IGNOU

MESP-001
DISSERTATION

Handbook on Dissertation Work

Master of Arts (Education)

School of Education
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068

"शिक्षा मानव को बन्धनों से मुक्त करती है और आज के युग में तो यह लोकतंत्र की भावना का आधार भी है। जन्म तथा अन्य कारणों से उत्पन्न जाति एवं वर्गगत विषमताओं को दूर करते हुए मनुष्य को इन सबसे ऊपर उठाती है।"

— इन्दिरा गांधी

"Education is a liberating force, and in our age it is also a democratising force, cutting across the barriers of caste and class, smoothing out inequalities imposed by birth and other circumstances."

- Indira Gandhi

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CONTENTS

1. INTRODUCTION

As you know, M.A (Education) Programme comprises Group A: Basic Course in Education; Group B: Core Courses; Group C: Courses on Knowledge Generation in Education; and Group D: Courses under Specialized Areas in Education. While courses under Group A, B and D provides you with a detailed theoretical understanding on Education as an area of knowledge and as an area of practice, courses under Group C are designed to provide you with both theoretical understanding of the process of knowledge generation in education as well as 'hands on' experience in research activities. The theoretical understanding of the process of knowledge generation in education is presented in the course on "Educational Research" and the practical experience on Educational Research" is to be gained by you by conducting a research study and submitting the output of the study in the form of dissertation.

While spelling out the objectives of M.A (Education) Programme, we have mentioned that this programme not only intends to provide distance learners like you with learning-experiences which will enable them to understand and appreciate knowledge structures and paradigms of education; and develop professional for effective participation in educational actions in different areas of education, but also attempts to create a community of scholars adequately equipped for participation in educational discourse. Thus this programme is intended to equip you with requisite research skills so that you could undertake research study in education and participate in educational discourse effectively.

While studying the theoretical courses both in core areas as well as specialised areas, you might have come across various issues and problems pertaining to Education as an area of knowledge and also as an area of practice. For example, issues and problems related to aims and goals of education; planning, development, transaction and evaluation of school or higher education curriculum; learner's characteristics, learning environment, impact of different attributes of learners on their academic achievement, education as a process of socialization, and social change; social mobility and education; economics of education; education and ideology; educational operations in organised, and semi-organised sectors; impact of education policies on the educational development in the country; decision making at micro level, resource management, curriculum transaction in face-to-face and ODLS mode; evaluation process at school and higher education level, etc.

Similarly, there could be issues and problems related to courses under specialised areas: higher education, distance education, educational technology and educational management. In order to execute theoretical understanding of research skills you have developed after studying the course MES-016: Educational Research, you may like to undertake a research study in the form of a Dissertation on one of the issues or problems you are beset with. The course MESP-001: Dissertation is conceptualised to provide you with the practical experience of conducting educational research. The detailed process of how you would conduct the research study is explained in this document called. 'Handbook on Dissertation Work.'

2. OBJECTIVES

After going through this Handbook on Dissertation Work, you should be able to:

- identify a research problem for dissertation work;
- evaluate the feasibility, suitability and significance of the problem;
- formulate questions related to different aspects/components of a research proposal;
- describe various components of a research proposal;
- prepare a research proposal;

- execute the research proposal; and
- write the research report in the form of a dissertation

3. IDENTIFICATION OF A RESEARCH PROBLEM

The first step in the conduct of a research study for dissertation is to choose a specific area from which you will identify a suitable research problem. The area selected should be one in which you are capable of demonstrating necessary initiative, insight, critical analysis and judgmental capacities. A thorough understanding of the known facts and developments in the area in which you are interested constitutes the first and most important step in selecting a specific problem for study.

The following points are helpful in the identification of problem situation.

- The understanding of the known theories, facts and ideas in the field of researcher's interest structures his/her problem-searching domain. The research focus is identified by what he/she already knows, what researches in his/her field have been conducted and what needs to be discovered.
- A problem for research may emerge from the researcher's curiosity about something shared, seen, felt or wondered about or through the natural interest of a researcher.
- Life situations, relationships established by related researches and implications advanced by technological advancements constitute the problem situation.
- New knowledge in the field of researcher's interest available in the new books, journal and published researches provide a situations for research.
- A survey of suggestions for further research given at the end of research reports like M.A. (Education)/ M.Ed Dissertation, M.Phil/Ph.D Theses and reviews of research projects, research articles highlighting, the gaps in a particular field of educational research are helpful in keeping the researcher informed of what researches are going on in the field in which he/she has competence and deeper understanding.

Sources for Selecting a Research Problem

After you have identified the broad area of research, you will proceed towards narrowing down it to a highly specific and focused research problem. At this juncture, you may bank upon the following sources which are available to you and which will help you to specify a meaningful problem of research:

Experience

Some of you may be having teaching experience in universities, colleges or schools. There may also be some who have simply Post-graduate or Bachelor's degree and are pursuing M.A. (Education) Programme. While the former group has an advantage of selecting a problem from their own experiences, the latter may choose a problem from their own experience by participating in intellectual discourses; listening to lectures by eminent teachers, and researchers; discussion with peers, teachers, practitioners and research experts; attending seminars and conferences.

Inferences from theory

A second important source of research problems lies in the inferences that can be drawn from various educational and psychological theories studied by you. The application of general principles involved in various theories in specific classroom settings makes an excellent starting point for research. It will help to determine whether a particular theory can be translated into actual practice. Use and application of learning theories, theories of motivation, and innovative evaluation techniques provide rich sources of

longer worthy of study. You might want to repeat a study when you want to verify its conclusions or to extend the validity of its findings in a situation entirely different from the previous one.

Is the problem significant?

The question of significance of the problem usually relates to what you as a researcher hope to accomplish in a particular study. What is your purpose in solving the particular problem you have chosen? What new knowledge do you hope to add to the sum total of what is known? All these questions need to be addressed and unless these are answered clearly, the problem should not be selected for dissertation work. Your dissertation should indicate that it is likely to fill the gaps in the existing knowledge, to help in resolving some of the inconsistencies in the earlier studies, or to help in the interpretation of the known facts.

Is the problem feasible?

A problem selected for the dissertation work may be a good one from the point of view of the three criteria mentioned above, yet it may not be feasible in view of some of the aspects discussed below:

Research competence. The problem should be in an area in which you are qualified and competent. You must be familiar with concepts involved in the area and also possess necessary skills and competencies that may be needed in the conduct of study.

Interests and enthusiasm. The problem should be one in which you are genuinely interested and about which you are truly enthusiastic. It should be meaningful and arouse your curiosity.

Financial consideration. The problem should be one, which is financially feasible. You must ascertain whether you have the necessary financial resources to complete the dissertation work on the selected theme. You must have an estimate of the expenditure involved in development of tools and data collection, word processing, etc.

Time requirement. Dissertation work is the compulsory component of M.A.(Education) Programme. You are required to complete it within the stipulated time. Thus, The dissertation selected by you should be one which can be completed in the second year along with the specialized courses of M.A.(Education) Programme.

5. PREPARATION OF A RESEARCH PROPOSAL

After identifying and formulating the research problem, you are required to prepare a research proposal for dissertation. Research proposal is also called 'synopsis' of research work to be undertaken by the researcher. Research proposal is the most important component of a research activity. It is like the blueprint, which an architect designs before construction of a house. It conveys the entire research work the researcher intends to carry out. It is basically a plan of action. If the proposal is prepared properly, the rest of the work in the process of research becomes smooth and easy. While you prepare a research proposal for dissertation work, you need to be clear about a set of questions. The answers to these questions constitute the different components or aspects of a research proposal. In the Table 1, the questions to be addressed by you and the corresponding components in the research proposal are given. Please go through them carefully as you have to highlight the questions while you formulate the research proposal for dissertation.

Table 1: Questions and Corresponding Components of a Research Proposal

	Questions	Themes
1.	What do you propose to study?	Title of the study
2.	Why do you intend to conduct the proposed study?	Context, justification/rationale of the study
3.	How do you define the study ?	Statement of the problem
4.	What earlier researches tell you about the research study?	Review of related literature
5.	What do you intend to address through your study?	Research questions
6.	What do you intend to achieve through your study?	Objectives of the study
7.	What tentative solutions do you formulate for research questions?	Hypotheses
8.	How do you operationally define the terms used in the title of the study?	Operational definitions of the terms
9.	What will be the scope of your proposal?	Delimitations of the study
10.	How do you propose to conduct the Study?	Methodology of the study
11.	What is the total number of units for which the research study is proposed?	Population of the study
12.	What is the small number of units to be selected for the purpose of conducting the study?	Sample
13.	What means do you propose to use for collection of research evidences?	Tools and techniques of data collection
14.	How do you propose to collect research evidences?	Procedure of data collection
15.	How do you propose to analyse the obtained evidences?	Method of data analysis
16.	What implications would your proposed study have for practice of education?	Results, findings and suggestions

6. COMPONENTS OF A RESEARCH PROPOSAL

From the above questions you can know the various stages of a research proposal. Let us discuss each of them.

1) **Statement of the Title of the Problem**

On the first page of the proposal, the statement of the title of the problem is mentioned along with name of the researcher, name of the guide, and name of the university to which research proposal is to be submitted. The title of the research proposal should do no more than name of the topic. The title should not be too lengthy or too short. It should be specific to the area of the study and should give sufficient information about the nature of the study. It should also make explicit the main objective of the study.

2) **Introduction (context and justification)**

In this section, the researcher introduces the problem briefly. Further, the researcher will spell out as to how the problem emerged, its social and educational context and its importance to the field of education. Some researchers name this caption as "Background of the Study." In short, here the entire topic of the study is introduced in brief. In some proposals, there is a separate caption 'Rationale', while in others the same is included in the introduction. Here the researcher specifically deals with justification for conducting the proposed study. In short, one tries to answer 'WHY' of the study, suppose one selects **"problems of distance learners in India"** as a problem of his/her study, the researcher will discuss about distance education in India, its status etc. in introduction along with various problems related to it and the justification for conducting this study.

3) **Statement or definition of the problem**

Statement of the problem is not exactly the same as the title of the study. It has a definite place in the research proposal. Statement of the problem is primarily an expansion of the title of the problem. It is the explanation of the title or theme highlighting the scope and area of the study.

4) **A brief review of related literature**

In this section, one presents what is so far known about the problem under consideration. The review of literature includes two parts (i) the theoretical background of the problem and (ii) the research work already carried out in the area. If the area selected is quite new, concepts involved are unknown or not explored at length, then researcher should describe it in brief. The latest research trends pertinent to the problem should also be mentioned in this section. The literature need not be exhaustive, but should contain the most pertinent aspects related studies. The researcher has to make it clear that his problem has roots in the existing literature, but needs further research and exploration. It should demonstrate the grasp of the researcher of the field and awareness of recent developments in the area.

It is not necessary to discuss all the related studies in details. By reviewing several similar studies, the researcher may describe the most important and recent ones. Suppose you are interested in studying the **problems of distance learners in India** in 2009, you may review related studies, which have been carried out in the recent past. This indicates that your research work has updated review of related literature. The related literature section should conclude with, a discussion of findings and their implications. He/she should focus on what has been done so far in the area along with the research gaps. Here he/she can share the insights he/she has gained from the review. Research gaps so identified will help the researcher in building a strong rationale for the proposed study. Very often the review of related literature is presented after the rationale of the study or integrated with it.

