



## Importance and Necessity of Research in Education

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### ABSTRACT

Educational research is a more formal, focused and an intensive process of carrying out a scientific method of analysis. The main purpose of educational research is focused upon scientific investigation and provides solutions to the problems in the field of education. Research in education represents an activity, directed towards the development of an organized body of scientific knowledge about the events with which educators are concerned. Educational research is the part of behavioural sciences, in which, emphasis has been put upon understanding, explaining, predicting and to some degree controlling human behaviour. Research in education is use of the methods of scientific analysis to produce information, needed to make improvements in educational planning, decision making, teaching and learning, curriculum development, understanding of children and youth, use of instructional media, school organization and education management. Research is an imperative area in not just the field of education but in other fields as well. It purifies the workings and the lives of the individuals. It primarily focuses upon improving quality and is a search for knowledge. It shows how to make provision of solutions to problems in a scientific and methodical manner. It is a systematic effort to acquire new knowledge in all disciplines. The main purpose of this article is to understand the significance of research in education. Educational research is termed as providing solutions to any educational problem. The main areas that have been taken into account in this research paper include, types of research, significance of statistics in research, meaning and features of educational research, steps of research in education, types of educational research, benefits of research in education, challenges of research in education, implementation of research in education and ethical considerations of research.

**Key words:** Education, Information, Projects, Research, Researcher

### Introduction:

#### *Educational Research*

**Meaning** - Educational research refers to a systematic attempt to gain a better understanding of the educational process, generally with a view in improving its efficiency. It is an application of scientific method to the study of educational problems.

#### *Definitions –*

- ❖ **Good.** “Educational research is the study and investigation in the field of education.”
- ❖ **Munroe.** “The final purpose of educational research is to ascertain principles and develop procedures for use in the field of education.”
- ❖ **Mulay.** “Any systematic study designed to promote the development of education as a science can be considered educational research.”
- ❖ **Crawford.** “Educational research is a systematic and refined technique of thinking, using special tools in order to obtain a mere adequate solution of a problem.”
- ❖ **J. W. Best.** “Educational research is that activity which is directed towards development of a science of behaviour in educational situations. The ultimate aim of such a science is to provide knowledge that will permit the educator to achieve his goals by the most effective methods.”
- ❖ **W. M. Traverse.** “Educational research is that activity which is directed towards the development of science of behaviour in educational situations.”

#### *Characteristics of Educational Research*

- Educational research is directed towards the solution of a problem in the field of education. It may attempt to answer a question or to determine the relation between two or more variables.
- It emphasizes the development of generalizations, principles or theories that will be helpful in predicting future occurrences.

- Educational research usually goes beyond the specific objects, groups or situations investigated and infer characteristics of a target population from the sample observed.
- Educational research involves getting new data from primary or first-hand sources or using existing data for a new purpose.
- Educational research accepts only what can be verified by observation. Certain interesting questions do not tend themselves to research procedures.
- Although research activity may at times be somewhat random and unsystematic, it is more often characterized by carefully designed procedures, always applying rigorous analysis. Although trial and error are often involved, research is rarely a blind, shotgun investigation trying something to see what happens.
- Research strives to be objective and logical, applying every possible test to validate the procedures employed, the data collected and the conclusions reached. The researcher attempts to eliminate personal bias.
- Research requires expertise. The researcher knows what is already known about the problem and how others have investigated.
- Educational research involves the quest for answers to unsolved problems. Pushing back the frontiers of ignorance is its goal and originality is frequently the quality of a good research project.
- Educational research is based on insight and imagination. It needs the service of man who looks beyond the present.
- Educational research requires interdisciplinary approach. It is related to the study of complex relations about facts.
- Educational research is not so exact a research as physical science. In the latter we can control the events but in educational research it is not possible.
- Educational research has a great field. Educational psychology, educational philosophy, methodology, class organization and management, child development and other subjects are the fields of research in education.

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### Objectives

- To understand and know the need of research and its importance in education.
- To understand the various methods of carrying the research.
- To evaluate the effect of research in education.
- To project the probable benefits that may be derived by implementing research component in education.
- To evaluate the gains by implementing research in education system.

