CHAPTER II

ORIENTATION OF THE PROBLEM OF THE STUDY

The genesis of the problems selected for the study have to be traced in the personal experiences of the present author during his stay for his post-graduate studies at the University of Minnesota U.S.A. He was advised to write a research paper for one of his minor faculty advisors, Dr. Willis S. Johnson of the faculty of Educational Psychology of the University. This research paper was to be written at the level, so that it would work as background for a doctoral dissertation on the topic of aptitude exploration, if such a choice was to be made during later days of professional work of the author. The situation confronted by the author as teacher of educational psychology and applied psychology and educational vocational guidance, made it seem to the author to undertake the current study for doctoral dissertation as a worthwhile project.

Since the very beginning of his career as a teacher in psychology, the author became more and more aware of the inadequate ability level of his students as a group. He got into the habit of trying to find a pattern of subjects of study of his students which were in some manner related to their doing better in psychology courses. Information
on general preference for various subjects offered from High School to B.A. was usually obtained at the time of the beginning of an academic session from students in Psychology. After about six years of this type of general exploration of each student admitted for B.A. in Psychology, it emerged that with the exception of two to ten percent of the total students who gave the names of the subjects which they 'liked' were 'indifferent to' and 'disliked' out of the ones they had studied at various levels, there was hardly any consistent pattern of subjects which could be related to their taking psychology at the post-graduate level.

It has been the author's understanding that a large amount of content of psychology is loaded with physiology, physical, numerical, abstract, sociological concepts, terminology and background. Further, a science graduate is likely to be better adjusted to modern training in Psychology than, say, a graduate in linguistic or History or Geography. The general structure of University arts courses unfortunately allows, in some cases, this type of abrupt change from one area to another despite a student having no background for the new choice. This creates a task, for the teacher and the taught, of greatest difficulty.

The author somehow always had a confirmed view of post-graduate training to be of a type
after which a student should be able to get equivalent of state second class service in his line of work. A student at Post-graduate level, who is not able academically to open his opportunities for even this level of job, is probably to be counted as an educational waste.

There can be many criteria of evaluation of waste in University education at the Post-graduate level. The structure of Post-graduate departments at various Universities which have been established after attaining national freedom, will show that in most of these, probably due to rapid growth of demand for higher education, the total expenditure has been proportionately high. It can be reasonably estimated that the average expenditure per student in various Universities ranges between £.30 to £.150 per month. The non-technical and professional courses of study specifically in arts faculties with few exceptions find student teacher ratio quite high, probably equal to that is ideally desired for best academic guidance arrangements. Further, it can be estimated that from these sections the most talented expected to be turned out who will be able to sell themselves as professional or second class state level servants in the beginning is not likely to exceed ten to fifteen percent of the total who study and appear at post-graduate examinations, which is not enough.
The author is not aware of studies of follow up type which show the actual percentages of those placements for various post-graduate degrees. On the other hand, the data collected for the present study shows quite an interesting state of affairs in some related factors. The idea of progressive selection in educational matters has been in vogue in most advanced countries. The criteria used for this selection have been different for different countries and different types of educational backgrounds. Most American institutions follow the simple probability percentage from examination to examination, with the following interesting results. The U.S. Census figures on formal education for 1940 showed 94.7% to have had some schooling, 85.1% got up to 5th or 6th grade, 73.3% got up to 7 or 8 grade, 39.1% got some high School education, 24.1% got to 4 years in high School, 10% went up to college and no more than 4.4% went up to 4 years of college and it will be a fair guess that no more than one fourth of those who went to 4 years of college, went for post-graduate study. A fair estimate would be to say that not more than 2% of the total literate population has a graduate or post-graduate degree. On the other hand, an estimate at one of our universities will show that this progressive selection does not exist. Not only that, as already has been pointed out, not more than ten to fifteen percent of the
total University post-graduate and professional course examinees will get jobs paying Rs 250/- or more as a start after their prolonged training. The University has only adopted the restriction on admissions to post-graduate schools since two years and yet there is no visible change in the percentage of relevantly gainfully employed post-graduate students. Post-graduate students do get jobs, but not in the professional field for which they have a degree and definitely very seldom at the level for which they are qualified.