(In many research proposals, there is a caption 'Rationale', which tries to focus on the 'WHY' of the particular study. Focus will be on "Why this problem?" "Why these variables?","Why this sample?" etc. A strong justification for conducting present study has to be presented in the Rationale.)

5) **Research Questions**

While conducting any research study, the researcher should aim at answering certain questions, which need to be answered. These research questions usually lead to framing of objectives of the study and hypotheses to be tested on the basis of evidences.

6) **Objectives**

Without clear formulation of the objectives, the researcher is likely to wander aimlessly in the field and he/she hardly achieves any worthwhile goal. Objectives are the basic foundations of the research, as these guide the entire process of research. The list of objectives should not be too lengthy and ambiguous. The objectives should be stated clearly to indicate what the researcher is trying to investigate. They generally flow from the research questions the researcher has in his/her mind.

5) **Hypotheses**

The formulation of hypotheses is based on the objectives of the study, which need to be tested on the basis of evidence. This step establishes the problem and the logic underlying the research study. The proposition of a hypothesis is derived from theoretical constructs, previous researches and logical analysis. Formulation of the hypotheses helps in two ways: (i) a well-grounded hypothesis is an indication that a researcher has sufficient knowledge in the area; (ii) the hypothesis gives direction for the collection and interpretation of the data. A good hypothesis must be testable, have explanatory power; state the expected relationship between variables; be consistent with the existing body of knowledge; and be stated as simply and concisely as possible.

In **experimental type** of research a researcher is interested in making predictions about the outcomes of the experiment or what the results are expected to show. Hence, formulation of hypotheses is very important in experimental research. On the other hand, in the **historical or some descriptive research**, the researcher may be interested in investigating the history of an educational institution, the life of a man or the happening of an event and thus may not have a basis for making a prediction of results. Therefore, a hypothesis may not be required in such fact-finding studies. It may be noted that when the purpose of the research is to find facts as they exist, a hypothesis may not be required.

A hypothesis can be stated in **directional** or **non-directional** form. The hypothesis which provides the direction of the expected differences or relationships is termed as directional hypothesis. Suppose you are interested to study the impact of computer-assisted instruction on the achievement of high school students in mathematics. For this problem you may formulate **directional hypothesis** as below:

" There will be significant positive effect of computer-assisted instruction on the achievement of high school students."

For this research problem you can also formulate **non-directional hypothesis,** which does not specify any direction of expected differences or relationships. For example,

" There will be an effect of computer-assisted instruction on the achievement of high school students"

Both directional and non-directional hypotheses are called **research hypotheses**. To test the research hypotheses statistically, **null hypotheses** are formed. In this example, the null hypothesis is formulated as below:

" There will be no effect of computer-assisted instruction on the achievement of high school students."

For more details about the hypothesis you are advised to refer to Unit 11 0f MES-016.

6) **Operational definition of terms**

Every research study involves certain key or technical terms, which have some special connotation in the context of the study. Hence, it is always desirable to define such terms. There are two types of definitions: (i) constitutive definition and (ii) operational definitions. A constitutive definition elucidates a term and perhaps gives some more insight into the phenomena described by the term. An operational definition is one, which ascribes meaning to a concept by specifying the operations that must be performed in order to measure the concept. e.g the word 'achievement' has many meanings but operationally it can be defined as: "The scores obtained by the students in an achievement test constructed by the researcher". Apart from operational definitions, one can define some terms which have a definite meaning. Terms like 'Eklavya' 'Lok Jumbish' etc. (these are terms associated with elementary education projects undertaken by NGOs) should be clarified in the study if they are used in study of elementary education.

7) **Methodology**

In this section the details about method of research to be used for conducting the study, viz., historical, description, experimental etc; sampling procedure and the data collection and analysis are described.

a) **Method**

In Block-II, in units 5, 6, 7, 8, 9 of MES-016: Educational Research, you have already studied about different types of studies in educational research. These are descriptive research, experimental research, qualitative research, historical research and philosophical research. In this section, you will specify the method of research to be adopted by you for the proposed study. The method or type of research will specify the nature of the data and their treatment. e.g. in historical and philosophical researches, the nature of data and their treatment is different from experimental and descriptive types of researches.

b) **Sample**

In Unit 12 of MES-016: Educational Research, you have already studied about various sampling techniques. Here the researcher will describe the population from which he will draw the sample and the procedure followed in drawing the sample. This section should describe the unit of sample, its size and structure. Justification should also be given for the choice of sample.

c) **Tool and Techniques of Data Collection**

In unit 13 of MES-016: Educational Research, you have already studied in detail about tools and techniques of data collection. It is important to note that research tool (also called instrument) is for the measurement of variables. In this section, the researcher will describe the various tools, which are to be used for collection of data. If the researcher is constructing the tool himself/herself, the procedure to be followed for development of tools should be described in brief. In case of standardized tools, information regarding their validity, reliability, norms etc. should be mentioned.

d) **Method of Data Analysis**

Here the researcher should indicate in brief the procedure to the followed in analysis of the data. The details of the qualitative and quantitative (statistical) techniques should be described in the research proposal. It is not sufficient to mention only the name of the technique, but it must be clarified for what purpose a particular technique will be used. The selection of the technique and its use should be justified in terms of objectives of the study. In case of historical research, it is necessary to throw light on the methods of internal and external criticism that are to be addressed to in the analysis of historical data. In document studies, mode of content analysis should be explained in the research proposal.

8) **References**

It is essential that researcher should report all the authors (books, titles etc.) at the end of the proposal, in the reference section. Books and journals consulted should also be mentioned in this section.

7. CARRYING OUT THE DISSERTATION WORK

After finalizing the research proposal, the next step for you is to undertake the research study and write a research report in the form of a dissertation. This involves collection of evidences, analysis and interpretation of evidences, and validation of the objectives or verification of hypotheses, formulation of conclusions and generalizations. In order to collect the required data or evidences, you have to sample the population concerned. Since it is not possible to take the entire population for the study, you have to select representative units from the population in the form of a sample. Although we have discussed the procedure of sampling in detail in Unit-12 of MES-016: Educational Research, we briefly mention again the discussion for your benefit.

Sampling

We have earlier explained that a sample is selected from a population under study. It is a small group of units of a population. After studying the characteristics of the sample, one can make certain inferences about the characteristics of the population from which it is drawn. A population is any group of individuals or units that have one or more characteristics in common which are of interest to the researcher, for a particular research. In order to select a sample, you need to follow the sampling methods- probability and non-probability sampling methods.

Probability Sampling Method

In this type of sampling, the units of the population are not selected at the discretion of the researcher, but by means of certain procedures which ensure that every unit of population has one fixed probability of being included in the sample. It is also called random sampling method. Different types of probability sampling methods are:

Simple random sampling

In this sampling method, each unit of the population is given an equal chance of being selected. You may use lottery method to draw a sample or take the help of Random Numbers Table for selecting a sample (please refer to Unit 12 of MES-016 for Random Number Table). Simple random sampling is neither possible nor feasible if lists of units are not available or incomplete.

Stratified random sampling

A simple random sample may have an undue proportion of one type of units in it. As a result, different types of units do not get proper representation in the sample. In order to get over such problem, you can opt for stratified random sampling. In this sampling method, you need to divide the population into different strata on the basis of some characteristics, and from each of the smaller homogenous strata or groups you may draw randomly a pre-determined number of units. Let us understand how stratified random sampling is carried out.

Suppose, we intend to study examination results of students of Class VII studying in different types of schools in a particular city. If there are 1500 students who have passed the Class VII examination, we may categorize population of students in different types of schools as presented in Table 2

Table 2: Distribution of students according to different types of schools

Types	Total number of students	Number of students in sample (25%)
Government Schools	700	175
Government Aided Schools	400	100
Private Schools	400	100
	Np = 1500	Ns = 375

It is evident from the Table 2 that there are three groups of students belonging to different types of schools in the population of 1500 students (Np = Number of students in the population). Suppose we may decide to select 25 per cent of each group (stratum) in the sample. As a result, from the stratum of government schools, we get 175 students, from government aided school 200 and from private schools 100. Thus, the total number of students in the sample comes to 375 which is Ns = Number of students in the sample.

While selecting a particular number of students from each stratum, the method of simple random procedure needs to be adopted. If we have more than one variable, we may go for further stratification of the population. In the example given in Table 3, we want stratification with respect to sex variable. The stratification in respect of the type of schools and sex is presented in Table 3,

Table 3: Distribution of students according to sex and types of schools

Types Schools	Number of boys and girls in the population		Number of boys and girls in the sample	
	Boys	Girls	Boys	Girls
Government School	400	300	100	75
Government Aided School	300	100	75	25
Private Schools	300	100	75	25
	Np = 1000	Np = 500	Ns = 250	Ns = 125

By now, you have a fair understanding of stratified random sampling method. It provides more accurate results than simple random sampling and is particularly useful when the lists of units or members in the population are available in various strata. It is also useful in survey-based research studies.

Systematic sampling

In systematic sampling method, the units of population in the sample are selected from a list made in alphabetic or some other order. In order to select the sample, you select a unit at random and this becomes number k. thereafter, every k^{th} subsequent number is selected. In order to find the number k, you can use the following statistic in which the total of the wider population being represented is divided by the sample size required (Cohen, et. al. 2000).

$f = N/sn$

Where f = the frequent interval

N = the total number of the wider population

sn = the required number in the sample.

For example, you want to study the attitudes of 200 secondary school teachers towards the introduction of computer education in the school and decide to have a sample of 40 teachers. You can get the k number by dividing 200/40, which comes to 5. Then you can choose any number from the list of 200 teachers and go on selecting every 5th number for the sample. This method is convenient, simple and less time consuming than simple random sampling.

Cluster Sampling

When the population is too large and geographically scattered and it is difficult to prepare lists of units of population, and sampling poses administrative problems, you may opt for cluster sampling. Clusters or groups representing the wider population are selected for sampling purpose. Suppose you want to survey the study habits of secondary school children of a district in your state. It is difficult for you to travel to each school in the district. Instead, you can choose some schools, which form the clusters and survey study habits of children in those schools.

These schools are supposed to represent characteristics of all secondary schools in the district. While selecting the cluster schools and the children in the cluster schools, you need to use simple random method for ensuring randomization.

Multi-stage Sampling

When the research involves large units of population and it is difficult to access the population spread across a large geographical area, you may opt for multi-stage sampling. In this method, sampling is done at different stages, which you define as per the objectives of the study. Each stage of sampling has some definite purpose. For example, you are interested to study the reactions of distance learners enrolled in different academic programmes of Indira Gandhi National Open University in your state towards distance learning system. At the first stage, suppose you may select 10 study centres located in different parts of state on random basis so as to represent different parts of the state. In the second stage, you can select five academic programmes out of the programmes activated at the study centres. In the third stage, you may select randomly 20 students out of all the students enrolled in these programmes. In this way, the final sample of students can come to 10 study centres × 5 programmes × 20 students = 1,000 students. Thus, 1,000 students will be constitute the sample for the study.

