The common idea of methodology is the collection, the comparative study and critique of the individual method is used in a given discipline or field of inquiry. It can be defined as (i) a body of method, rules and postulates employed by a discipline. (ii) A particular procedure or set of procedures. (iii) The analysis of the principles of procedure of inquiry in a particular field. Research, being a methodological approach, is a vast and multidimensional concept. It is an endless quest for knowledge or unending search for truth. It brings to light new knowledge, correct previous errors and misconception and adds an orderly way to the existing body of knowledge. The knowledge obtained by search is scientific and objective. Therefore, it is implied that for obtained by search is scientific and objective results; there should be a proper methodology and procedure.

A research study to be carried out as per design formulated in anticipation. The preparation of a research proposal or design is an important step in the research process. This provides a bases for the elevation of the project and gives the adviser a base for assistance during the period of his direction. It also provides a systematic plan of procedure for the research fellow. Every piece of research must be planned and designed carefully so that the researcher proceeds ahead without getting confused at the subsequent step of research. The researcher must have a clean and clear understanding of what is to be done, what data is needed, what data collecting tool are to be employed and how the data is to be statistically analyzed and interpreted.
Research design is comparable to the blue print, which the architect prepare the bids are let and building commences. The initial draft proposal is subject to modification in the light of analyzed by the students and his or her project advisors. A design is blue print of the procedure for the completion of various research steps and thus reaching valid conclusions regarding the relationship between the variables under study. Therefore, it is important that the design is specifically conceived and objectively executed to bring empirical evidence. By doing so, the observation and inferences become valid to rely on. The preparation of a research proposal or design is an important step in the research process. It provides a systematic plan and procedure for the research to follow.

Kerlinger (1983) remarked, “Research design set up the frame work for ‘adequate’ tests of relation among variables. Design tells us, in the sense, what observation to make, how to make them and how to analyze the quantitative representation of the observation. Strictly speaking design does not tell us precisely what to do, but rather suggest the direction of the observation making and analysis.” (p.276)

McMillan (1989) observes, “Research design refers to the plan and structure of the investigation used to obtain evidences to answer research questions. The design describes the procedure for conducting the study, including when, from whom and what conditions the data will be obtained”. (p.30)

Kothari (1990) has aptly remarked, “Research design stands for advance planning of the method to be adopted for collecting the relevant data and the techniques to be used in their analyses, keeping in view the objectives of research availability of staff, time and memory.
Selection of particular design is based on the purpose of the piece of research to be conducted. The design deals with selection of the subjects, selection of the data gathering devices, the procedure of making observations and the type of statistical analysis to bare employed in interpreting data relationship.

The present study has been completed through the descriptive method of research. This method has been the most popular and widely used method of research in social science and education. The descriptive method of designed to obtain pertinent and precise information concerning the current status of phenomena and also draw valid conclusions from the facts discovered. They are restricted to not only to fact finding but may often result in the formation of important principle of knowledge and solution to significant problems concerning local, state, national and international issues. It investigates phenomena in their setting. Their purpose is both immediate and long range. It helps to explain educational phenomena in terms of condition and relationships that exist, opinion that are held by the students, teachers, descriptive and the statistical methods used for data analysis for the present study are given as under:

**SAMPLE**: The sample for the present investigation consisted of 600 student-teachers selected by random sampling technique from different Secondary Teacher Education Institutions. These student-teachers were divided on the basis of Regions, 300 student-teachers from Jammu division (150 male and 150 female) and 300 student teacher from Kashmir division (150 male and 150 female). The Regional sample was further divided on the basis of subject streams keeping in view the gender of the selected sample (75 science, 75 arts respectively).
List of selected Secondary Teacher Education Institutions of Jammu and Kashmir Divisions

1. Dr. Iqbal Training College of Education, Srinagar
2. SSM College of Education, Srinagar
3. Rehmat-E-Alam College of Education, Anantnag
4. Muslim Educational Trust, Baramulla
5. Rizwan College of Education, Sopore
6. Al-Ahad College of Education-Anantnag.
7. Sheikh-Ul-Aalam College of Education Kupwara.
12. Government College of Education, Srinagar
15. Green Valley College of Education Lethpora, Pulwama
16. Gandhi Memorial College of Education, Jammu
17. Wisha Bharti College of Education, Jammu
18. Government College of Education, Jammu
19. Model College of Education and Research, Jammu
20. K.C. College of Education, Jammu
The distribution of the sample (N=600) were student-teachers (N=300, of which Jammu division 150, Kashmir division 150, of which 75 male science, 75 female science, 75 male Arts, 75 female Arts in each case).