If we take the probability that Ujjhat, Post-graduates are representative of other or from other Universities, then the scope of study becomes very wide and assumes greater importance.

The cause of this lesser academic achievement and unsatisfying employment may be pointed out in several maladjustments. There are practical problems of the imbalance of popularity of post-graduate education. Another one may be the general structure of the job market, which makes only the highest qualification demanding jobs attractive. It can also be pointed out that the recent growth of population of the country, structure of mechanisation, lack of planned education, illiteracy percentage, all contribute towards this problem of educational
displacement resulting in later vocational maladjustment.

Within the study of students, taught by the present author at a very superficial glance, it was evident that the rate of achievement for most students was found to be uneven and gradually declining. Few students seem to retain their percentage of marks gained at various final examinations after high school. It was most painful to see that a large number of them got early encouragement for higher studies because marks in the high school were sufficiently high to suggest that the student was better than average material, goal for higher studies. These students when confronted with their own calibre at higher levels seem to lose their achievement level, yet because of the initial impetuous keep on despite poor marks, gradually drifting to the inevitable situation where they would not stop studies because they are nearer and nearer their goal. This dangerous logic seems to have been recognised by Universities and the welcome hurdle of University examination every year after high school, may act as a fact finder for some of these unobjectively enthusiastic students.

Most people in the country seem to feel that University and other educational institution examinations are not designed to test the abilities
of our students. The relevant question here is as to whether the content of course material on which students have to be examined are of a nature which need the same abilities as are required in the work of scientific and professional calibre. It has to be understood that educational and professional and scientific work at the higher levels has to be comparable to that of international standard. A scientist and technologist finds and creates content which is unique and new and of universally comparable standard. Backwardness in this respect will mean, to have a post-graduate training and act and think like under-graduate of other countries.

The content of a training can be a factor of undermining all the experience giving qualities of that training. The next composite point is the method, approach and life like experiences provided during study. Unfortunately the training of a very large number of our teachers is itself not equal to their fullest. Approach to providing material of study to students is, hackneyed verbal lecturing or zero repetitive book content. Life like situations, their duplication in the laboratory or classroom situation are provided for a very few courses, generally in the technical and professional fields of study only. This may be due to the lack of money required
for field work or due to the lack of knowledge on the part of teacher of this type of teaching as a result of which he prefers to let the students apply or learn their knowledge of facts and their usefulness come where else - the job, generally at the risk of failure, inefficiency and condemnation. It is evident that students of better quality go to such courses where they get more laboratory, on the job, field experiences and they are the ones the later have paying and productive jobs for which they get more 'practical' than theoretical, abstract, imaginary book information, imaginary in the sense that as students they had to imagine the setting of problems to know them.

Some parents seem to be generally aware of the demands of job market and on the sole basis of this one fact, they make the choice on behalf of their ward about the courses he will study, mostly without ever bothering to find out the reactions of the ward himself.

"Hitching the wagon to the star" has been known to be an universal tendency of the students world over. There are hardly any of them who have a realistic view of their achievement as related to their later capacity for earning money. This generally leads to a miscalculation of their assets, ego-centric combined with average achievement can cause a learner to feel his learning to be of an
altogether higher order than others. This is one
core factor which causes maladjustment, which the
teacher and educator has to constantly keep in
view when planning for student guidance.