We have been till now discussing probability sampling and its various types. Now, we shall discuss non-probability sampling, its types and various situations where non-probability sampling methods are employed. (Dash, 2007)

Incidental Sampling

Incidental sampling is also called convenient sampling. You can select units of the population which are incidentally or conveniently available to you. Suppose you want to study the reactions of students towards the introduction of sex education in secondary schools. You may go on interviewing students in schools that are easily available to you to arrive at the required sample size. Since the sample is not drawn from the population on a representative basis, generalization is not possible.

Quota Sampling

Quota sampling method is somewhat more or less similar to the stratified random sampling method. But the difference between the two is that the randomization process is not required in quota sampling, as is in the case of stratified random sampling method. In quota sampling, you try to represent the strata (characteristics) in proportion to their presence in the population. For example, if the population of 1,000 comprises 60 per cent boys and 40 per cent girls, then in the sample there should be 60 per cent boys and 40 per cent girls. If the sample selected is 100, then there would be 60 boys and 40 girls in the sample.

Since the selection of the sample is done according to a fixed quota for different characteristics of the population, the sample is known as quota sampling. Sometimes, if there are too many characteristics of population, it is difficult to fix up quota for each characteristic. Hence, it is advisable to choose a few characteristics and accordingly decide about the sampling.

Purposive Sampling

Purposive sampling method is based on your discretion. You can use judgement or rationality to choose the sample. However, your judgement is based on your experience or understanding of the population. The purpose here is very specific to the objectives of the research. Suppose, you want to select 100 B.Ed. teacher trainees of IGNOU to study as to how they learn from the self-learning material provided to them. In this case, you may visit a programme centre and take B.Ed. teacher trainees enrolled under that programme centre for the sample. The problem in this type of sampling is that it fails to represent the wider population. Hence, you need to take care to report the findings of the study carefully.

Snowball Sampling

Sometimes, you may find it difficult to access the sample because of the very nature of the members of population. In this case, you first select a few members of the population whom you access, then uses them to identify and select another group of members who identify the third group of members. The process goes on till you arrive at the required size of sample. Therefore, this sampling method is called snowball sampling. This sampling method, for example, can be used when you want to study behaviour of those students who are addicted to computer games. Similarly, when it is difficult to trace the members of population due to lack of proper communication networks, the researcher may use snow ball sampling method.

Data Gathering Tools

After selection of sample you will require data gathering tools and techniques for collection of evidences. Each tool or technique is appropriate for the collection of certain type of evidence or information. You have to select tools from the available tools, which will provide data you require for achieving the research objectives or testing the hypothesis(es) of the study.. In some situations, you may find that the existing research tools do not meet your purpose and so you are required to modify them or construct your own.

As a researcher, you should familiarize yourself with the nature, merits and limitations of the existing tools and should also develop skills in the construction of the research tools. In Unit 13 of Block-3, MES-016, we have discussed in detail various tools and techniques of data collection. However, we again recapitulate some important details of these tools and techniques for your benefit and appropriate use.

Observation

It is a technique in which one or more persons observe what is occurring in some real-life situation. It classifies and records pertinent happenings according to some planned scheme. It is used to evaluate the overt behaviour of individuals in controlled and uncontrolled situations. Observational technique has occupied an important place in descriptive studies of qualitative nature. It needs proper planning, expert execution, and adequate recording and interpretation.

Observation may be either participant or non-participant. In participant observation, the observer (researcher) becomes more or less a member of the group under observation. He/she may play any one of several roles in observation, with varying degrees of participation, as a visiting stranger, an attentive listener, an eager learner, or a more complete role as participant observer. In the non-participant observation, the observer (researcher) takes a position where her/his presence is not disturbing to the group. She/he may follow in detail the behaviour of one individual or may describe one or two behaviour characteristics of a dozen or more individuals.

Observation may also be classified as structured or unstructured. The structured observations are much too formal and they are designed to provide systematic description for testing causal hypotheses. They are executed in controlled conditions. Interaction analysis of the classroom verbal behaviour of a teacher is an example of structured observation. Structured observations start with relatively specific formulations. The observer sets up in advance categories of behavior in terms of which she/he wishes to analyse the problem, and keeps in mind the time limit under which she/he has to make the observation. In unstructured observation, the observer does not categorie the behaviour in advance for observation. There is no fixed time limit. In the following Figure.1 a checklist of what you as an observer in the research process is expected to do is presented.

Decide exactly what you need to know.	List all topics/aspects for which information is required.
Consider why you need this information.	Examine your list and remove any item that is not directly associated with the task.
Is observation the best way of obtaining the information you need?	Consider alternatives.
Decide which aspects you need to investigate.	Are you particularly interested in content, process, interaction, intervention – or something else?
Request permission.	Clear official channels and also discuss what is involved with individuals concerned.
Devise a suitable grid, checklist or chart.	Consult published examples and adapt where necessary.
Consider what you will do with the information.	Is it likely to produce anything of interest? Will the data be sufficiently complete to enable you to come to any conclusion?
Pilot your method and revise, if necessary.	Memorize categories. Devise your own system of shorthand (symbols, letters, etc.). Practice recording until you are confident you can cope.
Prepare carefully before the observation.	Draw a plan of the room, indicating seating arrangements and layout. Make sure you have enough copies of grids or checklists. Consult minutes of previous meetings, agenda, scheme of work, etc.
Discuss where you will sit with whoever is in charge and with people who are to be observed.	You should try to be as unobtrusive as possible. Exactly where you sit will depend on your own preferences and the views of participants.
Remember that no grid, however sophisticated, will tell the full story.	Try to place the event in its organizational context.
Analyse and interpret the data.	Factual statements about what has been observed are only part of the task. Consider what the facts indicate or imply.
Don't forget to thank the people who have allowed you to observe.	You may need their help again!

Figure1: Observation Studies Checklist, Source: (Koul, 2003)

Interview

Interview is a process of communication or interaction in which the subject or interviewer provides the needed information verbally in a face-to-face situation. Although the interview is generally associated with counselling or psychotherapy, it can be used effectively to collect useful information about individuals in many research situations.

Interviews are classified as structured and unstructured. A structured interview is one in which the procedure to be followed is standardized and is determined in advance of the interview. The same type of questions are presented in the same order to each subject or interviewer, and wording of the instructions to the interviewers is specified. The interviewer has the freedom to rephrase questions, add extra ones, or change the order in which the questions have to be presented. On the other hand, unstructured interview provides greater flexibility. Although the series of questions to be asked and the procedure to be followed are decided upon before hand, the interviewer is largely free to arrange the form and timing of questions.

Interview technique is mostly used in descriptive and case study researches. The guidelines for conducting an interview is presented in Figure.2.

1) **Kind and Context of interview.**
   - What is the rationale for using interviews?
   - What kind of interview is it?
   - How is the interview structured?
   - How much flexibility does the interviewer have?
   - What is the length, location and occasion of the interview?

2) **Characteristics of the interview participants**
   - a) Interviewees
     - Who are involved?
     - How many people are involved?
     - What is the basis for their selection and how was the selection made?
   - b) Interviewers
     - Who and how many people are involved?
     - What experience of interviewing do they have?
     - What is their relationship to the main research?
     - What is their status and relationship to the interviewees?

3) **The purpose of the interview**
   - What are interviewees told about the purpose of the interview?
   - Is this understanding shared with the interviewer?
   - Who will have access to the data collected and is it negotiable?

4) **The method(s) of data collection**
   - How strictly controlled is the method of asking questions?
   - How are responses recorded?
   - What other methods of data collection are being used and what is the relative weighting between the methods?

5) **Analysis and reporting of data**

Who analyses what?

How are the interviewers concerned with the analysis?

How many analysts are there and how are disagreements resolved?

Are full transcripts used?

What basis is used for filtering the data?

What level of uncodeable data is tolerated?

Sorting of results

How are the outcomes of the interviews being evaluated?

What access may the academic community have to raw data?

Figure.2 : Guidelines for conducting an interview, Source: (Koul, 2003)

Questionnaire

Questionnaire is the widely used tool of research to collect data. It is used to collect information regarding any events, phenomenon, practices, or attitudes of an individual or a group of individuals. As the name suggests questionnaire contains a series of questions pertaining to the particular problem being investigated. A questionnaire is either administered personally to a group of individuals or sent by mail to the respondents located at different places. The purpose of the questionnaire must explain to the respondents and directions need to be given about how to respond to the questions.

Types of questionnaire

Based on the type of questions asked questionnaires can be classified into two types. These questions are: (i) closed-ended questions; (ii) open-ended questions. Let us look at both types of questions. (Dash, 2007)

Closed-ended questions: Closed-ended questions are the ones in which the respondents are to choose from the restricted or fixed responses. They cannot exercise their own options. There are different forms of closed questions, like replying with yes/no, putting a tick ('') on the possible answer from a list, ranking the alternate answers, circle around the alternative in a scale, etc.

Examples of closed-ended questions

i) Do you have a valid passport? Yes/No

ii) Please indicate your religion by ticking the appropriate alternative.

a) Hinduism ( )

b) Islam ( )

c) Christianity ( )

d) Sikhism ( )

e) Buddhism ( )

f) Jainism ( )

iii) Below is a statement followed by five options. Put a tick mark on the option you choose.

Open and Distance Learning System (ODLS) would cater to the increasing demand for education in the future.

Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree.

iv) Fill in the blanks?

How many times have you attended academic counselling sessions in a year?_____.

Open-ended questions: Unlike the closed-ended questions, the open-ended questions call for a free response from respondents. The questions are not structured. The respondents are given freedom to express their opinions and feelings.

Examples of open ended questions

i) Should teachers' performance be evaluated by their students? Substantiate your answer.

.....

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.....

ii) Suggest how distance education can provide increasing access to educational opportunities.

.....

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.....

Construction of a questionnaire

A questionnaire needs to be constructed very carefully. This requires both competence and ability on our part. The following points need to be taken into consideration while constructing a questionnaire.

- *Reflection of the purposes of research*: A good questionnaire must reflect the objectives of the research problem through specific questions contained in it. Each question must communicate to the respondents its objective so that analysis and interpretation of responses are made properly. Moreover, the covering letter of the questionnaire should indicate the purposes of the research study.

- *Make the questions more precise*: The following principles given by Best (1977, pp. 160-162) may be considered to make questions precise.

i) Properly define terms that otherwise could easily be misinterpreted. For example, "What work did you do in the year 2005?" This question is subject to various interpretations. Hence needs precision in its statement.

ii) Be careful in using adjectives and adverbs that have no agreed upon meaning. Words like 'rarely','occasionally','scarcely','hardly' may be interpreted differently; hence should be carefully used.

iii) Beware of double negative. The Distance Education Council should not fund the institutions that do not meet its requirements. This statement may be stated as: The Distance Education Council should fund only those institutions, which fulfill its requirements/conditions.

iv) Avoid the double-barreled questions. Break it into questions. For example, the question 'Do you agree that distance education is cost-effective and promote democratization of education?' can be split in to two separate questions.

v) Be careful of inadequate alternatives. For example, the question 'Are you employed? Yes/No', does not specify the nature of employment to the respondents.

vi) Underline a word if you wish to indicate special emphasis.

vii) When asking for rating or comparisons a point of reference is necessary. For example, 'The temperature of place 'A' is (hot, warm or cool)' needs to have a point of reference like 'in comparison to place B.

viii) Phrase questions so that they are appropriate for all respondents. For example "How many academic counselling sessions for a course do you attend in a month?" may not be appropriate for all distance learners as there is provision of intensive counselling sessions in many cases.

ix) Design questions that will give a complete response. The question "Do you watch television?" does not reveal the TV viewing habit of respondents.

x) Provide for the systematic qualification of responses. For example, number of alternatives to a question may be ranked and given some numerical weightage in a systematic manner. For example in the case of a 3 point scale A may be 3 pt, B may be 2 pt, and C may be 1 pt. based on the type of questions asked.