MFSTJKD : Male Female Student-teachers of Jammu and Kashmir Divisions

STJD : Student-teachers of Jammu Division

STKD : Student-teachers of Kashmir Division

MSTJD : Male Student-teachers of Jammu Division

FSTJD : Female Student-teachers of Jammu Division

MSTKD : Male Student-teachers of Kashmir Division
FSTKD : Male Student-teachers of Kashmir Division
MSSTJD : Male Science Student-teachers of Jammu Division
FSSTJD : Female Science Student Teacher of Jammu Division
MASTJD : Male Arts Student-teachers of Jammu Division
FASTJD : Female Arts Student-teachers of Jammu Division
MSSTKD : Male Science student-teachers of Kashmir Division
FSSTKD : Female Science Student-teachers of Kashmir Division
MASTKD : Male Arts Student-teachers of Kashmir Division
FASTKD : Female Arts Student-teachers of Kashmir Division

**Selection of Tools**

Selection of tool is very important in any research study. If valid tools are not used, the investigator may be misled and the effort of the investigator would go waste, as she would not be able to achieve the objectives of the study. A competent investigator therefore, looks into the possible measures, which can help her in arriving at the desired results. Accordingly, the present investigator adopted the following tools for the collection of data.

The data for the present study was collected with the help of Teaching Aptitude Test (TAT-GR) by Gakhar and Rajnish (for Teaching Aptitude) Culture Fair Test of Intelligence by R.B.cattles (for Level of Intelligence) Mental Health Checklist by Pramod Kumar (for Mental Health) and Teacher Attitude Inventory by Ahluwalia (for attitude towards teaching)
DESCRIPTION OF TOOLS:

I. Teaching Aptitude Test (TAT)

Teaching Aptitude Test (TAT) by Gakhar and Rajnish aims to measure the aptitude in teaching profession. The test has 75 statements divided into six categories. There is no time limit for the test; still it could conveniently answer in 15 to 20 minutes time. The six categories are related to the following dimensions:

1. Teaching profession: This category is used for measuring the traits among the student-teachers to become a good professional in teaching.

2. Interest towards students: This area of the test is used for measuring interest of the teacher towards students. As teacher plays vital role in the development of personality of the student.

3. Social contact: The teacher is an active participant of the society. He/she plays important role in the society. He/she should expand his/her contacts with other members of society. The item of this area helps to measure the social contacts with other members of society.

4. Innovations Regarding Activities of the School: The items of this area are helpful to measure the innovations regarding activities of the school. As teacher plays vital role in every activity of the school and a teacher should be intrinsically motivated towards the activities of the school.

5. Professional Ethics: The primary aim of education is to develop citizens who will safeguard strength and improve democracy, and maintain national ideal through equal educational opportunities. The quality of education reflects the ideals, motives preparation and conduct of the members of the teaching professions. Whoever choose teaching as a career assumes the obligation to
count him in accordance with the ideal of the profession. As guide for the teaching profession, the members adopt a code of professional ethics. Since all teachers should be members of united impression the basic principles here in enumerated apply to all persons engaged in the professional aspect of education at elementary, secondary and college level.

Professionals establish code of ethics to protect society from unscrupulous and incompetent practitioner, and to protect competent and honest members from engaging in undesirable behavior that will bring the profession into disrepute and provide all practitioners with an approved standard of employment etiquette. An educator works with many different personalities and must conduct himself properly with each of them. In addition to his daily contact with pupils, he may meet parents, administrators, colleagues, social workers, clerks, custodian, sales-man and community leaders. His skill in maintain fair, friendly, productive working relations with these people, determines to great degree the effectiveness of his contribution to education. Thus as a prospective teacher you should be fully acquainted with the code of ethics that guide teachers in their conduct with others. The ethical code of conduct for teachers include his relationship with pupils, parents, community, administrator and others.

6. **Teaching potentiality and current knowledge**: This area helps the investigator to know the teaching potentiality of student-teachers and also to know the current knowledge of these student-teachers.
STEPS FOR THE DEVELOPMENT OF TEST

Keeping in view the objectives of the study, books like Competition Master, Competition Success Review, and Pratiyogita Darpan were read thoroughly. Preliminary draft was prepared with 120 statements divided into six categories—(i) Teaching Profession, (ii) Interest Towards Students, (iii) Social Contacts, (iv) Innovations Regarding Activities of the school, (v) Professional Ethics, (vi) Teaching Potentiality and Current Knowledge. Preliminary draft of the test was administered over a sample of 40 B.Ed. trainees. Statements which were ambiguous or too difficult were dropped out. Finally, there were 75 statements divided into six categories.

Final Try Out

The test for final try out was administered on a sample of 400 B.Ed. trainees selected randomly from four colleges of Education situated in Punjab.

ITEM ANALYSIS OF THE TEST

A. Discriminating Value: Discriminating value of the statements were found out with the help of the following formula by taking 27% top and 27% bottom trainees divided on the basis of their performance.

\[
\text{Discriminating Value} = \frac{\text{RH} - \text{RL}}{\text{N}}
\]

Where

- RH means right responses in higher group.
- RL means right responses in lower group for a particular statement:
- and
- N means number of subjects in higher/lower group.
B. Difficulty Value

Difficulty Value of the statements was calculated as:

\[
\text{Difficulty Value} = \frac{\text{No. of Trainees giving correct responses}}{\text{Total number of trainees}}
\]

Result were entered in table 1. Statements having the difficulty value either too ‘small or too high’ were dropped. It was observed that 35 statements were having discriminating value more than 24. All these statements were selected. Hence this final test comprised of 35 statements divided into six categories.

Test-retest method was used for finding reliability on a sample of 40 trainees. Reliability co-efficient was found to be 0.76. Validity was found out by correlating the scores of Teaching Aptitude Test with that of Shah’s Teaching Aptitude Test on a sample of 40 trainees. Validity co-efficient was found out to be 0.68.

