

Course-M.A.Education

Semester- 4th

Paper- 401

Topic- TOOLS USE IN

RESEARCH



TOOLS USED IN RESEARCH

- Tools are instruments used to collect information for performance assessments, self-evaluations, and external evaluations.
- 2 Tools need to be strong enough to support what the evaluations find during research.

Depending on the nature of the information to be gathered, different instruments are used to conduct the assessment forms for gathering data.

DEFINITION OF TOOL: 2 It is a testing device for measuring a given event, such as a questionnaire, an interview or a set of guidelines or checklist for observation. 2 It is an instrument or machine that aids in accomplishing a task.

MEANING OF RESEARCH TOOLS:

Research tools are:

- The Instruments used for the purpose of data collection are measurable and observable for data analysis & interpretation constructed by researchers according to objectives.
- Research tool can be defined as the instrument in the hands of researchers to measure what they intend to in their study.
- Research tools are materials that are necessary to perform research. All inventions, discoveries and knowledge can become research tools.
- Research is a systematic study or investigation of something for the purpose of answering question posts by a researcher.

PRINCIPLES FOR CONSTRUCTION OF RESEARCH TOOL:

Principles questioning words must be

- concise,
- complete and
- definite.

Keep in mind the sequence and order of question i.e. psychological order. One question should not influence the other. The tool must not be too long or too short. It should complete within 25-30 minutes. Should be attractive.

The selection of suitable instruments or tools is of vital importance for successful research. Different tools are suitable for collecting various kinds of information for various purposes. The research worker may use one or more of the tools in combination for his purpose. Research students should therefore familiarise themselves with the varieties of tools with their nature, merits and limitations. They should also know how to construct and use them effectively.

The systematic way and procedure by which a complex or scientific task is accomplished are known as the technique. The technique is the practical method, skill or art applied to a particular task. So, as a researcher, we should be aware of both the tools and techniques of research.

The major tools of research in education can be classified broadly into the following categories.

A. Inquiry forms

- Questionnaire
- Checklist
- Scorecard
- Schedule
- Rating Scale
- Opinionnaire
- Attitude Scale

B. Observation

C. Interview

D. Sociometry

E. Psychological Tests

- Achievement Test
- Aptitude Test
- Intelligence Test
- Interest inventory
- Personality measures etc.

RATING SCALE :

The rating scale is one of the enquiry forms. The form is a term applied to expression or judgment regarding some situation, object or character. Opinions are usually expressed on a scale of values. Rating techniques are devices by which such judgments may be quantified. The rating scale is a very useful device in assessing quality, especially when quality is difficult to measure objectively. For Example, "How good was the performance?" is a question that can hardly be answered objectively.

Ratings can be obtained through one of three major approaches:

Paired comparison

Ranking and

Rating scales

- The first attempt at rating personality characteristics was the man to man technique devised during World-war-I. This technique calls for a panel of raters to rate every individual in comparison to a standard person. This is known as the paired comparison approach
- In the ranking approach, every single individual in a group is compared with every other individual and arrange the judgment in the form of a scale.
- In the rating scale approach which is the more common and practical method, the rating is based on the rating scales, a procedure which consists of assigning to each trait being rated

a scale value giving a valid estimate of its status and then comparing the separate ratings into an overall score.

Purpose of Rating Scale:

Rating scales have been successfully utilized for measuring the following:

- Teacher Performance/Effectiveness
- Personality, anxiety, stress, emotional intelligence etc.
- School appraisal including an appraisal of courses, practices and programmes.

Use of Rating Scale :

Rating scales are used for testing the validity of many objective instruments like paper-pencil inventories of personality. They are also advantages in the following fields:

- Helpful in writing reports to parents
- Helpful in filling out admission blanks for colleges
- Helpful in finding out student needs
- Making recommendations to employers.
- Supplementing other sources of understanding about the child
- Stimulating effect upon the individuals who are rated.

Limitations of Rating Scale :

The rating scales suffer from many errors and limitations like the following: As you know, the raters would not like to run down their own people by giving them low ratings.

So in that case they give high ratings to almost all cases. Sometimes also the raters are included to be unduly generous in rating aspects which they had the opportunity to observe. If the raters rate is higher due to those factors, then it is called the generosity error of rating.