- A question must correspond to the background information of the respondents.
- A question needs to be framed in such a way that they are socially accepted by the respondents. They do not feel offended by it.
- Leading questions are to be avoided. For example, "Do you agree that teachers should be consulted in formulation of University's policies?" would always invite positive response from the respondents. Therefore, the questions should be framed without providing any suggestions.
- The questions should be restricted to a single idea or to a single reference. They should be so arranged that they permit the idea of the respondents to flow logically. This is a procedure of asking the most general questions first and following it with successively more specific and restricted questions. This procedure helps the respondent to organize his own thinking and motivate him to respond logically.
- A questionnaire should contain either closed type of questions, or open type of questions or both.
- A questionnaire should not be too long lest respondents should feel bored to respond.
- Once the questionnaire is drafted, it should to be given to a few experts for their comments. After receiving the comments, the draft should be revised in their light.

Questionnaire, as we discussed, is a popular tool of research. But there are some limitations. This cannot be administered to illiterates and younger children. There is problem of poor response in the case of mailed questionnaires. Sometimes, the respondents may not express what they really intend to communicate.

Checklist

A checklist is a device through which we assess the knowledge of the respondents regarding the presence or absence of certain defined characteristics in an object, a phenomenon or a process. It is also used to evaluate the performance, which can be divided into a series of clearly defined actins. We prepare a list of items pertaining to the problem being studied and provide a space for the user to indicate the presence or absence of the characteristics or action mentioned in the item by circling 'Yes' or 'No' or by writing the appropriate word or number (Dash, 2007).

Construction of a checklist

The first thing in the construction of a checklist is to decide about the type of information required for the investigation. The items are to be prepared keeping in mind the information to be collected. These items may be arranged in a logical or psychological order. Generally, checklist items are framed in the following ways:

i) Items may be put in question form followed by 'Yes' 'No' answers. The respondents are expected to encircle or underline the answers. For example:

Does the school have a science laboratory? Yes/No

ii) Item may be in the form of statements. The respondents are asked to put a (√) tick or (×) cross depending upon the presence or absence of the phenomenon under study. For example:

The school has a well-established computer laboratory. (√)

iii) Items are developed in the form of a sentence. The respondents are required to chose, underline or encircle the appropriate words.

The Parent Teacher Meetings (PTA) are held in the school.

a) Fortnightly, b) Monthly, c) Bi-monthly, d) Irregularly.

After construction of a checklist, it is tried out on a small sample to assess its feasibility in the field.

Attitude scale

An attitude scale is designed to measure the attitude or belief of an individual towards an object, event, or a phenomenon. Thurstone (1929) defines an attitude as the degree of positive or negative effect associated with some psychological objects. By a psychological object, he means any institution, ideas, symbol, phrase, job etc. Attitude of an individual is basically his reaction to an object, situation or proposition in favourable or unfavourable ways. Attitude scale is always in the form of a continuum which ranges from favourablesness through neutral to unfavourableness. An attitude scale consists of a set of statements about the particular psychological object. While writing statements for an attitude scale, the following criteria as listed by Edwards (1957) need to be taken into consideration.

- Avoid statements that refer to the past rather than to the present.
- Avoid statements that are factual or capable of being interpreted as factual.

- Avoid statements that may be interpreted in more that one way.
- Avoid statements that are irrelevant to the psychological object.
- Avoid statements that are likely to be endorsed by almost every one or almost no one.
- Keep the language of the statements simple, clear and direct.
- Statement should be short and should contain only one complete thought.
- Statement with universals such as all, always, name should be avoided.
- Statement should be in the form of simple sentences.
- Avoid the use of double negatives.

There are two types of attitude scale. Which are commonly used in assessing attitudes. These are the method of equal-appearing intervals devised by Thurstone and Chave (1929) and the method of summated ratings devised by Likert (1932). Let us discuss the latter one in detail.

The method of summated ratings

The method of summated ratings is a convenient and simple method of measuring attitudes of people towards any psychological object. It was introduced by Likert (1932) and hence is popularly known as Likert scale. It is a popular tool for opinion research. The respondents are asked to respond to each item in the scale on a five-point scale, which has categories as Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD) (Dash, 2007).

Construction of scale

- A large number of statements with favourable and unfavourable opinions towards the psychological objects are written. For example, in preparing an attitude scale to measure students' attitude towards the use of computers in the teaching-learning process, items such as the following may be written:
  - — Computers help in the teaching-learning process (Statement of favourable attitude).
  - — Use of computers in the teaching-learning process consumes a lot of instructional time (Statement of unfavourable attitude).
- The number of favourable and unfavourable statements in the scale needs to be equal. All the statements are edited. In the beginning of the scale, clear directions are given regarding how to mark their answers, namely, by putting a mark or by putting a circle around the answer.
- Scoring weights of 5,4,3,2 and 1 are used for SA, A, U, D, and SD for the statements with favourable attitude and the scoring weights of 1,2,3,4, and 5 are used for SD, D, U, A and SA for the statements with unfavourable attitude. An individual score on a particular attitude scale is the sum total of these ratings on all items.
- Once the draft is ready, it is generally administered to a sample of at least 200 subjects selected from the population of the study. Scoring of the items is done as per the scoring weights decided for different items.
- The final selection of the items for the scale are made on the basis of their t-values. For this, item-wise analysis of the responses is carried out. On the basis of the total scores obtained by the respondents, the upper 25 percent obtaining the highest scores and the lower 25 percent obtaining the lowest score are taken. The value of 't' is found out based on the responses of upper and lower group to the individual statement. Finally, 20 to 25 statements with the largest t-values ($t > 1.75$) are selected for the find draft of the attitude scale.

- The reliability of Likert type attitude scale is computed by the split-half method. The validity of the scale is decided by comparing it with other similar standardised scales.

Achievement test

Achievement test is an important tool often used in educational research. For example if you are interested in collecting data about the achievement of a group of students in a particular subject area in a research study you have chosen for the dissertation work, you would use an achievement test for this purpose. Hence you need to know how an achievement test is developed .Let us consider the necessary steps in developing a good achievement test.. The first step in the development of a good achievement test is to design a framework. For this, you have to:

a) Analyze the course contents into different content units/chapters and decide the weightage to be given to each in the test.

b) Decide the weightage to be given to different objectives being tested.

c) Decide the weightage to be given to different forms of questions to be used in preparing a question paper.

d) Decide the weightage to be given to time and marks for different forms of questions.

e) Decide the weightage to be given to the difficulty level in the test.

The second step is to prepare a table of specification, i.e. the blueprint, which reflects distribution of various types of question to be set on different content units testing particular objectives, such as knowledge, understanding, application, skill, etc. You will most likely need essay type, short answer type as well as objective type items to evaluate the learning outcomes of students related to objective at varying levels. Let us know how a table of specifications (blueprint) is developed (IGNOU, 2003).

Preparing a Table of Specifications (Blueprint)

As discussed earlier, the first step in preparation of a 'Table of Specification' is to give the weightge to different content units. Let us take the example of Geography of class IX of a secondary school. From the textbook on Geography, let us choose the first six chapters. The achievement test will be based on these chapters. The weightage given to each chapter is presented in Table 1.

Table 1: Weightage given to different content units

Content Units	*Weightage given*
Chapter-1	10
Chapter-2	20
Chapter-3	15
Chapter -4	20
Chapter -5	20
Chapter -6	15
Total	100

The second step in the prepartion of blueprint is to give weightage to different objectives which is presented in Table 2.

Table 2: Weightage given to different instructional objectives

Instructional Objectives	*Weightage given*
Knowledge	40
Understanding	30
Application	20
Skill	10
Total	100

The third step in the preparation of blueprint is to give weightage to different forms of questions. The weightage given to different forms of questions is presented in Table. 3

Table 3: Weightage given to different forms of questions

Forms of Questions	*Weightage given*
Essay type items	30
Short answer type items	45
Objective type items	25
Total	100

The fourth step in the preparation of achievement test is to give weightage to marks and time for different forms of questions. The allotment of marks and time to different forms of questions is presented in Table 4 and Table 5.

Table 4: Weightage given to marks for different forms of questions

Forms of questions	*Marks per question*	*Total no. of questions*	*Total marks*
Essay type	10	03	30
Short answer type	03	15	45
Objective type	01	25	25
		43	100

The weightage given to time for different forms of questions is presented in Table 5.

Table 5: Weightage given to time for different forms of questions

Forms of questions	*Time per question (in minutes)*	*Total no. of questions*	*Total time (in minutes)*
Essay type	20	03	60
Short answer type	05	15	75
Objective type	01	25	25
		43	160

The next step is to give weightage to difficulty levels of the items, which is presented in Table 6.

Table 6: Weighage to difficulty levels of the items

Difficulty levels	*Weightage given*
Difficult items	25
Average items	50
Easy items	25
Total	100

Based on the above steps of preparation of a blueprint, the final blueprint is developed. With the help of such a table of specifications, you will be able to ensure the needed content validity of adequate coverage of syllabus units and assessment objectives. The final blueprint is presented in Table 7.

Table 7: Blueprint (Table of Specifications)

Objective	*Knowledge*			*Understanding*			*Application*			*Skill*			*Total*
From of Question / *Content*	*E wise*	*S*	*O*	*E*	*S*	*O*	*E*	*S*	*O*	*E*	*S*	*O*	*Unit*
Chapter 1	—	3(1)	2(2)	—	—	2(2)	—	3(1)	—	—	—		10
Chapter 2	—	3(1)	1(1)	10(1)	—	2(2)	—	—	1(1)	—	3(1)		20
Chapter 3	—	3(1)	1(1)	—	6(2)	1(1)	—	3(1)	—	—			15
Chapter 4	10(1) 10(1) (a)	—	1(1)	—	3(1)	1(1)	—	—	2(2)	—	3(1)		20
Chapter 5	7(1)	—	4(4)	—	—	2(2)	—	3(1)	1(1)	3(–)			20
Chapter 6	—	3(1)	2(2)	—	3(1)	—	—	6(2)	—	–1(1)			15
Sub-total	17 (2)	12 (4)	11 (11)	10 (1)	12 (4)	8 (8)	–	15 (5)	5 (5)	3 (–)	6 (2)	1 (1)	100 (43)
Total		40			30				20		10		100

After the preparation of blue-print, the next step is to write test items as per the blue-print. A good test should provide clear directions to the students. Such directions should include amongst other things, information regarding the following:

- Purpose of the test
- Time allowed to complete the test
- Total marks for the test
- How to record the answer
- Whether guesses are allowed when in doubt about the correct answer
- Weightage given to the different questions or parts of questions

After the test is developed it is administered to the intended respondents. After collecting the responses of the respondents on the test the test scripts are scored. Scoring procedure for objective type items and essay type items will be different. Objective type items can be scored by you or sometimes by machines (computers), if the scoring key is provided. Essay type questions have to be scored only by you or the teacher who are familiar with what has been taught. Sometimes, correction for guessing formula are applied while scoring objective type items in which answers can be guessed. One such formula is as follows:

$$\text{Correct score} = \text{Right} - \frac{\text{Wrong}}{n-1}$$

In which "n" is the number of options (alternatives) in each question.