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### Need and importance

Research in education as in the other fields is essential for providing useful and dependable knowledge through which the process of education can be made more effective. There are various considerations which emphasize need for research in education (Best, 1998).

- ❖ Education has strong roots in the field like philosophy, history, economics, psychology and sociology. It is through an intensive process of scientific inquiry about the philosophical, historical, economics, psychological and sociological impact on various aspects of education that sound theories can be established.
- ❖ Education is considered as much a science as an art. As a science, it has a corpus of knowledge. Since education depends on a corpus of knowledge, there is need to add scientific knowledge to it for enrichment and improvement. As an art, education seeks to impart knowledge effectively. For example, 'How can the teacher play an effective role in the classroom and outside?' is a vital question before educationists. It needs careful research efforts to enhance teacher's effectiveness.
- ❖ The slogan of democratization of education resulted in the expansion of education. It has given rise to numerous problems like the problem of individual differences, expansion, buildings, discipline and so on. Solutions of such problems by trial and error or by experience from tradition and authority often yielded erroneous result. We need solutions based on research so that the coming generation is not left to the mercy of errors of outright sins of tradition, ignorance and prejudice (Boykin, 1972).
- ❖ There is a need for educational research because of the changing concept of education. The International Commission on the Development of Education, in its report "Learning To Be" (UNESCO 1972, p. 143) emphasizes: 'Education from now-on can no longer be defined in relation to a fixed content which has to be assimilated, but must be conceived of as a process in the human beings, who thereby learns to express himself, to communicate and to question the world, through his various experiences and increasingly - all the time - to fulfil himself. It has strong roots, not only in economics and sociology but also in the findings from psychological research which indicate that man is an unfinished being and can only fulfil himself through constant learning. If this is so, then education takes place at all ages of life, in all situations and circumstances of existence. It returns to its true nature, which is to be total and life long, and transcends the limits of institutions, programmes

and methods imposed on it down the centuries.’ In the context of above nature of education, the limits of educational research have to be extended from the formal and conventional modes of education to the non-formal and innovative systems based on ecological and cybernetic models (Bransford *et al.*, 2017).

- ❖ During the last two decades, great changes have taken place as a result of the rapid scientific and technological developments. Education has to play an important role so that we can accept the change in a smooth way. It can do so by bringing improvements in the existing curriculum, textbooks, methods of teaching and evaluation (Bulterman-Bos, 2008). Research in education has enabled substantial progress to be made in curriculum development and reform, educating slow learners, understanding the psychological traits of the physically challenged individuals and in adapting methods of instructions to the needs of individual learners. Research in education has rendered an imperative contribution in acquiring information regarding different cultures, norms and values. The individuals have made substantial contributions through research to their knowledge and generation of awareness, understanding administrative leadership and behaviour, group procedures, classroom atmosphere, interaction analysis, self-concept, levels of aspiration, deprivation and racism, educational inequality and the deprived, marginalized and socio-economically backward sections of the society. The need for research activities becomes imperative, which will support education to achieve its goals and objectives, rebuild confidence in public schools, adapt to cultural diversity, educate for self-identity and individual realization, re-establish faith in human, moral and democratic values, bring about changes in racial attitudes, achieve the goals of quality and relevance, and meet the challenges of the future world of accelerating scientific and technological change (Boykin, 1972).