1. **The Errors of Central Tendency:** Some observers want to keep them in a safe position. Therefore, they rate near the midpoint of the scale. The rate is almost all as average.
2. **Stringency Error:** Stringency error is just the opposite of generosity of error. These types of raters are very strict, cautious and hesitant in rating on average and higher sides. They have a tendency to rate all individuals low.
3. **The Halo Error:** When a rater rates one aspect influenced by another is called the halo effect. For if a person will be rated on the higher side of his achievement because of his punctuality or sincerity irrespective of his perfect answer, it is called the halo effect. The biasedness of the rater affects one quality to another.
4. **The Logical Error:** It is difficult to convey to the rater just what quality one wishes him to evaluate. An adjective or Adverb may have no universal meaning. If the terms are not properly understood by the rater and the rates, then it is called a logical error. Therefore, brief behavioural statements having clear objectives should be used.

ATTITUDE SCALE :

Attitude scale is a form of appraisal procedure and it is also one of the enquiry terms.

Attitude scales have been designed to measure the attitude of a subject or group of subjects towards issues, institutions and groups of peoples. The term attitude is defined in various ways, "the

behaviour which we define as attitudinal or attitude is a certain observable set" organism or relative tendency preparatory to and indicative of more complete adjustment."

Purpose of Attitude Scale :

In educational research, these scales are used especially for finding the attitudes of persons on different issues like:

- Co-education
- Religious education
- Corporal punishment
- Democracy in schools
- Linguistic prejudices
- International cooperation etc.

Characteristics of Attitude Scale :

The attitude scale should have the following characteristics.

It provides for the quantitative measure on a unidimensional scale of the continuum.

It uses statements from the extremely positive to an extremely negative position.

It generally uses a five-point scale as we have discussed in the rating scale.

It could be standardised and norms are worked out.

It disguises the attitude object rather than directly asking about the attitude on the subject.

Examples of Some Attitude Scale :

Two popular and useful methods of measuring attitudes indirectly, commonly used for research purposes are:

1. Thurstone Techniques of scaled values
2. Likert's method of summated ratings

Thurstone Technique :

Thurstone Technique is used when the attitude is accepted as a uni-dimensional linear Continuum. The procedure is simple. A large number of statements of various shades of favourable and unfavourable opinion on slips of paper, which a large number of judges exercising complete detachment sort out into eleven plies ranging from the most hostile statements to the most favourable ones.

The opinions are carefully worded so as to be clear and unequivocal. The judges are asked not to express their opinion but to sort them at their face value. The items which bring out a marked disagreement between the judges unassigning a position are discarded. Tabulations are made which indicate the number of judges who placed each item in each category.

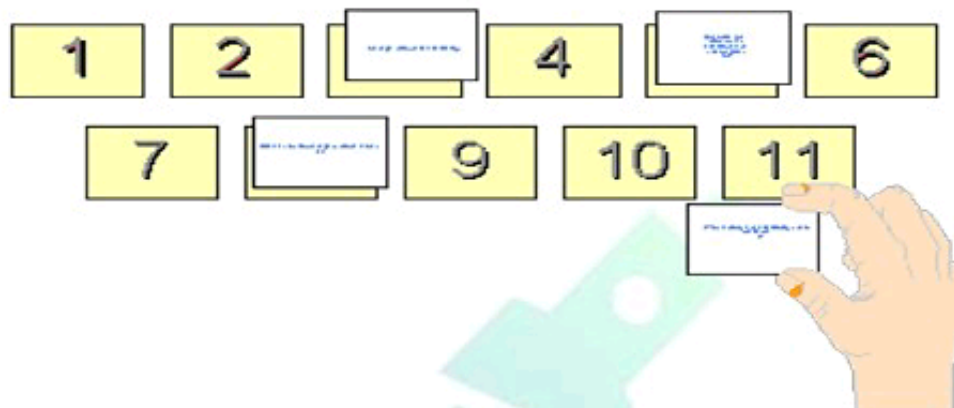
The next step consists of calculating cumulative proportions for each item and ogives are constructed. Scale values of each item are read from the ogives, the values of each item being that point along the baseline in terms of scale value units above and below which 50% of the judges placed the item. It will be the median of the frequency distribution in which the score ranges from 0 to 11.

The respondent is to give his reaction to each statement by endorsing or rejecting it. The median values of the statements that he checks establish his score, or quantifies his opinion. He wins a score as an average of the sum of the values of the statements he endorses.