Administration of the Test

1. This test can be administered to one individual or a group of persons.
2. In case of a group, at a time not more than 20 persons should be given the test.
3. For testing proper seating arrangement be made.
4. The purpose of the test and how to answer to made clear to the testees.
5. The target population for Teaching Aptitude Test is Teachers already in-service, STC, B.Ed. students and persons who aspire to become teachers.
6. Though there is no time limit for the test, still, it could conveniently be answered in 15 to 20 minutes time.
7. It is emphasized to testees to answer to all the 35 statements and no statement be left unanswered.

**Scoring**

Four alternative answers have been given for each statement and only one answer is correct, which can be found with the help of scoring key. Each correct answer carries 1 (one) mark.

There are 35 statements and the maximum score could be 35 and minimum 0 (zero). This score shall form the raw score for the test.

**II. CULTURE FAIR TEST OF INTELLIGENCE (CFTI)**

Purpose of the Culture Fair Test:

The Culture Fair Intelligence Tests measure individual intelligence in a manner designed to reduce, as much as possible, the influence of verbal fluency, cultural climate and educational level. The test which may be administered individually or in a group, are nonverbal and requires only that examinees to be able to perceive relationships in shapes and figures. Each scale contains four subtests, involving different perceptual tasks, so that the composite intelligence measures avoid spurious reliance on a single skill.

The main aims in the design and construction of the tests were:

1. To create a psychometrically sound instrument, upon a comprehensive theoretical foundation, with maximum possible validity and reliability;
2. To minimize irrelevant influence of cultural learning and social climate while preserving the predictive utility of the tests across a broad spectrum of concrete behaviors;
3. To provide high administrative and scoring convenience and maximum economy of testing time.
Applicability and Scope

Perhaps because intelligence tests have been available much longer than comparably valid measures of personality and interest, many psychologists and educators had to begin to believe that intelligence is of greater importance than we know it to be. Many saw intelligence as the major dimension of individual differences. This line of thought led to a great deal of confusion and many abuses in intelligence testing. From our current vantage point, we now recognize that intelligence, though important, is only one element of a larger set of individual attributes that need to be considered when we attempt to understand and predict human behavior comprehensively.

Experience in industrial validation, for example, has shown that intelligence does make an important contribution to the prediction of skill acquisition, problem solving, etc. With regard to other relevant aspects of job performance—such as length of stay with the company, absenteeism or sales effectiveness, to name only three—intelligence plays a less prominent role than personality or motivation factors. Educational research has frequently demonstrated that intelligence is an important predictor of academic performance. Other findings indicate that the inclusion of personality and motivational factors in the test battery substantially improves the level of predictive accuracy.

With these cautions in mind, we see that the culture fair test is valuable instruments for all uses to which an intelligence test is rationally applied, notably:

1. Discovering whether the achievement of each individual is what would be expected from his intelligence, thus facilitating identification of emotional or learning problems where they exist;
2. Assessing an applicant’s potential to perform job-relevant tasks that involve cognitive ability;
3. Making a more reliable and informed decision whether a particular child may require special educational facilities or a program of cultural enrichment;
4. Selecting students for accelerated educational programs within an age group of grade;
5. Advising students in regard to probable success in college or the chance of winning a scholarship;
6. Increasing the effectiveness of vocational guidance decision, both for students and adults.

In all such applications, the special advantage of the Culture Fair Test is that they make a cleaner separation of natural ability from specific learning and thus permit better analysis and prediction of the individual’s ultimate potentialities.

**Research Development and Test Design**

The history of the culture fair scales began in work undertake by Cattle in the late 1920’s, sparked by the precise scientific research of Charles Spearman and other into the nature and accurate measurement of intelligence. In 1930, this work resulted in the publication of the Cattle Group and individual Intelligence Test. Five years later, several scales were revised and recast into non-verbal form to diminish the unwanted and necessary effects of verbal fluency in the pure measurement of intelligence.

Research and refinement of the scales continued. In 1940, another revision of the test appeared. At this stage, items had become completely perceptual and were organized into six subtests, three of which have been retained in the present format. Before publication of this edition, four
successive item analyses were carried out (on sample of high school senior, college students, seventh and eighth grade and psychology majors). Of the 159 items analyzed, 72 of satisfactory validity and reliability were retained for the published edition.

In 1949, the culture Fair Scales underwent another revision and adopted the format which has been retained since, consisting of four subtests (Series, Classification, Matrices and Conditions) at each of two difficult levels.

The increasing availability of electronic computing facilities enables more refined and more comprehensive item analyses than had always been possible in the past. Moreover, the technical feasibility of large-scale factor-analytic experimentation provided increased precision in the identification of maximally valid items. A new pool of more than 500 items was developed at this time. Less than half survived.

In 1961, another revision, though not so extensive as those of 1935, 1940 and 1949, was concluded. The primary outcomes of this revision were sight adjustments in difficulty level and sequencing of a few items. At the same time, the norm samples were expanded to achieve better national representation in the final tables.

