE PRESENT INVESTIGATION:

The present aptitude test is meant to measure the aptitude of pupils for the subject of science. Based on this measurement, one can predict with a reasonable degree of confidence the pupils' ability to pursue science courses in higher studies.

The present work can also be used:

1. To afford a basis for the prediction of the character of the work that each student will do in science subjects.

2. To deal more effectively with pupils who are not well oriented in their academic work; e.g. pupils who fail at their work but possess adequate mental ability, pupils who lack interest in their work, etc.
3. To section classes for instructional purposes on the basis of ability.

4. To furnish a basis for the diagnosis of class weakness.

**SCORE OF THE PRESENT INVESTIGATION:**

The present test is meant for the pupils of Gujarat. The test is prepared in Gujarati. It has not been constructed in English language as pupils in Gujarat learn English only for four years. Again Gujarati has been the official language of instruction and examination for more than 98% of the population in the state.

Again, the test has another limitation as regards its use in other states. The pattern of Education in Gujarat has been:

(a) Seven years for elementary education,

(b) four years of high school education, and

(c) one year of pre-university course followed by three years of undergraduate education.

The present test is for the pupils of the last year of a High School stage and not of a higher secondary school. With proper translation, the test can be used to fix the norms for the S.S.C. pupils of the Maharashtra State.
SELECTED REFERENCES


Educational Journals :