Another set of circumstances which seem
to exist all over the country for which there
does not seem to be any remedy is the problem
of examination and evaluation. Everybody knows
that examination has different meaning for
every examiner. The essay type examination has
very low reliability and questionable validity.
There is greater probability of an examiner being
subjectively involved in the content of answerpaper
and the process of rating the paper. Further, it
is known that the general set of standard of
examination rating differs from paper to paper
within the same degree examination. Further,
papers have got set stereotypes in the minds of
the examiner and the examinee that beyond a certain
percentage of marks, it will probably be an
exception to score or lot score. On the other hand
there are papers in which it is possible to score
marks upto a very high percentage, if the examinee
happen to be lucky in getting those questions which
he had the chance to choose for special preparation.
The net result is that the University examination
has dwindled into a chance affair, from which it
will be very difficult to find out whether the
examinee knows enough or remembers enough or can
create new information or will be able to use the available information in a lifelike situation or shall be able to find equated information from a mass of unclassified data or shall be able to evaluate the available information etc. The implication of this is that probably the functions of University post-graduate training and examination should be of the nature from which comparative information about the candidate assessed on the above general factors may be known. It seems that right now examinations succeed in confusing most of the above bases and barely serve to give a generalized level of student retention for book material and a certain amount of his ability to organize for essay writing. They fall too short of their aim, how to go about getting comparative picture of the students so that their being in a preferred or non-preferred degree course will not affect their final achievements in various fields.

It is very unpleasant to realize that M.A. or B.Sc. degrees of a University are salable at various prices, depending upon what content you covered for it, as if one content takes lesser ability to master than another.

The previous paragraphs show that there is a general awareness of the deficiencies in educational situation on the part of the University teachers, but there are no criteria available, no ideal existing which will act as the frame of reference for setting up the consolidated University
The structure of student abilities and attitudes is one such criteria from which frame of reference of education achievement can be set. There is a general feeling that postgraduate education is not of a variety which can be assimilated by any and all levels of ability. The psychologist is aware of the different criteria different people use for measuring ability. In the days of technological advancement and increasing complexities of production methods, criteria of achievement and ability are generally bound to be bid to favour of those factors which ultimately make a person's assessment in the field of work relative to his training achievement. Men's worth, the worth of his training generally are likely to be in terms of how much he was able to earn, how high in the profession he was able to rise, how many useful things and ideas he was able to create and finally how the society around him rates him as a worker. The days of education for education's sake seem to have passed by and hermits hardly are known as hermits unless they could bring something of value to themselves and others. Self realisation is only for personal mental health, which again is relative to others mental healths. The selection of the criterion for the present study was based generally on the above. Professional achievement should be related to professional training and
therefore the criteria group will have to be described generally in terms that it will reflect the above concepts.

The selection of a measure to cover most of the problems took considerable time. The summary of the problems to be tackled will give a brief picture of the case. It was to be undertaken to explore under the study as to whether students distribute themselves after the early examinations in the post-graduate classes? How do they differ as groups on some of the aptitudes which have been found to be occupationally significant? Are there any differences between various courses of study and the student aptitude pictures i.e. do students as a group from one course differ from those of others and if so in that respects and up to what degree? What are the essential differences amongst these students as far as their basic vocational aptitudes are concerned? How do they compare with the present professional sample as a whole and possibly from the professionals of their own training? Were there any differences due to age upon their aptitude scores? In what respects sex was related to aptitudes? How do University examination results relate to aptitude scores? Can it be possible to predict University examination marks on the basis of aptitude test marks? Can the aptitude tests be normalized and standardized for our post-graduate students for the purpose of comparisons in a mixed group, so that prediction
will be possible about the interchange from course to course? While in the process of doing all the above, it was foreseen that a certain amount of comparison of examination marks at various levels will be necessary. Age and sex distributions shall have to be ascertained. Norms for the aptitudes test had to be established, in order to make the test scores comparable to the various groups of students.

Areas of coverage of the present research.

The area of research in the context of the present study is not any single well defined field which can be specified in short space. As visualized, whole study will cover several problems allied to evaluation of postgraduate students. The problems are to be solved with the help of some material form which brings out the essential background information about students examination their age, sex etc. There is the criteria group to be tackled and prepared for cooperation. From the content point of view the study is likely to cover informative material pertaining to the aptitude research, statistics and other informative material about the student groups and criteria group. The classification methods of analysis, statistical treatment, interpretation of results, their discussion in the light of the stated problem and drawing of useful
conclusions are part of the work.