Format of the Tests

There are three scales in the Culture Fair series. Scale 1 was designed for use with children 4-8 years of age. It may be also used with older, mentally handicapped individuals.

Scale 3 is wholly group administrable. Nevertheless, occasions may arise in which the closer rapport of a one -on -one situation will be required to enable the individual being tested to perform most effectively. The examiner should be alert to such situations.
Table 1 shows the breakdown, item content and time required to administer any one form of the tests. At this point, we must note that the existence of two forms, A and B, of each scale may cause confusion to some. The reason for the existence of two forms is mainly one of administrative convenience. Because of wide variability in class time scheduling among schools, for example, many occasions would arise when the full test (Form A + Form B) could not be given in a single class period. However, each part or form can be reasonably administered in a single session. Additionally, the two form design permits some extra benefits, such as a brief rest period between forms to reduce fatigue and aid test-taking morale.

Of course, there will arise certain occasion when circumstances force the test administrator to use Form ‘A’ alone. Appropriate norm tables and statistical information have been provided to guide the test administrator on these occasions. But for the vast majority of application, the psychologist or educators will want to rely on the greater precision of the full test (A+B) score.

**Description of the Subtests**

Scales 3 consists of four subtests.

<table>
<thead>
<tr>
<th></th>
<th>Scale 2 (Form A or B)</th>
<th>Scale (Form A or B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of items</td>
<td>Time Allotted</td>
</tr>
<tr>
<td>Test 1.Series</td>
<td>12</td>
<td>3 mins.</td>
</tr>
<tr>
<td>Test 2.Classification</td>
<td>14</td>
<td>4 mins.</td>
</tr>
<tr>
<td>Test 3. Matrices</td>
<td>12</td>
<td>3 mins.</td>
</tr>
<tr>
<td>Test 4. Conditions</td>
<td>8</td>
<td>2½ mins.</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>46 items</td>
</tr>
<tr>
<td></td>
<td>12½ items</td>
<td>12½ mins.</td>
</tr>
</tbody>
</table>
In the first subtest, the individual is presented with an incomplete, progressive series. His task is to select, from among the choice provided, the answer which best continues the series.

The classification subtest differs slightly between Scale 2 and 3. The individual is presented with five figures. In scale 2 he must select one which is different from the other four. In scale 3 he must correctly identify two figures which are in some way different from three others.

In the Matrices subtest, the task is to correctly complete the design or matrix presented at the left of each row.

The final subtest, conditions (or Topology), requires the individual to select, from the five choices provided, the one which duplicates the conditions given in the far left box. Before each subtest, examples are given so that the task requirements are clear to the examinee.

Which Scale to Use

A question which occasional arise among test users in which Scale (2 or 3) is more appropriately used in a given situation. The main difference between the two scales is in the difficulty level of the items. Scale 2 can appropriately used with children as young as eight years and equally appropriately with older children and most adults. From 13 to 14 onwards either scale 2 or scale 3 could be employed. Scale 2 is usable in all cases, but greater refinement in the higher intelligence range is obtained with scale 3 because of higher difficulty level of the items in this scale. Scale 3 would be called for with college students. Thus in choice of scales, the test administrator should be guided by his own evaluation of potential ability level to be tested. When he reasonably anticipates ceiling effects with scale 2, he would, of course, use Scale 3. For the vast majority of test users, however, Scale 2 will prove appropriate to the task at hand.
PSYCHOMETRIC PROPERTIES OF THE CULTURE FAIR SCALES:

Reliability and validity

In recent years, an increasing store of information related to the Culture Fair Intelligence Tests has become available. These tests, identified as Scale 1, Scale 2 and Scale 3, have been developed to assess general intelligence level over the age range between four years and adulthood. At the same time, the subtests they employ have been selected on the basis of their culture “fairness” so that the assessment of intelligence will not be confounded with cultural or social level to the extent that it is in many traditional intelligence tests.

Research findings furnished by test users and result gathered from IPAT’s own investigations have provided an impetus to collate and summarize this array of information, especially those data relating to the reliability and validity of the scales. At the outset, it would be best to distinguish briefly among the various types of reliability and validity coefficient that may be obtained. Reliability or test consistency can be considered more precisely as: (1) homogeneity (internal); (2) dependability (short term test-retest correlation); and (3) equivalence (inter-form consistency). Validity can be viewed, for our purposes here, as: direct concept (i.e., correlation of the test with the pure factor which it is designed to measure); and (2) direct concrete (i.e., correlation of the test with other know measures of the same ability and with dependent upon or related to the ability measured, such as school performance).

A general problem in validity which logically precedes any discussion of individual scale validities concerns the cross-cultural stability of the test stands up fairly well across widely dissimilar cultures, and then one can expect the test to be even less sensitive to the sub cultural differences that exist, for example, within the American society.
As evidence of the extent to which this has been carried out in the tests, one can point to Rodd’s (1958) work with mainland Chinese and Taiwanese school children on Scale 3 of the Culture Fair Test. Mean score on Form A were 22.88 for the mainland Chinese (N=525), 21.99 for the Taiwanese (N=765), and 24.00 for a group of 1,100 American students of equivalent age. In addition, standard deviations for the three groups were extremely close: 4.47 for mainland Chinese, 4.50 for the Taiwanese, and 4.50 for the Americans. Form B results were also quite similar for the mainland group (X=27.33; SD = 4.53), the Taiwan group (X=26.95 SD= 4.47), and the American group (X= 27.00; SD=4.50).