The Thurstone technique is also known as the technique of equal appearing intervals.

1 = least favorable to the concept

11 = most favorable to the concept



The Likert Scale :

The Likert scale uses items worded for or against the proposition, with a five-point rating response indicating the strength of the respondent's approval or disapproval of the statement. This method removes the necessity of submitting items to the judges for working out scaled values for each item. It yields scores very similar to those obtained from the Thurstone scale. It is important over the Thurstone method.

The first step is the collection of a number of statements about the subject in question. Statements may or may not be correct but they must be representative of opinion held by a substantial number of people. They must express definite favourableness or unfavourableness to a particular point of view. The number of favourable and unfavourable statements should be approximately equal. A trial test may be administered to a number of subjects.

Only those items that correlate with the total test should be retained. Likert's scaling techniques assign a scale value to each of the five responses. All favourable statements are scored from maximum to minimum i. e. from a score of 5 to a score of one or 5 for strongly agree and so on 1 for strongly disagree. The negative statement or statement opposing the proposition would be scored in the opposite order. e. from a score of 1 to a score of 5 or 1 for strongly agree and so on 5 for strongly disagree.

Example of Likert scale

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
ScaleWeek is a worthwhile feature on The Research Bunker Blog.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
I would like to read more posts about survey rating scales.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Vance Marriner is, without a doubt, the most insightful contributor to The Research Bunker Blog.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Limitations Of Attitude Scale :

In the attitude scale the following limitations may occur:

- An individual may express socially acceptable opinions to conceal his real attitude.
- An individual may not be a good judge of himself and may not be clearly aware of his real attitude. He may not have been controlled with a real situation to discover what his real attitude towards a specific phenomenon was.
- There is no basis for believing that the five positions indicated in the Likert's scale are equally spaced.
- It is unlikely that the statements are of equal value in 'forness' or "againstness".
- It is doubtful whether equal scores obtained by several individuals would indicate equal favourableness towards again position.
- It is unlikely that a respondent can validly react to a short statement on a printed form in the absence of a real like qualifying Situation.
- In spite of the anonymity of response, Individuals tend to respond according to what they should feel rather than what they really feel.

QUESTIONNAIRE :

A questionnaire is a form prepared and distributed to secure responses to certain questions. It is a device for securing answers to questions by using a form that the respondent fills by himself. It is a systematic compilation of questions that are submitted to a sampling of the population from which information is desired.

Types: Questionnaires can be of various types on the basis of its preparation.

They are like:

- Structured v/s Unstructured
- Closed v/s Open
- Fact v/s Opinion

Structured v/s Unstructured Questionnaire :

The structured questionnaire contains definite, concrete and directed questions, whereas non-structured questionnaires are often used in interviews and guides. It may consist of partially completed questions

Closed v/s Open Questionnaire :

The questions that call for short check responses are known as restricted or closed-form types. For Example, they provide for marking a yes or no, a short response or checking an item from a list of responses. Here the respondent is not free to write of his own, he was to select from the selected responses. On the other hand, with the increase of open-ended questionnaires, the respondent is free to respond in his own words. Many questionnaires also included both close and open type questions. The researcher selects the type of questionnaire according to his need for the study.

Fact and Opinion :

In the case of fact questionnaires, the respondent is expected to give information of facts without any reference to his opinion or attitude about them.

But in the opinion questionnaire, the respondent gives the information about the facts with his own opinion and attitude.

Characteristics of A Good Questionnaire :

1. The questionnaire should deal with important or significant topics to create interest among respondents.
2. It should seek only that data that can not be obtained from other sources.
3. It should be as short as possible but should be comprehensive.
4. It should be attractive.
5. Directions should be clear and complete.
6. It should be represented in good Psychological order proceeding from general to more specific responses.
7. Double negatives in questions should be avoided.
8. Putting two questions in one question also should be avoided.
9. It should avoid annoying or embarrassing questions
10. It should be designed to collect information that can be used subsequently as data for analysis.
11. It should consist of a written list of questions.
12. The questionnaire should also be used appropriately.

Interview:

The interview is a two-way method that permits an exchange of ideas and information.