The study in a major portion is being conducted as a norm study. The psychology of test construction and standardization procedure lays down some minimum levels of analysis of data without which norms are not considered even as tentative. Essentially the norm study entails finding of standards and scores on which behaviour samples can to compared either on the basis of age, or distribution of scores related to each other. Age norms, standard scores and percentile scores are generally to be expected to be computed. In the case of present study percentile norms are expected to be established, the reasons for which will be discussed elsewhere. This is likely to bring out the University examination differences and similarities - an indirect evaluation of the examination system from the testing point of view.

The study will entail descriptions of the structure of various groups as related to the whole University population for the year 61. These descriptions are likely to entail statistical procedures which quantitatively describe the groups and their performance. The study is likely to have some connection with the statistical psychological concepts and their use in aptitude test evaluation and University examinations. Comparative studies will be necessary to arrive at
some of the conclusions regarding the number used as percentage for various examinations of post-graduate level. It may be possible to show that some percentages mean different achievement and ability.

From the point of view of educational theory the present research only covers overlapping concepts and criteria. It may be possible to see if the university education represented during the year is directed towards the development of occupationally significant aptitudes. It may be further possible by analysing the performances of the criteria group to see how any change in the theory of university education may be suggested.

The study visualises comparative study of the performance of students from various facilities, colleges etc. Further, the field work and testing conditions have been kept constant, which neutralize external bias. It will be possible to study and evaluate as to which faculty or college has what type of aptitude structure of its students.

The test used for exploration, in the present study enables several comparisons. The available norms for WJ, make it easier to compare the criteria groups from the Indian and American populations. Further, it enables the comparison of scores of student populations with the criteria group scores. The occupational
aptitude pattern scores provide comparison of both, the level and the quality of aptitudes which have been found to be significant for various occupations in U.S.A. One of the needs of present day specialized training is to find and select trainees who deserve better consideration for foreign training. The study may indirectly point out a percentage of students who score marks equal to or higher than the level which prescribes successful performance in U.S.A. Later follow up may further indicate the usefulness of the test and predictions based on the scores on this test.

The study touches on the problems of evaluation of post-graduate curriculum related to various areas of study provided by the University. The test is used as the tool of finding the differences in the aptitudes of students who are studying in various courses. Professional workers from these areas have been tested and it will be possible to compare and suggest additional work as part of training which may bring the training at post-graduate level nearer to the level of performance required for professional work.

The guidance worker in the field is not only confronted with problems of diagnosing the assets and liabilities of the clients but also that of finding alternatives with regard to a suitable choice of post-graduate training soon after the graduate work. When this study was in its beginning
stage, the University rules allowed the students to take admission in one out of the several courses for which they had successfully appeared at their graduate examination. Recently it has been大大提高 changed to the effect that now post-graduate training can be taken in only that subject which they had offered for their entire study and if they scored better than 44% of marks in that subject. This rule may help the standard of achievement of students at the post-graduate level and make for progressive selection based upon marks achieved at the University graduate examination. This, however, can not be considered the only desirable, sure, valid method of such a selection. It may help with certain limitations.

It must be pointed out that guidance generally is neither provided nor sought after graduate degree. In itself it will be considered a healthy sign, a sign of creditable, objective choice of post-graduate training. On the other hand the factors influencing the choices of the students who want to pursue post-graduate study but have not been influenced in this respect by their parents seem to be "sense of the study", hours of study and school, etc. Generally, students like to take the line of least resistance, even though it may not bring them nearer to their professional goal. They would rather modify their goal than strive to achieve it by going flat out while doing
the study. The choice of the students combined with this inertia brings down their achievements, which results in waste of talent, man hours, money and resources resulting in educational waste.

Selection practices, with the exception of the central and state services of the gazetted categories, generally, do not exceed anything more than an interview and the preliminary screening based upon the application form data. It should be pointed out that this in a lot of cases leads to misplacement. Diagnostic techniques in psychology are advanced enough now to enable a far better than change prediction of a probable behaviour. In fact, it can easily be estimated that the selections in the military services - the organisation which adheres to the strictest of diagnostic standards, usually gets their men, who generally more than succeed in their assigned tasks. There are very few instances of inefficient military personnel performance. Further, in the civilian services, where competition and selections are not too elaborate and do not usually reach the ideal standards of diagnostic practices in Psychology, also get better men. It is a very happy state of affairs that the general screening based upon a written examination helps to weed out the 'able and aspiring' from the 'aspiring only'.
The personal interview at the final trial helps with a general measure of confidence, manner of bearing, command over essential expression and communication. From this category of selection also, it is seen that generally no more than negligible percentage of those hired for various categories of administrative, organisational, executive and judiciary services turn out to be misplaced.