As cattle (1966) has noted, although the difference in scores between Forms A and B (attributable to test sophistication) is quite similar for all three groups, the slightly greater values for the Chinese students may be due to their lower, initial experience with the test. In any event, the mean scores do give strong evidence for the cross-cultural stability of the test.

MacArthur and Elley’s (1963) work provides an indication of the extent to which effects of social status have been minimized in test performance. They found a correlation of.24 between social status and Culture Fair scores which was somewhat lower than a similar correlation with the California Test of Mental Maturity (r=.38), for example. As Jensen (1967), Cattel (1963), Burt (1961), and others have pointed out, some real correlation of intelligence and social status is to be expected, but the traditional intelligence test adds false magnitude to this correlation.

In the light of these studies that have been reported above and other studies (Henderson, 1964; Jordheim & Olsen, 1963; Knapp, 1960), we can conclude quite reasonably that the tests do minimize the normally very powerful effects of cultural and social status differences.
SCALE 3

Reliability: below mentioned tables present available data on the intra and inter-form consistency of Scale 3.

Table 0.1

Scale 3: HOMOGENITY COEFFICIENT $r_h$'s

<table>
<thead>
<tr>
<th>Type of Formula</th>
<th>Form of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Spearman-Brown</td>
<td>.68</td>
</tr>
<tr>
<td>Cronbach’s</td>
<td>.68</td>
</tr>
<tr>
<td>K.R Formula 21</td>
<td>351</td>
</tr>
</tbody>
</table>

Based on N= 202 high school students, male and female

Table 0.2

Scale 3: EQUIVALENCE COEFFICIENTS, $r_e$'s

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Form</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Total Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A vs B</td>
<td>.34</td>
<td>.32</td>
<td>.41</td>
<td>.51</td>
<td>.68</td>
</tr>
<tr>
<td></td>
<td>(A+B) vs (A+B)</td>
<td>.51</td>
<td>.49</td>
<td>.58</td>
<td>.68</td>
<td>.81</td>
</tr>
</tbody>
</table>

*Based on N=202 high school students, male and female.

Spearman-Brown corrected to double form length. These are not precisely equivalence coefficient, but may be thought of as lower-bound estimate of dependability coefficient for A+B the equivalence coefficient.
reported are based on an interval of one week between administrations. Generally, Table 0.3 shows coefficients which reflect, simultaneously, both equivalence and dependability. These are based upon administration of Form A and Form B, one week apart. The scores from the two occasions are then correlated. These values, consequently, might be expected to be somewhat lower than any of the other reliability coefficient presented. Two sources of variance are operating to attenuate the correlation coefficient, time variations and form variations.

**Table 0.3**

Scale 3: DEPENDABILITY AND EQUIVALENCE COEFFICIENTS

<table>
<thead>
<tr>
<th>Form of Test</th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>A vs. B (A+B) vs.(A+B)</td>
<td>.60</td>
<td>.55</td>
</tr>
<tr>
<td>(A+B) vs.(A+B)</td>
<td>.75</td>
<td>.71</td>
</tr>
</tbody>
</table>

*aBased on a total N of 1290 Taiwan students. Figures have been set out separately here for boys (N=723) and girls (N=567).

*bSpearman-Brown corrected to double form length.

Validity: Concept validities in Table 0.4 represent the correlation between the scales and the pure factor.
Table 0.4

Scale 3: DIRECT VALIDITIES

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Form</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Total Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td>.56</td>
<td>.56</td>
<td>.75</td>
<td>.56</td>
<td>.85</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>.64</td>
<td>.48</td>
<td>.45</td>
<td>.66</td>
<td>.81</td>
</tr>
<tr>
<td>A+B</td>
<td></td>
<td>.74</td>
<td>.64</td>
<td>.81</td>
<td>.71</td>
<td>.94</td>
</tr>
</tbody>
</table>

*N= 202 high school students.

The extensive work of Rodd (1958) has furnished a wealth of criterion information on Scale 3. Working with an N of 1290 Taiwan and mainland Chinese students, he found correlation of .29 with the Watson-Gleser Critical Thinking Appraisal, .22 with teachers’ rating of intelligence, .23 with total grade average, .32 with mathematics test scores, and .31 with science grade.

Domino (1964) reported a correlation of .56 (p<.01) with the non-language form of the California Test of Mental Maturity, .64 (p<.01) with SAT mathematics scores, and .55 (p<.01) with the Gottschaldt Figure Test.

Barney found a correlation of .45 with freshman grade point average on a group of 229 undergraduates was lower, however (r = .21). At the same time, he found a correlation, of the Sixteen Personality Factor Questionnaire.

In summary, then, it is evident that the Culture Fair Scale shows up well under psychometric security. The various consistency and validity coefficients that have been presented here are based upon representative sample taken primarily from the American population. Several have been included which are based upon non-American groups to underscore the transferability and structural stability, of the tests across culture. It is inappropriate, however, to
consider these scales primarily as instruments for cross cultural research. The extent of sub cultural differences within the American society has become more and more evident. Consequently, where a measure of intellectual ability is needed for prediction, decision, or guidance purpose, it seems increasingly necessary to rely more heavily upon instruments, such as the Culture Fair Scales.