**Forms of Research:** - Following are the types of research methods (Pramodini and Sophia, 2012):

- a) **Basic research:** A basic research definition is data collected to enhance knowledge. The main motivation is knowledge expansion. It is a non-commercial research that doesn't facilitate in creating or inventing anything. For example: an experiment to determine a simple fact.
- b) **Applied research:** Applied research focuses on analysing and solving real-life problems. This type refers to the study that helps solve practical problems using scientific methods. Studies play an important role in solving issues that impact the overall well-being of humans. For example: finding a specific cure for a disease.
- c) **Problem oriented research:** As the name suggests, problem-oriented research is conducted to understand the exact nature of a problem to find out relevant solutions. The term “problem” refers to multiple choices or issues when analysing a situation.
- d) **Problem solving research:** This type of research is conducted by companies to understand and resolve their own problems. The problem-solving method uses applied research to find solutions to the existing problems.
- e) **Qualitative research:** Qualitative research is a process that is about inquiry. It helps create in-depth understanding of problems or issues in their natural settings. This is a non-statistical method (Alexander and Dochy, 1995). Qualitative research is heavily dependent on the experience of the researchers and the questions used to probe the sample. The sample size is usually restricted to 6-10 people. Open-ended questions are asked in a manner that encourages answers that lead to another question or group of questions. The purpose of asking open-ended questions is to gather as much information as possible from the sample (Brownlee, 2001). The following are the methods used for qualitative research:
  - One-to-one interview
  - Focus groups
  - Ethnographic research
  - Content/Text Analysis
  - Case study research
- f) **Quantitative research:** Qualitative research is a structured way of collecting data and analysing it to draw conclusions. Unlike qualitative methods, this method uses a computational and statistical process to collect and analyse data. Quantitative data is all about numbers. Quantitative research involves a larger population - more people mean more data. With more data to analyse, you can obtain more accurate results. This method uses close-ended questions because the researchers are typically looking to gather statistical data. Online surveys, questionnaires, and polls are preferable data collection tools used in quantitative research. There are various methods of deploying surveys or questionnaires. Online surveys allow survey creators to reach large amounts of people or smaller focus groups for different types of research that meet different goals. Survey respondents can receive surveys on mobile phones, in emails, or can simply use the internet to access surveys (Hiebard, 1993).

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## Purpose of Research

There are three purposes of research:

- a) **Exploratory:** As the name suggests, exploratory research is conducted to explore a group of questions. The answers and analytics may not offer a final conclusion to the perceived problem. It is conducted to handle new problem areas which haven't been explored before. This exploratory process lays the foundation for more conclusive research and data collection.
- b) **Descriptive:** Descriptive research focuses on expanding knowledge on current issues through a process of data collection. Descriptive studies

are used to describe the behaviour of a sample population. In a descriptive study, only one variable is required to conduct the study. The three main purposes of descriptive research are describing, explaining, and validating the findings. For example, a study conducted to know if top-level management leaders in the 21st century possess the moral right to receive a huge sum of money from the company profit.

- c) **Explanatory:** Explanatory research or causal research is conducted to understand the impact of certain changes in existing standard procedures. Conducting experiments is the most popular form of casual research. For example, a study conducted to understand the effect of rebranding on customer loyalty (Tsai, 2002).

To understand the characteristic of research design using research purpose here is a comparative analysis:

	<b>Exploratory Research</b>	<b>Descriptive Research</b>	<b>Explanatory Research</b>
Research approach used	Unstructured	Structured	Highly structured
Research conducted through	Asking research questions	Asking research questions	By using research hypotheses.
When is it conducted?	Early stages of decision making	Later stages of decision making	Later stages of decision making

Research method is defined as the tools or instruments used to accomplish the goals and attributes of a study. Think of the methodology as a systematic process in which the tools or instruments will be employed. There is no use of a tool if it is not being used efficiently.

Research begins by asking the right questions and choosing an appropriate method to investigate the problem. After collecting answers to your questions, you can analyse the findings or observations to draw appropriate conclusions (Kothari, 2014).

When it comes to customers and market studies, the more thorough your questions, the better. By thoroughly collecting data from customers through surveys and questionnaires, you get important insights into brand perception and product needs. You can use this data to make smart decisions about your marketing strategies to position your business effectively.

## Research Methodology

Research methods are broadly classified as Qualitative and Quantitative. Both methods have distinctive properties and data collection methods (Kothari, 2014).