In the above two selection procedures, one outstanding fact emerges that selection is more statistically oriented than clinically organised. For any given number of posts intended to be filled, it can be estimated that a very large number of applicants are available for screening, which makes the probability of correct selection very high. If an untrained selector is able to rank the top ten out of the available fifty candidates on a 'general impression' basis, the chances of faculty selection based on the most general factors of observed behaviour are often reduced. The sheer number of applicants for a post in India, makes it easier for even the lay selectors to select better candidates, and practically impossible to make a wrong selection even if the selectors resort to the most generalised and crude methods of observation and interview.

The present author had the chance of discussing, the problem of scientific placement
in the textile industry at Ahmedabad, with some of the executives and managers. It was done for the purpose of introducing the test and present study in order to gain their rapport for cooperation for this study. I needed some of their personnel for the criteria group in this study. In these discussions, it became evident that they were thoroughly dissatisfied by the 'pressure put on them to employ personnel of whom they had no idea about their relative academic merit or personal integrity or professional efficiency'. They gave instances where thoroughly undesirable, unfit personnel had been imposed upon the industry, on the basis of no other factor except personal considerations on the part of the top authority. Generally the impression the present author gained was that textile industry did not employ any set scientific procedure in their selections, with a few notable exceptions. Quite often placement was based upon other than the job requirement criteria. As a whole efficiency, harmonious relationships were affected by such a process and it led to quite a bit of strain on the really efficient and hard worker.

The teachers of the professional and technical institutions had to be contacted for the purpose of liaison with their students who were to be tested for the study. A very experienced teacher in engineering discussed the merits of
their selection test for admission of the students for their B.Sc. courses. He was of the opinion that about no less than a third of their admitted students were not deserving the admission to engineering course. He went further to point out that the three year teaching and laboratory work was not of the desirable quality and quantity, not nearer enough to actual engineering work of the professional standard and as a result of which most of their average and better students were obliged after securing their degrees to take 'apprentice training at various jobs, in order to enable them to get remunerative jobs in the apprenticing factory or organization. The demand for qualified technical personnel - personnel who will take up independent responsible duties soon after coming from the colleges and training is very high indeed. On the other hand, we find a large number of average and below average technicians, engineers registered with the employment exchanges, who are not acceptable for any productive responsible jobs.

The U.P.S.C. periodically makes it known that specialized jobs are left unfilled for lack of trained personnel. We know on the other hand that University trained postgraduates are available in large numbers, but they have only a general training and that too of theoretical information type. Their training has not prepared them for these jobs.
Problems exist in various areas, problems of teaching, training, selection, placement, successful performance and promotions. We are not able to compete against advanced countries in this respect also because we do not have consonance with them in above factors. We are gradually changing over.

The present study was motivated by the recognition of the fact that no norms existed for a usable aptitude test on the adult, post-graduate sample in the country. Norm study becomes most imminent for the clinician so that he may get started with a context. Naturally one aspect of the norm research is to provide this context or a generalized frame of reference on the basis of which he can lay reasonable standards for clinical diagnosis. It is a well known fact that the more motivated, ego-involved, needly respondents on the whole cooperate and do better in the test situation than the volunteers upon whom norm research has been conducted. Despite the best of intentions volunteers in the norm research do not behave at their best on the test. On the other hand, it is also well known that the tempo in real vocational work performance is not always of the highest order. More applicants put their best performance when they are under scrutiny for selection for a job than in most other every day work situations. Probably selection
situation acts as an emergency situation and the heightened tension leads to speedy and accurate performance.