(III) MENTAL HEALTH CHECK-LIST

Purpose

Mental health Check-List (MHC) has been developed with a view to provide a handy tool for identifying persons with poor mental health and in need of psycho diagnostic help.

Development of the Check-List

Interpreting mental health as a psychic conditions identified by the absence of disabling and debilitating symptoms, both mental and somatic in the person, 5 teachers of psychology were asked to list all such symptoms the presence of which according to their understanding showed poor mental health. Following this, a list of 21 such symptoms was prepared. This list of symptoms was then submitted to 5 practicing clinical psychologist for their comments and observation regarding the relevance of those symptoms as far as the study of mental health was concerned. Finally, a list of 16 such symptoms showing complete agreement amongst the judges was selected to form the Mental Health Check- List.

Item selection

The Mental Health Check-List was administered to a group of 122 adults-60 males and 62 females, in the age range of 18-28 yrs. They were all educated and drawn from the towns of Anand and Nadiad of Gujarat State. It
was impressed upon them that the very success of the project depended on their being free and frank while giving their replies. 27% Ss with the highest and 27% Ss with the lowest score on the check-list served as criterion groups for item-analysis (Garrett, 1961). Finally, 11 items having discrimination value of .30 or above or above were selected to form the Mental Health Check-List.

**Mental Health Check-List**

The final form of the Mental Health Check–List consists of 11 items 6 mental and 5 somatic, presented in a 4-point rating format.

**Its scoring**

A numerical value of 1, 2, 3 and 4 is assigned to the 4-responses categories, i.e. for ‘Rarely’, ‘At times’, ‘Often’ and ‘Always’, respectively. The total score varies from 11 to 44, showing the highest to the lowest (poorest) mental health status of the person.

**Result**

The Mean, Median, and SD for the sample (N=122) have been found to be 15, 16, 15.05 and 2.25 respectively (table 1). The distribution appears to be slightly positively skewed.

**Table 1**

**Showing Mean, Median and SD (N=122)**

<table>
<thead>
<tr>
<th>Mean</th>
<th>Median</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.16</td>
<td>15.05</td>
<td>2.25</td>
</tr>
</tbody>
</table>

**Skewness and Kurtosis** have been calculated to see if the sample deviated from normality. These have been found to be .14 and .31, respectively.
Since the Standard Error of Skewness and Kurtosis has been less than ± 1.96, the .05 level of confidence, it is interpreted that the sample does not differ from normality (McNemar, 1962).

### Table 2

**Showing Skewness and Kurtosis (N=122)**

<table>
<thead>
<tr>
<th>Indices</th>
<th>Value</th>
<th>S.E.</th>
<th>P_</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skewness</td>
<td>.14</td>
<td>.22</td>
<td>N.S.</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>.31</td>
<td>.44</td>
<td>N.S.</td>
</tr>
</tbody>
</table>

### Reliability

The split-half reliability, correlating the odd-even items (applying the Spearman-Brown formula for doubting the test length), has been found to be .70 (N=30) with an index of reliability of .83 (Garrett, 1961).

The test -retest reliability has also been studied. It has been found to be .65 (N=30) with an index of reliability of .81 (Table 3). The retest was given with a time interval of two weeks.
Table 3

Showing Split-half and Retest Reliability Indices

<table>
<thead>
<tr>
<th>Indices</th>
<th>N</th>
<th>r-value</th>
<th>Index of reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split-half</td>
<td>30</td>
<td>.70</td>
<td>.83</td>
</tr>
<tr>
<td>Re-test</td>
<td>30</td>
<td>.65</td>
<td>.81</td>
</tr>
</tbody>
</table>

The r-value of .70 and .65, respectively, have been found to be significant at .01 level of confidence, showing that the test is reliable both in terms of its internal consistency and stability of scores.

Validity

The face validity of the MHC appears to be fairly high as items were prepared by asking teachers of psychology to list all such symptoms which, according to them, showed poor mental health.

The content validity was adequately assured as only those symptoms which showed 100 percent agreement amongst the judges regarding their relevance to the study of mental health were selected.

Of those, only those items which gave a fairly high discrimination value, i.e., .30 or above, following items-analysis were finally included in the Check-List.

On the assumption, that martially high adjusted couple (having had a higher satisfaction of basic needs like love, companionship and sexuality) would show better mental health status than poorly adjusted couples, the MHC was administered to a group of 108 couples-54 showing high marital adjustment and 54 showing poor marital adjustment (Kumar, Mori and Patel, 1989).
Table 4

Showing Mental Health Status of Martially High and Low Adjusted Couples

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>T</th>
<th>P_</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband</td>
<td>MHA 54</td>
<td>12.72</td>
<td>2.30</td>
<td>4.46</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>MLA 54</td>
<td>14.82</td>
<td>2.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wives</td>
<td>MHA 54</td>
<td>12.56</td>
<td>2.48</td>
<td>2.68</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>MLA 54</td>
<td>13.90</td>
<td>2.76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significantly lower on the check-list than the couple showing poor marital adjustment (Table 4).