- i. **Qualitative Research Methods:** - Qualitative research is a method that collects data using conversational methods. Participants are asked open-ended questions. The responses collected are essentially non-numerical. This method not only helps a researcher understand what participants think but also why they think in a particular way. Types of qualitative methods include:
  - ❖ **One-to-one Interview:** This interview is conducted with one participant at a given point in time. One-to-one interviews need a researcher to prepare questions in advance. The researcher asks only the most important questions to the participant. This type of interview lasts anywhere between 20 minutes to half an hour. During this time the researcher collects as many meaningful answers as possible from the participants to draw inferences.
  - ❖ **Focus Groups:** Focus groups are small groups comprising of around 6-10 participants who are usually experts in the subject matter. A moderator is assigned to a focus group who facilitates the discussion amongst the group members. A moderator's experience in conducting the focus group plays an important role. An experienced moderator can probe the participants by asking the correct questions that will help them collect a sizable amount of information related to the research.
  - ❖ **Ethnographic Research:** Ethnographic research is an in-depth form of research where people are observed in their natural environment without This method is demanding due to the necessity of a researcher entering a natural environment of other people. Geographic locations can be a constraint as well. Instead of conducting interviews, a researcher experiences the normal setting and daily life of a group of people.
  - ❖ **Text Analysis:** Text analysis is a little different from other qualitative methods as it is used to analyse social constructs by decoding words through any available form of documentation. The researcher studies and understands the context in which the documents are written and then tries to draw meaningful inferences from it. Researchers today follow activities on a social media platform to try and understand patterns of thoughts.
  - ❖ **Case Study:** Case study research is used to study an organization or an entity. This method is one of the most valuable options for modern This type of research is used in fields like the education sector, philosophical studies, and psychological studies. This method involves a deep dive into on-going research and collecting data.
- ii. **Quantitative Research Methods:** - Quantitative methods deal with numbers and measurable forms. It uses a systematic way of investigating events or data. It is used to answer questions in terms of justifying relationships with measurable variables to explain, predict, or control a phenomenon. There are three methods that are often used by researchers:

- ❖ **Survey Research:** The ultimate goal of survey research is to learn about a large population by deploying a survey. Today, online surveys are popular as they are convenient and can be sent in an email or made available on the internet. In this method, a researcher designs a survey with the most relevant survey questions and distributes the survey. Once the researcher receives responses, they summarize them to tabulate meaningful findings and data.
- ❖ **Descriptive Research:** Descriptive research is a method which identifies the characteristics of an observed phenomenon and collects more information. This method is designed to depict the participants in a very systematic and accurate manner. In simple words, descriptive research is all about describing the phenomenon, observing it, and drawing conclusions from it.
- ❖ **Correlational Research:** Correlational research examines the relationship between two or more variables. Consider a researcher is studying a correlation between cancer and married women have a negative correlation with cancer. In this example, there are two variables: cancer and married women. When we say negative correlation, it means women who are married are less likely to develop cancer. However, it doesn't mean that marriage directly avoids cancer.

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## Steps in Educational Research

Since the educational research is the application of scientific method to the study of educational problems. The steps in educational research, therefore, are more or less identical to those of scientific method. Following are the steps generally found in educational research (Russell, 1962).

- I. **The research problem.** Educational research starts with the selection of a problem.

Following are the fields in which one may look for problems for research:

- The classroom, school, home, community and other agencies are the obvious sources.
- Social developments and technological changes are constantly bringing forth new opportunities for research.
- Records of previous research should also be consulted. This includes encyclopaedia of educational research, dissertations and similar publications.
- Classroom discussions, seminars and exchange of ideas with the faculty members and fellow scholars and students will suggest many stimulating problems to be solved.
- Consultation with an expert, researcher supervisor, researcher guide or a senior scholar will also be helpful.

- II. **Formulation of hypothesis.** Educational research should make the use of carefully formulated hypothesis. This may be formally stated or implied (Wilkinson and Bhandarkar, 1979).

**Hypothesis.** Hypothesis is the pre-assumptive statement of a proposition or a reasonable guess based upon the available evidences, which the researcher seeks to prove through his study.

- III. **Methods to be used.** The selection of research method to be used is of utmost importance in the research process. It refers to the general strategy followed in collecting and analysing the data necessary for solving the problem. The research methods are generally classified in 3 categories: (1) Historical, (2) Descriptive, and (3) experimental. The methods used in the study are decided by the nature of the problem and the type of data required for answering the questions relating to the problem.
- IV. **Data collection.** Whereas the research method describes the overall approach to the problem, this step is concerned with the procedures and techniques to be adopted for data collection. It refers to the nature of the sample to be chosen for study, and selection and development of data gathering devices such as tests, questionnaires, rating scales, interviews, observations, checklists and the like.
- V. **Analysis and interpretation of data.** Good research is characterized by the care taken in the analysis and interpretation of data. It includes the selection of appropriate quantitative and qualitative techniques to be used for processing the data collected for the study.
- VI. **Reporting the results.** This is the last and important step of the research process. It is characterized by carefully formulated inferences, conclusions or generalizations. The researcher must be able report his procedures, findings and conclusions with utmost objectivity to others who may be interested in his study and its results.