The interpretation of any of the above type of diagnostic testing is best done when norms exist for the non emergency, average tension human performance. The clinician has hardly any objective standard of comparison except the norms, thereby he can reasonably feel secure about the diagnostic information on the test.

Tests help not only assessing the relative present status of the client but also are used for prognosis and evaluation of therapy. To accomplish either of the above two tasks, clinician has to have reliable, valid relatively constant standards of performance with which he can compare the performance and be in a position to reasonably assess the chances of the client for better or worse, prescribe a given mode of behaviour for practice which will bring the client unto the accepted level of performance - the therapy aspect of his job. To accomplish this complicated professional duty, the existence of norms on a well defined ample is a necessity.

So far it has not been possible to accurately assess the absolute range of any ability or aptitude in the human organism. Psychology has not been able to find any 0 or 100. Best
assessment has been confined to samples of human behaviour so stratified that it covers the statistically valid and reliable representative behaviour. There are hardly any human beings who have absolutely no aptitude or ability of a given quality and none who has all of it. The clinician needs to use the quantum provided by norms. It is really very difficult and tricky for the clinician to be reasonably sure about a client's relative position compared with those of others who are described as average or normal individuals. The average or normalcy level changes with the samples of human performance. If we think that all groups, ages, at all times, average the same performance, we are being too unscientific. At best, what is left for us to do is to reasonably, within certain fiduciary limits, to assess a relative position and try to correlate factors which are being or likely to be of help or hamper the client's performance. Some in this respect help discover and provide the fiduciary limits of the client's performance, given an adverse or advantageous environment of performance.

Considering the above argument, it is even more confusing and unreliable to normalise scores on a test which has foreign content as items. Factorial component of a test may change, usually does change, then the sample for standardisation is separate or unrepresentative
of the sample on which item selection or analysis
was performed. Certainly, it can be assumed that
language, environment, performance and test content
affect scores of samples. American test items may
or may not be usable for Indian samples, even though
it may be for the purpose of establishing norms.

One aspect of this study in fact relates to this
problem of finding equated performance on the GATB.
This becomes specially difficult when the sample
covered contains elements influencing test
performance. Some of the present sample perform
as well or better than the American respondents,
but a majority does not. Naturally, we can only
point out these differences. On the other hand the
nature of scores as a whole reflects nothing but
the ideal averages, statistically arrived at,
which may change with each new group of respondents.
Also these ideal scores are no guarantee that
individual performances will not change significantly
with the change due to time, experience, change of
circumstances. Born study at test can lay down
scores which are scored by competent successful
people e.g. the professionals. Considering that
even some of these professionals may not be
objectively most ideally or objectively placed
in their respective positions, we have to further
furnish levels of scores we consider minimum for
purposes of comparison.
Scores based upon statistically ideal averages or percentages or proportions suffer from another grave inconsistency in sample scores. Distribution of human aptitudes or abilities in the normal fashion puts predictions in the middle range of distribution at a disadvantage. Scores of any variety - percentiles, age norms, standard scores, etc. - are not fixed. Prediction in the middle range of 35th to 65th percentile or one half standard deviations from the mean are not too easy to make. The fiducial limits in this middle range of scores renders predictive statements inaccurate because they cover a larger percentage of sample scores falling at the mean, and naturally in terms of percentage of the sample at least middle one third, i.e. about 30 to 40 percent scores are too near to each other, to help the clinician make more accurate and finer diagnosis or prognosis.

Predictive efficiency decreases in the middle range probably because of the factor of chance probability of performance.

Extreme cases are easy to compare against a distribution of scores. Not only the probability of change in the extreme low or high scores is low, it is statistically more significant. The percentage or proportion numbers become more significant in the lower or upper quartiles or the first and sixth standard deviation levels.

The construction and selection of the items based
on their relative difficulty value assessed on a comparable and representative sample affects the research conducted for establishing norm. The items with least and most difficulty percentage have statistically higher predictive value. On a test which is loaded with speed than power, performance of an individual seems to be more under statistically controlled stimuli and naturally decisions are statistically oriented. Some study can surely point out both of these factors and probably leave the choice of the method of prediction to the individual clinician.