Percentile Norms:

Separate percentile norms have been prepared for male and female groups (Table 5). These are to be interpreted in the conventional manner; that is, if a person gets a score equivalent to P₉₀ or more, it shows that he is under great mental strain and needs urgent psycho-diagnostic help.
### Table 5

**Showing percentile Norms**

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Male (N=111)</th>
<th>Female (N=138)</th>
<th>Mental Health categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P_{90})</td>
<td>23.19</td>
<td>22.82</td>
<td>Very poor</td>
</tr>
<tr>
<td>(P_{75})</td>
<td>20.67</td>
<td>20.63</td>
<td>Poor</td>
</tr>
<tr>
<td>(P_{50})</td>
<td>18.07</td>
<td>18.56</td>
<td>Average</td>
</tr>
<tr>
<td>(P_{25})</td>
<td>15.47</td>
<td>17.47</td>
<td>Good</td>
</tr>
<tr>
<td>(P_{10S})</td>
<td>13.55</td>
<td>14.27</td>
<td>Very good</td>
</tr>
</tbody>
</table>

### IV. Ahluwalia’s Teacher Attitude Inventory (TAT)

Ahluwalia’s Teacher Attitude Inventory was considered as an adequate tool in order to know the attitude of the teachers towards teaching:

1. Teaching profession (TP)
2. Classroom Teaching (CT)
3. Child centered Practices (CCP)
4. Educational Process (EP)
5. Pupils (P)
6. Teachers (T)

The inventory is a 90-item scale consisting of six sub-scales. The sub-scales were developed by the Likert's summated rating procedure. Each scale has 15 statements that pertain to a particular aspect of a prospective and practicing teacher’s profession attitude. Out of 90 items, 56 are in positive
declarative form and 34 are in negative form. Again 43 items are meant to assess attitude unfavorable continuum adequately measures the aforesaid six selected areas. The serial numbers of statement expressing favorable attitude are:

1, 2, 3, 5, 6, 8, 9, 11, 14, 15, 16, 17, 20, 23, 27, 28, 33, 37, 39, 40, 41, 42, 43, 44, 47, 49, 50, 52, 53, 55, 57, 62, 64, 66, 67, 80, 81, 85, 87, 88, 89

The serial numbers of statements expressing unfavorable attitude are:

4, 7, 10, 12, 13, 18, 19, 21, 22, 24, 25, 26, 29, 30, 31, 32, 34, 35, 36, 38, 45, 46, 48, 51, 54, 56, 58, 59, 60, 61, 63, 65, 67, 68, 69, 70, 72, 73, 74, 75, 76, 77, 78, 79, 83, 84, 86, 90.

The scale has following six areas

Total number of favorable and unfavorable items and scale wise their serial numbers.

<table>
<thead>
<tr>
<th>Sub-Scale</th>
<th>F Serial Number</th>
<th>UF Serial Number</th>
<th>Total No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching Profession</td>
<td>F* 1, 8, 20, 33, 41, 66, 85</td>
<td>UF* 13, 34, 46, 48, 60, 72, 79, 86</td>
<td>7</td>
</tr>
<tr>
<td>2. Classroom Teaching</td>
<td>F* 2, 9, 14, 17, 42, 47, 53, 67</td>
<td>UF* 35, 38, 59, 61, 65, 73, 84</td>
<td>8</td>
</tr>
<tr>
<td>3. Child Centered Practices</td>
<td>F* 3, 11, 16, 21, 27, 39, 49, 62, 64, 80</td>
<td>UF* 25, 54, 75, 83, 90</td>
<td>10</td>
</tr>
<tr>
<td>4. Educational Process</td>
<td>F* 15, 28, 36, 43, 50, 55, 71, 87</td>
<td>UF* 4, 7, 10, 32, 63, 74, 76</td>
<td>8</td>
</tr>
<tr>
<td>5. Pupils</td>
<td>F* 5, 44, 81, 82, 89</td>
<td>UF* 18, 22, 29, 31, 37, 51, 56, 58, 70, 77</td>
<td>5</td>
</tr>
<tr>
<td>6. Teachers</td>
<td>F* 6, 23, 40, 52, 88</td>
<td>UF* 12, 19, 24, 26, 30, 45, 57, 68, 69, 78</td>
<td>10</td>
</tr>
</tbody>
</table>

F* = Favorable, SA = strongly agree – 4, A = agree – 3, U = uncertain – 2, SD = strongly disagree – 0

UF* = Unfavorable. In it we assign to SA = strongly agree – 0, A = agree-1, U= uncertain – 2, SD = strongly disagree – 3, D = disagree – 4.
Reliability

Reliability was estimated by the split (odd-even) method and found to be 0.79 for a sample of 239 prospective teachers. The test-retest reliability coefficient after the interval of 3 months and 9 months were found to be 0.59 (N=102) and 0.64 (N = 290). The details of reliability co-efficient and standard errors of measurement are given in the following table.