Suppose, a student scores 40 items right and 9 items wrong on a 50 item multiple choice test. Using four alternatives in each item, his corrected score will then be as follows:

$40\text{-}9/3 = 40\text{-}3 = 37$

It is, of course, not necessary to use any such formulae if the test is made by the teacher for classroom use or for the discussion/guidance to students after his scores are communicated to him. Even in a selection, if the number of items in that test is large (above thirty), it is not necessary to use this formula, as it does not yield better discrimination.

8. TEST DEVELOPMENT

You can adopt a test already developed or stanadardised or you can develop a test on your own. In case you plan to develop a test you need to follow certain steps (Dash, 2007). These are:

i) Planning

ii) Preparation of preliminary draft

iii) Tryout of the test

iv) Item analysis

v) Final draft

Let us discuss each step in detail.

Planning

Like any activity, planning of a test involves a detailed description of the tasks to be accomplished in the development of a test. These include the purpose, type, objectives, content and format of the test. Apart from these, it also includes the construction of the test including item-analysis, procedure of tryout, validity and reliability of the test, procedures of test administration, method of scoring, cost involved, etc.

The purposes of the test could be many, such as, diagnosing students' strengths and weaknesses, measuring their achievement, measuring their attitude towards certain phenomena, or objects or individuals,etc.

The purpose of the test decides the objectives of the test in specific terms. Specification of objectives, content areas, relative weightings to objectives and content areas, total number of test items, and the format of items, namely, essay type, short answer type, objective type, etc. are to be decided.

Preparation of preliminary draft

After having obtained a fair idea of the different aspects of the test, you prepare a preliminary draft. You write test items as per the test specifications. Although you are required to create new test items for the test, yet it is advisable that you consult the existing tests in the concerned area. This helps you to create similar kind of items. You must develop double the number of items as are required for the final draft. While developing test items, you should try out a few items on a small group of subjects to have a rough idea about the difficulty of items. When all the items are prepared, the test items may be edited by a language expert for ascertaining adequacy of language used in the construction of test items. Apart from test items, the test should also include other necessary details like basic information about the respondents, directions for responding to the items, etc. The preliminary draft is then referred to experts for their opinions and comments. Based on the experts' opinions, the test items can be modified. At this stage, the test can be administered to a group of subjects to find out the correctness of answers. It is called 'small group try out' of the test. With its feedback, the test items, if required, may be again modified accordingly. After the necessary modification, the test is ready for final 'try out'. Then the preliminary draft is duplicated for try out on a large sample.

Tryout of the test

The preliminary draft is administered to a large random sample of the population for which test is developed. The size of the sample for try out is usually taken as 370 because it helps the test-maker to get indices of difficulty and discrimination quickly for selecting good items for the final test with the help of the table developed by J.C. Flanagen (Koul, 1984). The test takers need to be given sufficient time to answer the items. Of course, time depends upon the nature of the test.

Item analysis

After the try out, it is desirable to appraise the effectiveness of the different questions or items. This can be done by considering the responses of students to each item. Such a procedure is called item analysis. When systematically done, item analysis would provide information regarding the following aspects:

- The difficulty level of the item.
- The discriminating power of the item.
- The effectiveness of each alternative.

We can find out through item analysis whether an item was too easy or too difficult, to what extent it was able to discriminate between high and low achievers and the effectiveness with which the different alternatives functioned. Such information may be useful in improving the items for later use. The teacher also gets useful information from item analysis for providing feedback to students regarding their performance in the test.

For example, answer to difficult questions can be explained fully, common errors and misconceptions of students pointed out and the remedial learning activities suggested.

In the section that follows certain simplified item analysis procedures are discussed for your guidance and use.

Difficulty level

The difficulty level of a test item is indicated by the percentage of students who answer the item correctly. The following formula can be used to estimate the difficult value of an item.

$$\text{Difficulty Level} = \frac{R}{T} \times 100$$

Where R = The number of students who get the right answer

T = the total number of students who have tried the item.

In order to find out the difficulty level, the following steps are followed:

i) Arrange all the answer sheets in an order from the highest score to the lowest score.

ii) Select the top 27 percent and the bottom 27 percent of the answer sheets separately. The middle 46 percent of the answer sheets need not be taken into consideration.

iii) Count the number of subjects answering the item correctly in the upper group (top 27 per cent) as well as in the lower group (bottom 27 per cent).

iv) Count the total number of subjects who have tried the item.

v) Find out the difficulty level using the formula.

Suppose, there are 100 students appearing for the test, the difficulty level for the item I is as follows:

Item 1:	Alternatives	A	B	C*	D
	Upper Group	3	3	16	5
	Lower Group	5	5	11	6

* correct answer

$$\text{Difficulty level} = \frac{(16 + 11)}{54} \times 100 = 50.$$

This means that the difficulty level of the item is 50%. The maximum difficulty level is 100 per cent. Items falling below 33 per cent and above 67 per cent are likely to be too difficult and too easy respectively. Hence, it is ideal to select items with moderate difficulty level. Therefore, the present item is an ideal item to be included in the test as it has 50% difficulty level. However, it may be noted that the decision to include item with varied difficulty level depends upon the nature of testing and objectives of the test.

Index of discrimination

The second item analysis parameter is index of discrimination of the item. It means how well an item discriminates between the high and low achievers. For computing the index of discrimination, the following formula can be used (Cohen, et. al. 2000).

$$\text{Index of Discrimination} = \frac{A - B}{1/2\ N}$$

In which, A = the number of correct scores from the high scoring group;

B = the number of correct scores from the low scoring group;

N = the total number of students in the two group.

Let us take an example. Suppose out of 100 students; 20 students from the top-scoring group (top 27 per cent) and 5 students from the bottom scoring group (bottom 27 per cent) answered the item correctly, the index of discrimination will be calculated as follows:

$$= \frac{20 - 5}{27} = \frac{15}{27} = .55$$

The index of discrimination for the item is .55. The maximum index of discrimination is 1.00. Generally, the items with high index of discrimination need to be selected for the test.

According to Cohen et. al. (2000), any item whose index of discrimination is less than 0.67, i.e. is too undiscriminating and therefore should be reviewed to find out whether this is due to ambiguity in the wording or possible clues in the wording.

Effectiveness of alternatives

When alternative answers are provided in objective type test items, one would expect that for an effective item, more students from the upper group will choose the correct alternative in comparison to the students from the lower group. Let us consider the responses of the students to an item in earlier example.

Alternatives	A	B	C*	D
Upper group (27)	3	3	16	5
Lower group (27)	5	5	11	6

* Correct answer.

It can be seen from the above illustration that the distracter C is the effective one as more students have chosen the option from the upper group than the lower group. In case of other options the case is otherwise. Thus, the effectiveness of the distracters in objective type items can be determined by an inspection of the responses of the students in the upper and lower group. Poor distracters suggest that the item is ineffective and needs to be revised. It should be noted that a good distracter would attract more students from the lower group than from the upper group.

Development of final draft

Based on the item analysis values i.e. difficulty level and index of discrimination, items are selected for inclusion in the final draft of the test. The final draft is administered to a large sample of the population under consideration for estimation of validity, reliability and norms. Validity and reliability are computed as per the nature and purposes of the test. Norms are developed for interpreting the test results of an individual or a group. Let us discuss how validity and reliability of the test are ensured.

9. ENSURING THE ESSENTIAL CHARACTERISTICS OF A TEST

Whether you develop a test or plan to select a test from the available tests, you should ensure that the test selected or developed must fulfill the following characteristics. These characteristics are validity, reliability, usability and objectivity. Let us discuss each of them briefly.

Validity

Validity is associated with specific purpose for which the test is developed. According to Gronlund (1981), it refers to the extent to which the results of an evaluation procedure serve the particular uses for which they are intended. For example, a test of attitude towards science ought to evaluate the childrens' attitude towards science. The validity of test may be low or high which depends upon the result of the test. The validity of a test depends upon the nature of a test. Hence we generally estimate the following different types of validity:

i) Content validity

ii) Criterion-related validity

iii) Construct validity

Content Validity

Content validity of test refers to the proper representation of contents (learning tasks) in the test. This validity is generally looked for in the case of an achievement test. Content validity of test is ensured by subjecting the test to the judgment of several subject experts. In an achievement test, preparing a table of specification or blueprint is the best way of ensuring its content validity. Based on the blueprint, the items can be developed to ensure content validity.

Criterion-related Validity

When the test developer intends to predict the future performance of the test takers or evaluate their current performance in a test against some criterion, it is presumed that he/she is concerned with criterion-related validity. Criterion-related validity, thus, can be predictive validity which establishes the relationship between the present results of a test and the future performance of the test takers For example, OPENMAT of IGNOU is designed to predict the future performance of the students in MBA programme. Concurrent validity is concerned with correlating the results of a new test with the results of a currently available standardized test, which measures the same traits as intended in the new test. For example, a test developer develops a test of creativity and correlates the results of his/her test with the results of Torrance Test of Creativity and finds out the correlation coefficient to establish the validity of his/her test. A significant positive correlation between the two tests is an indicator of concurrent validity of the test.

Construct Validity

When the objective is to measure certain psychological constructs, the test maker must ensure construct validity of the test According to Koul (1984), 'a construct is a trait or ability, temperament, or attitude which is hypothesized to explain certain aspects of behaviour such as 'achievement motivation; 'intelligence', 'creative thinking' or 'test anxiety'. Construct validity is established through a long continued experimentation based on imagination, reasoning and observation. Even the results of test can be compared with like and unlike tests. For example, the results of an attitude test can be compared with the results of another attitude tests (like test) as well as with the results of an intelligence test (unlike test)

Validity Coefficient

The validity of test is always reported in terms of validity coefficient. Lovell and Lawson (1973) recommend that a test ought to have a validity coefficient of at least + 0.70. but many tests with lower coefficients can be used in the absence of better ones if they measure something for which no other test has been constructed.

Reliability

The second important characteristics of a test is reliability. In common parlance, it refers to consistency. The same meaning is also applicable to the reliability of a test. When a test is administered to the same individuals with the same conditions and there is consistency of test results at both the times, it can be conceded that the test has reliability. Cohen et al (2000) defines reliability as a synonym for consistency and reliability over time, over instruments and over group of students. Thus reliability refers to consistency of measurement from one testing situation to another. For example, a teacher of class IX has developed an achievement test in mathematics, which is administered to students. After six months, she/he administers the same test again to them. If the test results in two situations match with each other, the test seems to have reliability. Reliability of a test is estimated through four methods. These are: test-retest method; alternate or parallel forms method; split-half method; and rational-equivalence method. Let us discuss each of these method.

Test-retest method

This is the method in which the same test is re-administered after a gap of time. The earlier example is a case of test-retest method of estimating reliability of test. The time gap given in between the two administration of the test determines whether the reliability of test results is overestimated or underestimated. If the time gap given is too short, immediate memory, practice and the familiarity of the test may overestimate the reliability of the test. Similarly, if the time gap is too long, maturation of the test takers may under-estimate the reliability of the test. In order to overcome the shortcoming of test-retest method, the test developer may prefer other methods of estimating reliability.