Characteristics of an Interview:

1. The interviewer can probe into causal factors, determine attitudes, and discover the origin of the problem.
2. It's appropriate to deal with young children and illiterate people.
3. It can make cross-questioning possible.
4. It helps the investigator to gain an impression of the person concerned.
5. It can deal with delicate, confidential and even intimate topics.
6. It has flexibility.

7. Sincerity, frankness, truthfulness and insight of the interviewee can be better judged through cross-questioning.
8. It gives no chance for the respondent to modify his earlier answer.
9. It is applicable in survey methods, but it is also applicable in historical, experimental, case studies and clinical studies.

Difference between Interview and Questionnaire

Questionnaire Method	Interview Method
<ol style="list-style-type: none"> 1. Data is gathered indirectly. 2. No face to face contact between two. 3. Interviewer should have the general knowledge of the topic. 4. Interviewee will hesitate to write it. 5. We get written information only. 	<ol style="list-style-type: none"> 1. Data is gathered directly. 2. There is face to face contact between interviewer and interviewee. 3. Skillful interviewer is needed. 4. Some confidential information can also be obtained. 5. We get written and oral both type of information.

CHECKLIST :

A checklist is a type of informational job aid used to reduce failure by compensating for potential limits of human memory and attention. It helps to ensure consistency and completeness in carrying out a task. A basic example is 'to do list'. A more advanced checklist lays out tasks to be done according to the time of a day or other factors.

Uses :

Checklists are used for various purposes. As we have discussed, we can check our requirements for the journey, Birthday list, proforma for pass-port, submitting examination form or admission form etc. in every case, if we check before doing the work, then there is less chance of overlooking any important things. As it is useful in daily life, it is also useful in the educational field in the following way.

- To collect acts for educational surveys.
- To record behaviour in observational studies.
- To use in the educational appraisal, studies – of school buildings, property, plan, textbooks, instructional procedures and outcomes etc.
- To rate the personality.
- To know the interest of the subjects also. Kuder's interest inventory and Strong's Interest Blank are also checklists.

ARTICLES, WORKSHOP, SEMINAR, CONFERENCE, AND SYMPOSIUM

A research article is an article that includes the methods, results and findings of one's research in a peer-reviewed research journal. Every discipline has a number of peer-reviewed research journals such as Economic and Political Weekly (EPW) for social sciences research, Science Magazine by American Association for the Advancement of Science (AAAS) etc.

Advancement in digital media and information technologies has led to an intensification of mediums where research articles can be published and shared. This has undoubtedly broadened the potential audience for research-related content in the forms of manuscripts, articles and papers.

Meeting

A meeting is an assembly or coming together of people be it a symposium, workshop, conference or so. In a very remote sort of way, all of them convey the same meaning, i.e., people coming together for a purpose.

Symposium

It is usually a formal meeting at which specialists deliver short speeches on a topic and then answer the questions based on these topics. It is especially one in which the participants form an audience and make presentations. A symposium is also defined as a collection of writings on a particular topic, as in a magazine.

Colloquium

It is usually an academic meeting at which specialists deliver addresses on a topic or on related topics and then answer the questions relating to these topics. A colloquium is targeted to a well-educated but not specialized audience.

Conference

It is a meeting of people who confer about a topic. It is a meeting where people come for discussion. It features keynotes and presentations delivered to all attendees, as well as multiple break-out sessions. Attendees expect to receive information about industry trends and developments. It can be an academic conference (a formal event where researchers present results), a business conference (organized to discuss business-related matters), or a parent-teacher conference (meeting with a child's teacher to discuss grades and school performance), a peace conference (a diplomatic meeting to end conflict) and so on.

Webinars or Web Conferences

Webinars are presentations that involve audio and video part. The audio part of the event is delivered via phone or over the Internet, so the participants can listen via their computer speakers. The video part of the event is delivered via the Internet, giving participants a presentation to watch while listening to the instructor.

Seminar

The term seminar is taken from the Latin word *seminarium*, meaning seed plot. It is a formal presentation by one or more experts to a small group of audience. It can be conducted on a recurring or regular basis, monthly or even weekly, there is an invited speaker, and the audience is much more technically versed or specific in nature.

The motive behind the seminar system is to familiarize the students extensively with vital aspects of their study and also to allow them to interact with examples of practical problems that always occur during study or research work. Thus, a seminar is a form of academic instruction either at an academic institution or offered by a commercial or professional