Reliability co-efficient, indices of reliability, corrected co-efficient and standard errors of measurement.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Methods (Split-Half)</th>
<th>Reliability Obtained</th>
<th>Coefficients Corrected</th>
<th>Index of Reliability</th>
<th>Standard Error of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Odd-even) (Split-half)</td>
<td>0.79</td>
<td>0.88</td>
<td>0.89</td>
<td>11.37</td>
</tr>
<tr>
<td>2</td>
<td>Test-retest (3-Months)</td>
<td>0.58</td>
<td>0.75</td>
<td>0.76</td>
<td>16.17</td>
</tr>
<tr>
<td>3</td>
<td>Test-retest (9-Months)</td>
<td>0.64</td>
<td>0.78</td>
<td>0.80</td>
<td>15.16</td>
</tr>
<tr>
<td>4</td>
<td>Rational equivalence (KR 21)</td>
<td>0.54</td>
<td>0.70</td>
<td>0.73</td>
<td>20.10</td>
</tr>
</tbody>
</table>

Validity:

The inventory appears to have content validity and the method of selecting items supposition. In addition, difference in mean scores was found
among selected “known” groups. The mean scores of B.A. Part I and II students offering and not offering education as an elective subjects, B.Ed. trainees and practicing teachers were computed and compared. The observed differences were found to be in expected directions. The validity was also undetermined through stimulus group technique. The following table represents a summary of the obtained results.

Table 1 A: Mean, Standard deviation and other measurement of some selected groups.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SEM</th>
<th>SD</th>
<th>SES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B.A. Part I (not offering education elective)</td>
<td>56</td>
<td>230.53</td>
<td>2.94</td>
<td>21.98</td>
<td>2.09</td>
</tr>
<tr>
<td>2</td>
<td>B.A. Part II (offering-Education elective)</td>
<td>53</td>
<td>230.73</td>
<td>3.44</td>
<td>28.74</td>
<td>2.44</td>
</tr>
<tr>
<td>3</td>
<td>B.A. Part II (offering-Education elective)</td>
<td>70</td>
<td>237.98</td>
<td>3.41</td>
<td>23.36</td>
<td>2.41</td>
</tr>
<tr>
<td>4</td>
<td>B.A. Part II (offering-Education elective)</td>
<td>47</td>
<td>252.91</td>
<td>4.65</td>
<td>33.91</td>
<td>3.30</td>
</tr>
<tr>
<td>5</td>
<td>Practicing teachers</td>
<td>122</td>
<td>251.41</td>
<td>2.78</td>
<td>30.70</td>
<td>1.97</td>
</tr>
<tr>
<td>6</td>
<td>Prospective teachers (at the time of B.Ed. admission)</td>
<td>86</td>
<td>251.45</td>
<td>3.36</td>
<td>31.12</td>
<td>2.39</td>
</tr>
<tr>
<td>7</td>
<td>Prospective teachers (after 9 months of B.Ed. training)</td>
<td>86</td>
<td>256.29</td>
<td>3.60</td>
<td>33.38</td>
<td>2.56</td>
</tr>
</tbody>
</table>
Administration and Scoring: The administration of the inventory was completed in the following pattern:

The inventory was administered to the selected sample by hand. Before distributing inventory, they were assured that their information would be kept as confidential. They were first asked to fill in certain details required on the title page of the inventory. Later, they were asked to darken the circle one of the choices given against each of the 90 statements respectively.

Scoring was done as per manual. For the purpose of scoring the favorable statement for the five alternatives responses are in the order 4,3,2,1,0 for strongly agree, agree, uncertain, disagree and strongly disagree respectively. When the unfavorable statements for their five alternative responses are scored in the order of 0,1,2,3 and 4 for strongly agreed, agreed, uncertain, disagree and strongly disagree respectively. The attitude scores each subject is the sum total of item scores of all the six sub-scales. The theoretical range of scores is from 0-360 with higher score indicating the more favorable attitude towards teaching and its allied aspects and lower scores indicating less favorable or negative attitude.

PROCEDURE

The investigator collected the data from various Secondary Teacher Education Institute of Jammu and Kashmir Divisions (Male and Female student-teachers). Teaching Aptitude Battery by Gakhar and Rajnish, Culture Fair Test of Intelligence by R. B. Cattle, Mental Health Check-List by Pramod Kumar and Attitude Inventory developed by S. P. Ahuluwalia were administered to 600 student-teachers (300 student teachers from Jammu Division and 300 student teachers from Kashmir Division) to assess their teaching aptitude, level of intelligence, mental health and attitude towards teaching. These tests are administered to them in presence of the investigator in
their respective Secondary Teacher Education Institutions and strictly accordance with the instructions provided in the manuals.

STATISTICAL TREATMENT

After the scoring is done, the data collected was subjected to the following statistical treatment.

i). The investigator used ‘t’ test in order to find whether there is a significant difference between male and female student-teachers of Jammu division and male and female student-teachers of Kashmir Division on Teaching Aptitude, Level of Intelligence, Mental Health and Attitude towards Teaching.

ii). The investigator use Pearson’s Product Moment Method for calculating Coefficient of Correlation. To find the correlation between teaching aptitude, level of intelligence, mental health and attitude towards teaching.

iii). Bar diagrams were plotted in order to make the result transparent.

The details regarding statistical analysis of the data are given in the chapter that follows.