Equivalent or parallel forms method

In this method, two equivalent or parallel forms of the test are prepared. Both forms of the test are administered to the same group of students. The results obtained from the administration of both the forms are taken to estimate the reliability of the test

Split-half method

You, as a test developer, can estimate the reliability of test from a single administration. In this case, after administration of the test, the test is divided into equal halves. While dividing the test, you keep items with even numbers in one half and odd numbers in the other half. The results obtained from both the halves are correlated to estimate the reliability of half test. Spearman-Brown formula given below is applied to estimate the reliability of the full test.

$$\text{Reliability on full test} = \frac{2 \times \text{Reliability on 1/2 test}}{1 \times \text{Reliability on 1/2 test}}$$

Suppose the reliability of the half test is 0.60, the reliability of the full test is:

$$= \frac{2 \times .60}{1 + .60} = \frac{1.20}{1.60} = .75$$

Rational-equivalence method

The rational equivalence method is used to find out a measure of internal consistency. Reliability is estimated from a single administration of a single form of test with the help of formula given by Kuder-Richardson known as Kuder-Richardson formulae 21. The formula mentioned in Gronlund (1981) is as follows:

$$\text{Reliability estimate (KR21)} = \frac{K}{K-1}\left(1 - \frac{M(K-M)}{KS^2}\right)$$

Where K = The number of items in the test

M = Mean (arithmetic average) of the test scores

S = Standard deviation of the test scores

This formula is applicable for tests where one point is given for every correct answer and zero for a wrong answer.

Reliability Coefficient

Like validity coefficient, reliability of a test is reported in terms of reliability coefficient

Usability

Before using a test for the research purpose, the researcher should look into certain practical considerations, which determine its usability. Gronlund (1981) has mentioned these practical consideration as: ease of administration, time required for administration, ease of scoring, ease of interpretation and application, availability of equivalent or comparable forms and cost of testing.

Objectivity

Objectivity of a test refers to consistency of test scores when evaluated by different evaluators. Suppose, you have scored the responses of subjects on a test and again their responses to the items are evaluated by another evaluator. If scores awarded by both the evaluators match, then, we can say that there is objectivity in scoring between the two evaluators. Objectivity in also called inter-scorer reliability.

10. ANALYSIS AND INTERPRETATION OF DATA

We have discussed in detail about data analysis and interpretation in Block 4 of MES-016. However, we recapitulate about it for your benefit. .Data collected from various sources or samples through the use of different tools and techniques generally comprise numerical figures, descriptive narrations, responses to open-ended questions, quotations, field notes etc. In educational studies, usually two types of data are recognized. They are quantitative data and qualitative data.

Quantitative data are obtained by using various scales or tests. The experiences of people are provided in standard responses to which numerical values are attached. These data are close ended and hardly provide any depth and detail.

Quantitative data are either parametric or non-parametric. Parametric data are measured data on interval or ratio scales of measurement. The marks scored by students in a test is an example of parametric data. Non-parametric data are obtained by applying nominal or ordinal scales of measurement. These data are either counted (enumerative) or ranked (ordinal).

Qualitative data are verbal or other symbolic materials. The detailed description of observed behaviours, people, situations and events, are examples of qualitative data. The responses to open ended questions of a questionnaire or a schedule, first hand information from people about their experiences, ideas, beliefs etc., and selected content or excerpts from documents, case histories, personal diaries and letters are other examples of qualitative data.

We make use of various types of techniques in the analysis of quantitative and qualitative data.

Statistical techniques have contributed greatly in gathering, organizing, analyzing and interpreting quantitative (numerical) data. In the analysis of quantitative data with the help of statistical techniques, the researcher is required to understand the concepts involved in use and applications of these methods. Their strengths and limitations need to be understood so that there is no ambiguity in the use of these techniques. Quantitative data analysis techniques include the use and application of various descriptive statistical measures: (i) measures of central tendency or averages; (ii) measures of dispersion or variability; (iii) measures of relative position; and (iv) measures of relationship. Inferential or sampling statistics, with the help of various parametric and non-parametric tests, enable the researcher to make generalizations or inferences about populations from the observations or measures of the characteristics of samples. Z-test, t-test, analysis of variance and co-variance, regression analysis, chi-square test, median test and Mann-Whitney U Test are examples of some parametric and non-parametric tests which are widely used in the analysis of quantitative data.

Qualitative data in form of responses and narratives are analysed to study or discover inherent facts. These data are studied from as many angles as possible to explore new facts or to reinterpret already existing facts. Content analysis, inductive analysis and logical analysis are mostly used in the analysis of qualitative material.

Once the data have been analysed, you can proceed to the stage of interpreting the results. The process of interpretation is essentially one of stating what the results show. It is not a routine and mechanical process, but calls for a careful, logical and critical examination of the results obtained after analysis, keeping in view the limitations of the sample chosen, the tools selected and used in the study. There is always an element of subjectivity, which should be reduced to minimum by the researcher while interpreting the results.

Formulation of conclusions and generalizations

In the light of interpretations of the results, you as a researcher have to use all care and caution in formulating your conclusions and generalizations. This final step of the project work demands critical and logical thinking in summarizing the findings of the study and compare them with the objectives, research questions and hypothesis(es) formulated in the beginning. You should not draw conclusions which are inconsistent among themselves or with external realities. The generalizations drawn on the basis of research findings should be in agreement with facts and should not conflict with the known laws of nature. The implications of the conclusions for the education processes and practices may also be indicated here. The suggestions for the applications of research findings in practical settings and suggestions for problems for further research may also be provided with conclusions and generalisations.

11. WRITING THE RESEARCH REPORT

After completing the research work as per the requirements of the research proposal, you are required to write the detailed account of the research work highlighting the statement of the problem, research objectives, hypothesis(es) of the study based on the review of the related literature, method and procedures

used in respect of selection of sample groups, development and use of tools, collection of data, analysis and interpretation of data, conclusions with educational implications and suggestions for further research in the area. The detailed account of all these aspects constitute a research report. There are certain rules and principles involved in writing a research report a dissertation which will be discussed in the present section.

General format of the research report

For the purposes of presentation of a dissertation report, several style manuals are available which provide us guidance as to the specific rules and on style and format to be followed in reporting the objectives, methods, procedures and findings of the research study. But all formats are somewhat similar to the following outline which comprises three main sections: (i) the preliminary section; (ii) the body of the report; and (iii) the reference section. Each main section consists of several sub-sections (Koul, 2003).

Preliminary section

1) **Title Page**

Several parts of preliminary material are presented prior to the body of a research report. Generally it contains the following information.

i) Title of the dissertation
ii) Name of the institution to which the dissertation is being submitted.
iii) Name of the student (if desired, previous academic degree may be listed after name).
iv) Month and Year of submission of the dissertation.

2) **Preface**

The preface usually includes a brief statement of the purpose and scope of the dissertation report. It should also include thanks for those who provided you substantial guidance or help in the completion of the dissertation work. If you have little to say about the contribution of her/his research project, the preface can easily be omitted. In such situation, the page should be labeled **'Acknowledgements'** rather than 'preface'. Acknowledgements should be brief and simple. A long list of effusive acknowledgements full of flattery is not in a good taste. The brief statement of acknowledgements should sincerely recognize the persons and institutions to whom you are indebted to for providing academic guidance, administrative support and facilities.

3) **Table of contents**

The table of contents includes the major divisions of the report; the introduction, the chapters with their sub-sections, the bibliography and the appendices, along with the page numbers. The preface or acknowledgements, list of tables and list of figures are also entered in the table of contents.

Body of the report

The main body of the report contains four logical divisions:

1) **The introduction**

The introduction of dissertation report should be lucid, complete and concise. It should introduce the research problem in proper context, and arouse and stimulate the reader's interest.

In the introduction section you define, analyse, state the nature of the problem with research objectives. You also review the related studies so as to provide a rationale for the formulation of hypothesis(es). The introduction also includes the significance of the problem and the need for undertaking the dissertation work. After reviewing the background of the problem, its scope and delimitations, you present the research questions, objectives of the study, the hypothesis (es), if required, assumptions and operational definitions of the terms used in the title of the study.

2) **Design of the study/Methodology of the study**

This section explains the design of the study in detail. It includes a detailed description about the research method which was used in the conduct of the study, the details about the nature of the population, the size of sample (s), the method of sampling, tools and techniques used for data collection, procedure of data collection, quantitative (statistical) and qualitative data analysis methods to be used and reasons for selecting such methods, and how data will be organized and presented for analysis and interpretation, are also provided in this section.

3) **Analysis and interpretation of the data**

This section is the heart of the research report. The data analysis and interpretation may either be presented in separate chapters or may be integrated and presented in one chapter. The data are presented in table and figures accompanied by textual discussion. Tables, which are complex and lengthy, should be placed in appendix, otherwise the continuity of textual discussion gets broken. In the textual discussion the report should not repeat all the detailed information that is provided in tables and figures. It should only point out important facts and relationship to give meaning to the data and make certain generalizations about the data. Any weakness or limitations in the study pertaining to the research design, tools, or population that have come to light during the completion of the project work should be reported frankly alongwith the manner in which factors may have affected the findings of the study.

4) **Summary and conclusions**

This section includes a brief re-statement of the problem, objectives and hypotheses of the study, a description of the methodology of the study, and discussion of findings, conclusions of the study and suggestions for further research. The conclusions are presented concisely and related directly to the objectives of the study and hypotheses that were tested. As stated earlier they state whether the findings of the study accept or reject hypothesis(es). Conclusions are answers to the questions raised and suggest modifications in the existing knowledge. In addition, the researcher may list unanswered questions that have occurred in the process of study and which require further research beyond the scope of the problem investigated. The discussion and presentation of conclusions should leave the reader with the impression of completeness and of positive gain.

It should be noted that summary and conclusion section is the most widely used part of the research report because it reviews all the information that has been presented in its previous sections. Most readers scan this section of the report first to get an overview of the study and to determine its utility to them. If the study is of some utility to them, they go through the remaining chapters also.

5) **Reference section**

The reference section includes bibliography and appendices. The bibliography follows the main body of the report. It is a record of those sources and materials that have been used for the study. If the number of references is large, the researcher may divide the bibliography into various sub-sections, one for books, one for periodicals and journals etc.

An appendix follows the bibliography. All the relevant supporting unwieldy materials, that are important but not essential to the understanding of the report, are presented in the appendix. These materials include copies of the tools like tests, questionnaires, interview schedule, courses of study, raw data etc. For detail on how to write references, please refer to Unit 23 of MES-016.

12. STYLE OF REPORT WRITING

The presentation of the dissertation report should be creative, logical and concise making use of simple common words and sentence structure whenever possible. Its language should be formal and straightforward. The personal pronouns I, we, you, my, our and us should not be used. Their use should be avoided by the use of such expression as "the researcher" or "the investigator". The use of abbreviations, except some universally acceptable ones such as IQ, M. A., etc., should be avoided in the main text of the research report. In the footnotes, the tables and the bibliography, some standard abbreviations should be used to conserve space. A researcher should be familiar and should master the standard abbreviations, viz., et al, edn, eds, fig etc.

Numbers of less than three figures, round numbers and numbers that begin sentences are spelled out, except in statistical discussions in which they are used frequently. Fractions are also spelled out unless they are part of longer numbers. Figures are used for decimals and percentages, but word 'per cent' is spelled out e.g. 12 per cent.

To ensure continuity of the text, neither the standard statistical formulae nor the computations are included in the research report.

A good dictionary, a spelling guide and Roget's Thesaurus should be made use of by the researcher. The past tense should be used when referring to what the researcher or other researchers have done. The present tense should be used when the researcher is referring the reader to the tables and charts that are presented before him and when he is presenting general truths and well established principles.

13. TYPING/WORD PROCESSING THE RESEARCH REPORT

The dissertation report should be typed by a professional typist or a data entry operator. When the entire report is typed, you should proof read each page personally. If there are more than one or two corrections on a page, you are advised to retype the page. While retyping care should be taken to accommodate the material in such a way so that the last line on the page comes even. If no care is taken, you may have to retype the rest of the chapter and renumber the remaining pages of the dissertation. However such problems can be overcome if you type your dissertation in the computer. Since word processing on the computers is easily available, it is advised that you must type your report in the computer.

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Sample of A Research Proposal- I
(Descriptive Survey Study)

Tittle: A Study of Reactions of Student Teachers of IGNOU B.Ed Programme in Delhi Region Towards Practical Courses

Introduction

Education constitutes an important critical sector, which contributes to the process of national development. The success of any educational system depends upon the quality of teachers working in the system. Hence, professional development of teachers has always been an important concern for the various commissions and committees set up from time to time to make recommendations for educational development in our country. According to Selected Educational Statistics (2005-06), there are about 6 million teachers in our country out of which a sizeable number are either untrained or under trained. Moreover, the resolution by the Government of India to universalize elementary education, to meet the target of Education for All (EFA) and its recent decision to make education a fundamental right and lunch of Sarva Shiksha Abhiyan (SSA) has brought in new pressures on the school systems in terms of student enrolment, infrastructure development and demand for well trained teachers. Added to this, unprecedented growth in knowledge technology has compelled the Government to introduce information technology (IT), as part of the school and tertiary level curricula, which demands preparation of a cadre of teachers who could stand up to such technology induced changes in the teaching-learning process.

Although efforts are being made by several face-to-face teacher education institutions, such efforts are very minimum considering the large number of teachers which are in need for effective teacher education programmes. The Open and Distance Learning System (ODLS) has taken up the challenge of providing professional development programmes to a large numbers of trained and untrained teachers. Indira Gandhi National Open University, State Open Universities and Correspondence Course Institutes (CCIs) have initiated a number of teacher education programmes at different levels to meet such demands.

Professional Development of Teachers through Distance Mode

The need for training teachers through distance mode was felt in 1960s when there were large numbers of untrained teachers in schools and there were inadequate teacher training facilities in the country. Realising that about 45 per cent of the teachers in schools were untrained in 1965, the All India Association of Teacher Educators adopted a resolution at their annual conference recommending that the untrained teachers in schools who have at least five years continuous teaching experience be trained through two consecutive summer school programmes with some correspondence lessons in between (NCTE, 1995). This programme called the summer-school-cum-correspondence course (SSCC) was started by Central Institute of Education (C.I.E) in 1966 and by the Regional Colleges of Education in 1970 (NCTE, 1995). C.I.E. stopped this programme in 1971 and the Regional Colleges of Education stopped this programme in 1985. The efforts of C.I.E. and the RCEs gave rise to a new model of correspondence-cum-contact programme for B.Ed. degree which was started in several universities. The NCTE (1995) looked into the deficiencies in various aspects of the correspondence-cum-contact B.Ed. programme offered by the Universities and recommended that correspondence/distance education mode should not be used for pre-service teacher education for the first degree/diploma in teacher education. However, it suggested that distance education could be effectively utilized for up dating in-service teachers' knowledge in any special subject of teaching at the school or in any pedagogical subject.

IGNOU launched a bachelor of Education (B.Ed) programme in 2000 to meet the professional requirements of untrained graduate/post-graduate teachers working at different levels (primary, secondary and senior secondary) of education, having minimum 2 years of experience. The programme, with 48 credits, has duration of two years in the minimum or four years in the maximum. The programme comprises eight theoretical courses of four credits each and practical courses of sixteen credits. The instructional components of the programme consist of self-learning materials, academic counselling, assignments audio-video programme, teleconferences, school-based activities, and face-to-face workshops (IGNOU, 2004). Several studies have been conducted on different aspects or components of B.Ed programme. For example, Sharma and Singh (2001) found that reactions of the student teachers to a large extent were positive on the major components of the B.Ed programme. Sharma (2002) found that reactions of the student teachers on major components of the B.Ed programme were positive except interaction of students with peers as well as teacher educators, audio-video inputs, discussion of assignment questions by the resource persons, feedback on the assignments. Shukla (2002) found that student teachers rated IGNOU B. Ed programme more comprehensive and better than the conventional B. Ed programme. Rastogi and Sahare (2003) found both SIM and TCR strategy equally effective in raising level of knowledge of B.Ed students. Peshin (2007) found that the distance mode teacher education is as effective as the formal mode. The level of teaching competencies developed by both the modes is at par, but a significant section of teachers from both the modes need to strengthen their competencies. Although several studies have been conducted on different aspects of teacher education programmes through distance mode, no study has been undertaken to investigate the reactions of distance student teachers undergoing B.Ed programme of IGNOU towards practical courses. Hence a research study is proposed to address the following questions:

Research Questions

1) What are the reactions of student teachers of B.Ed Programme of IGNOU towards school-based activities?

2) What are the reactions of student teachers of B.Ed Programme of IGNOU towards workshop-based activities?

3) What are the reactions of student teachers of B.Ed Programme of IGNOU towards practice teaching?

Objectives of the Study

The following objectives are formulated for the proposed study:

1) To study the reactions of student teachers of B.Ed Programme of IGNOU towards school-based activities.

2) To study the reactions of student teachers of B.Ed Programme of IGNOU towards workshop based activities

3) To study the reactions of student teachers of B.Ed Programme of IGNOU towards practice teaching

Operational Definition of the Terms

1) Reactions: Perceptions of individuals towards a phenomenon, an object, or any individual. In the present study, reactions refer to the perceptions of student teachers towards practical courses.

2) Student Teachers: In-service teachers who are enrolled in B.Ed Programme of IGNOU.

3) B.Ed Programme of IGNOU: Bachelor of Education (B.Ed) Programme of Indira Gandhi National Open University (IGNOU) is a two-year in-service teacher education programme for working teachers with two years' full time teaching experience on temporary/permanent basis at primary secondary/ higher/higher secondary level.

4) Practical Courses: Practical courses in B.Ed Programme comprise three courses, which include School-based Practicals, Workshop-based Practicals and Practice Teaching.

Delimitation of the Study

1) The study will be delimited to student teachers of IGNOU B.Ed Programme enrolled under Delhi Regional Centre – I and Delhi Regional Centre – II during academic session 2008-09

2) The study will also be delimited to the collection of student teachers' feedback on practical courses through a questionnaire

Methodology of the Study

The methodology of the study comprises research method, population, sample, tool, procedure of data collection, and procedure of data analysis.

Research Method

Descriptive survey method will be adopted for the present study.

Population

All student teachers enrolled in B.Ed Programme of IGNOU under Delhi RC-1 and Delhi RC-2 during academic session 2008-09 will constitute the population of the study.

During academic session 2008-09, there are 12 Programme study centres under Delhi RC-1 and Delhi RC-2. In each programme study centre, 100 student teachers are allotted by the University. Hence, the population for the study will be 1200.

Sample

Systematic sampling method will be followed to draw the sample from the target population. It is proposed to draw 25 student teachers from each PSC through systematic sampling method. Hence, the sample for the study will be 300.

Tool

A questionnaire will be developed to collect student teachers' feedback on practical courses of B.Ed Programme. The questionnaire will have three sections. The first section will have questions related to school-based activities. The second section will have questions related to workshop-based activities and the third section will comprise questions pertaining to practice teaching. The questions will be both open-ended and close-ended.

Procedure of Data Collection

Data pertaining to student teachers feedback on practical courses will be collected through questionnaires. The questionnaires will be sent to student teachers through surface mail and will be received back from them within a period of two months.

Procedure of Data Analysis

The data to be obtained from the student teachers will be analysed with the help of both quantitative and qualitative techniques. Data to be obtained from close-ended questions will be analysed using percentage analysis method and content analysis (qualitative analysis) will be used to analyse data obtained from open-ended questions.

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Sample of A Research Proposal-2
(Experimental Research Study)

Title: A Study of Effect of Face-to-Face Workshop on the Achievement of Student Teachers of B.Ed Programme of Indira Gandhi National Open University

Introduction

Distance education has been witnessing an unprecedented expansion in the recent past, and is now recognized as a proven means of extending, to a large number of aspirants, access to educational provisions, right from primary to tertiary levels, in most countries of the world. Since its inception a century before, it has metamorphosed itself considerably from correspondence education to virtual education. Distance education programmes are being offered with the help of a plethora of interactive media-printed material (SLMs), audio-video programmes, teleconferences, internet, academic counselling, assignments, face-to-face workshops, project work, practical works, etc. However, these technologies may influence learning in unanticipated ways if used without understanding the implications for student learning (Maher, 1998). 'Distance education is currently experiencing great growth in new applications of interactive technologies, but we have not guarantees that, without critical reflection on our practice, we will produce any significant growth toward transformative learning, toward the development of personal empowerment and critical abilities to question rather than to accept assumptions, beliefs and expectations about one's role in the World' (Burge and Haughey, 1993:2). Hence, it is assumptions which have driven distance education theoreticians and practitioners to believe that different distance education technologies induce student learning. Although such assumptions may be true, they need to be empirically validated.

One can find a number of empirical validations pertaining to student reactions or perceptions to distance education from several perspectives. Similarly, comparative effectiveness of distance education and traditional education system has also been studied in term of several variables. For example, researchers have examined student feedback on print material (Sahoo, 1985; Koul, 1988; Kamau, 1995), on academic counselling (Nagaraju, 1982; Sahoo, 1985), on audio video programmes (Sahoo and Patri, 1998), on assignments (Biswal, 1979 and Sahoo, 1985), on delivery of printed material (Nagaraju, 1982; Sahoo, 1985). Similarly, educators who continue to employ alternate modes of study, and those who continue to participate in them, report distance delivery to be positive (Barker and Platten, 1989). Others have also reported that student achievement levels in distance learning are comparable, if not slightly higher than those learning in the traditional face-to-face classroom (Kirby and Chugh, 1993).

However, these studies do not validate the assumption that different distance education technologies contribute to learning or achievement of distance learners. Of course, a few studies have attempted to examine this aspect. For example, Maher (1998) studied the impact of delivery media on student learning. Fritsch and Strohlein (1998) examined the effect of mentor support on the performance of distance education students. Ritchie and Newby (1989) compared the effect of classroom lecture / discussion and live televised instruction on student performance, attitude and interaction. But, there is hardly any study, which has examined the impact of face-to-face workshop on the achievement of distance teacher trainees. The present study is an attempt to assess the impact of face-to-face workshop on the achievement of distance teacher trainees of Indira Gandhi National Open University (IGNOU), India.

IGNOU launched a Bachelor of Education (B.Ed) programme in 2000 to meet the professional requirements of untrained graduate/post graduate teachers working at different levels (primary, secondary and senior secondary) of education, having minimum 2 years of experience. The programme, with 48 credits, has

duration of two years in the minimum or four years in the maximum. The programme comprises eight theoretical courses of four credits each and practical courses of sixteen credits. The instructional components of the programme consists of self-learning materials, academic counselling, assignments audio-video programme, teleconferences, school-based activities, and face-to-face workshops (IGNOU, 2004). Although it is assumed that each of these instructional components does have an impact on the learning of the teacher trainees, there is hardly any empirical evidence in support of such an assumption. Of course, there have been studies of teacher trainees' feedback on the various components of the B.Ed programme offered through distance mode. Sharma and Singh (2001) found that reactions of the student teachers to a large extent were positive on the major components of the B.Ed programme. Sharma (2002) found that reactions of the student teachers on major components of the B.Ed programme were positive except interaction of students with peers as well as teacher educators, audio-video inputs, discussion of assignment questions by the resource persons, feedback on the assignments. Shukla (2002) found that student teachers rated IGNOU B. Ed programme more comprehensive and better than the conventional B. Ed programme. Rastogi and Sahare (2003) found both SIM and TCR strategy equally effective in raising level of knowledge of B.Ed students. Peshin (2007) found that the distance mode teacher education is as effective as the formal mode. The level of teaching competencies developed by both the modes is at par, but a significant section of teachers from both the modes need to strengthen their competencies. Although several studies have been conducted on different aspects of teacher education programmes through distance mode, no study has been undertaken to investigate the effect of face-to-face workshop on the achievement of distance student teachers undergoing B.Ed programme. Hence a research study is proposed with the following objectives.

Objectives of the Study

The following objectives are formulated for the study.

Main Objective

1) To study the effect of face-to-face workshop on the achievement of student teachers of B.Ed programme.

Minor Objectives

1) To study the effect of face-to-face workshop on the achievement of student teachers of IGNOU B.Ed programme with respect to their sex.

2) To study the effect of face-to-face workshop on the achievement of student teachers of IGNOU B.Ed programme with respect to their age.

3) To study the effect of face-to-face workshop on the achievement of student teachers of IGNOU B.Ed programme with respect to their educational background.

4) To study the effect of face-to-face workshop on the achievement of student teachers of IGNOU B.Ed programme with respect to their school background.

5) To study the effect of face-to-face workshop on the achievement of student teachers of IGNOU B.Ed programme with respect to their of teaching subject in the school.

Hypotheses of the Study

The following hypotheses are formulated to empirically validate the above objectives

1) There will be a significant difference between the mean scores of student teachers of IGNOU B.Ed programme in the pre-test and the post-test in general.

2) There will be a significant difference between the mean scores of student teachers of IGNOU B.Ed programme in the pre-test and the post-test with respect to their sex.

3) There will be a significant difference between the mean scores of student teachers of IGNOU B.Ed programme in the pre-test and the post-test with respect to their age.

4) There will be a significant difference between the mean scores of student teachers of B.Ed programme in the pre-test and the post-test with respect to their educational background.

5) There will be a significant difference between the mean scores of student teachers of IGNOU B.Ed programme in the pre-test and the post-test with respect to their school background.

6) There will be a significant difference between the mean scores of student teachers of IGNOU B.Ed programme in the pre-test and the post-test with respect of their teaching subject in the school.

Operational Definitions of the Terms

Face-to-Face Workshop

In B. Ed programme, there are two workshops of 12 day duration each (one in the 1st year and another in 2nd year) as part of the Course 382: Workshop-based Practicals which every student teacher has to successfully complete during the period of their registration in the programme.

Achievement

Student teachers' performance at three levels, namely knowledge, understating, and application on the several practical concepts which will be taught to them before they are asked to do practical activities on them during the workshop.

Student teachers

In-service school teachers who are enrolled in the two-year B. Ed programme of IGNOU.

B. Ed Programme

IGNOU's B. Ed programme is a two-year teacher education programme designed for graduate/post graduate in-service school teachers having two years' full' time teaching experience on temporary/permanent basis at Primary/Secondary/Senior Secondary level.

Delimitations of the Study

The Study will be delimited to 1st year workshop to be organized during 2009 at the IGNOU Programme Study Centre: 0735P, i.e. Jamia Millia Islamia, New Delhi. The study will also be delimited to the study of effect of face-to-face workshop on achievement of student teachers with the help of teacher-made achievement test.

Methodology of the Study

The methodology of the study comprises method of research, population, sample, tool, procedure of data collection, and procedure of data analysis.

Method of Research

In order to obtain empirically dependable answers to the research questions, and to test the formulated hypotheses, a pre-test and post-test single group experimental design will be adopted.

Population

The population of the study will be all student teachers enrolled in B.Ed Programme under Delhi Regional Centre-I during academic session 2009-10.

Sample

The sample of the study will consist of all 100 student teachers, allotted to B. Ed Programme study Centre: 0725, i. e. Jamia Millia Islamia, New Delhi during academic session 2009-10.

Tool

An achievement test comprising 32 items covering all the instructional components of the workshop will be developed. The test items will be on knowledge, understanding and application levels of Bloom's Taxonomy of Educational Objectives. The draft test will be perused by faculty members of School of Education, IGNOU and resource persons to be involved in the workshop for ensuring the content validity of the test. The achievement test will be used as both pre-test and post-test.

Procedure of Experimentation and Data Collection

The achievement test will be administered to the group of 100 students in the beginning of the workshop as pre-test. It will be followed by workshop activities to be conducted by resource persons. The major instructional skill components to be covered during the workshop are unit and lesson planning, teaching skills, alternative instructional methods, psychological testing, individual and group projects, guidance and counselling skills, skill of preparing a question paper, action research, etc. All sessions will be organized with conceptual presentations by the resource persons followed by individual and group activities, peer interaction and exposure to audio-video programmes. After the end of the workshop, the same test will be used as post-test.

Procedure of Data Analysis

The data to be collected from the pre-test and the post-test will be analyzed with the help of mean, standard error of mean difference (SEMD), and 't' test.

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Note: This proposal has been developed based on the paper, authored by N.K.Dash, titled "Learning gain from face-to-face workshop over self-instructional material: A Study, published in *Indian Journal of Open Learning*, 2005, 14(1), 47-57.

Guidelines for Dissertation Work of M.A. (Education) Programme

- A student will start dissertation work in the second year of the programme and submit the dissertation to the Regional Director of the Concerned Regional Centre before the second year Term-end Examination.
- The student has to carry out research work on a problem on any of the compulsory courses, the courses under specialized areas or any aspect of education related to the programme.
- The student has to choose a guide from the approved list of guides and prepare the research proposal under his/her supervision. He/she has to get the research proposal approved by the guide.
- Research proposal along with the filled-in proforma given in Appendix-IX should be submitted to the concerned Regional Director for approval.
- The Regional Director will send the proposal back to the students after getting it approved by an expert in Education.
- After completing the dissertation work, the student will submit two copies of dissertation to the Regional Director of the Concerned Regional Centre for evaluation.
- After evaluation of dissertation is completed, viva-voce will be conducted at the concerned Regional Centre.

Checklist for Submission of Dissertation

- The dissertation should be typed or word-processed in double space on single side, 12 pt. in A-4 size (29 × 20 cm) paper.
- The student should attach a copy of the approved project proposal while getting the copies bound.
- The cover and the first pages should have title of the study, name of the researcher, enrolment number, full address, name of the supervisor/guide etc. (please see specimen of cover page at Appendix-V).
- For fulfillment of the requirements of the Degree of Master of Arts (Education), a declaration from the student that the work is original and has not been submitted to IGNOU or any other university or institution, must also be included in his/her dissertation (please see format at Appendix- VI).
- A certificate from the supervisor stating that the Dissertation has been done under his/her supervision and is a genuine and original piece of work (please see format at Appendix-VII).
- Binding should be done with hard cover page.
- Two copies of dissertation reports should be mailed by registered post or submitted by hand to: The Regional Director of the concerned Regional Centre .
- The dissertation reports submitted to IGNOU will not be returned to the student.

Specimen of the Cover Page of Dissertation

TITLE OF THE STUDY

A Dissertation Submitted

to

Indira Gandhi National Open University

for the Degree of

MASTER OF ARTS (EDUCATION)

Name of the Researcher

Name of the Supervisor

Enrolment Number

(Month and Year of Submission)

School of Education
Indira Gandhi National Open University
Maidan Garhi
New Delhi-110068

DECLARATION

I hereby declare that the Dissertation entitled .....

.....

(Write the title in Block letters) submitted by me for the partial fulfillment of the M. A. (Education) to Indira Gandhi National Open University. (IGNOU), New Delhi is my original work and has not been submitted earlier to IGNOU or to any other institution for the fulfillment of the requirement for any course of study. I also declare that no chapter of this manuscript in whole or in part is lifted and incorporated in this report from any earlier work done by others or me.

Place:

Date:

Signature

Enrolment No.

Name

Address

CERTIFICATE

This is to certify that Mr./Miss/Mrs. .....
Student of M.A. (Education) from Indira Gandhi National Open University, New Delhi was working under my supervision and guidance for his/her Dissertation for the Course MESP-001. His/Her Dissertation entitled .....

.....

.....

which he/she is submitting, is his/her genuine and original work.

Place :

Signature

Date :

Name

Address of the Supervisor

A Sample of Table of Contents in Dissertation Report

Table of Contents

Chapter V

Summary and Conclusions

Brief restatement of the problem, objectives, hypotheses, delimitations, methodology of the study

- Major findings of the study
- Discussion of Results
- Implications and conclusions of the study
- Suggestions for further research

Bibliography

- Books
- Journals
- Dissertations/Thesis
- Reports

Appendices

- Approval of Dissertation Proposal
- Tools and techniques used
- Courses of study, if any
- Raw data (Lengthy and Complex not given in Chapter IV)
- Any new materials developed for research, e.g. PLM, SLM, CAI, etc.

Note: Please ensure that corresponding page numbers are given against the contents

School of Education
IGNOU, Maidan Garhi, New Delhi-110068

PROFORMA FOR APPROVAL OF M.A. (EDUCATION)
DISSERTATION PROPOSAL

Note: i) Please ensure that all entries of the proforma are correctly filled-in.

ii) The filled-in proforma along with the dissertation proposal should be submitted to the concerned Regional Director for approval.

Dissertation Proposal No. .....
(for office use only)

(To be filled in by the student)

Enrolment No.: .....

Study Centre: .....

Regional Centre:.....

E-mail: .....

Telephone No.: .....

1. Name and Address of the student .....
.....
.....

2. Title of the Dissertation .....

3. Name and Address of the Guide .....
.....
.....

.....
Signature of the Student

Date: .....

.....
Signature of the Guide

Date: .....

For Office Use Only

☐ Approved ☐ Not approved

(If not approved, please give suggestions for reformulating the proposal in the enclosed sheet)

.....
Signature, Designation, Stamp of the Dissertation Proposal Evaluator

Date: .....

Signature of the Regional Director
Date and Stamp:

Suggestions for Reformulating the Dissertation Proposal:

SOE-IGNOU/P.O.5 T/February, 2009