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## Challenges of Research in Education

The challenges of research in education have been stated as follows: (Pramodini & Sophia, 2012). The learning and teaching experience needs to be based upon research and evidence, but it is at the risk of being any one of theory, thought, philosophy, suitability and prejudice.

The main purpose of research in education should be to liberate, and encourage equality, egalitarianism and equality of opportunity. Ideology can be hazardous and precarious. Besides making provision of academic skills and contributing towards skills development and growth and progression of the students. Students are the future citizens of the country, youth can render an effective contribution towards the progression and development of the community and the nation, if they are adequately trained and development of skills takes place in an appropriate manner.

Teachers have a social responsibility to develop dynamic citizens by providing them efficient knowledge and information. It is an imperative role of the teacher to generate awareness among the individuals. Following a philosophical route limits choice, which is the opposite to the real purpose of education (Ghosh, 1982).

What is been taught in an age gone by new theories and technological advances have occurred, and are taking place. Basing one's practice solely on own learning experiences, without reflection, mean education runs the risk of being out-of-date, invalid and not being progressive.

Any single theory cannot function in seclusion. Learners and learning are complicated and success is influenced by a multitude of factors, social backgrounds, family backgrounds, personality, age, gender, location and so forth. Theories needs to be shared, tested and challenged to permit researchers to familiarize to suit local and personal environments.

Suitability and manageability are important. Teachers in schools and higher educational institutions are required to control the attitudes, behavioural traits and workings of the individuals. They are required to ensure that students have adequately mastered the research strategies that have been provided by them.

Learning new things and new ways of behaving can be uncomfortable, especially in the initial stage, therefore, it is vital to implement effective teaching-learning processes and ensure students have acquired efficient understanding. It is not enough to create a base of teaching and learning around convenience.

Research have been assisting to the individuals to understand what kind of strategy would be applicable in what kinds of situations, what are the short and long term inferences, provide an explanation and validation for decisions and actions, help to build a repertoire to help deal with the unanticipated, recognize problems, possess adequate knowledge, make improvements and so forth.

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### **Implementation of Research in Education**

The ways to implement research in education have been stated as follows: (Prמודینی & Sophia, 2012). The various forms of research should be suitable and acceptable to the policy makers, planners and implementers of policy.

There have been studies conducted on a large scale into pupil performance that can assist to recognize tendencies and enable educational outcomes to be related to the social and economic requirements. Policy makers want to see the large picture. On the other hand, practitioners are mainly interested in finding out the reasons that some techniques work and the others do not.

All professionals need to be able to have faith in the source of information and research ethics make provision of that declaration. The profession as a whole is required to access to the range of data and evidence types. The individuals, who are conducting research, need to possess efficient knowledge and information regarding various aspects involved.

These include, collection of data, organizing the data, analysing it and obtaining the research findings.

Teaching does not involve creative thinking and experimentation. Within the teaching processes, it is vital to make use of the methods and strategies that are required to make the teaching-learning processes effective.

The teachers and the educationists need to be aware of what works and why. The strategies should always be made use of that generates productive outcomes (John and James, 1986).

Research is primarily made use of in higher educational institutions, particularly when the individuals are working on Masters or Doctoral thesis. There are various types of research, including fundamental, applied, action, qualitative and quantitative.

Qualitative research is more interactive and it gets carried out through interviews and does not involve any calculations or numerical data. On the other hand, quantitative research involves numerical data and in this case, information is collected mainly through surveys.

The individuals are required to possess adequate information and knowledge regarding these types of research techniques. Whether a teacher's action leads to an enhanced pupil performance, increased motivation, commitment, better behaviour or not, but it will confidently reflect that research is more formal.

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### **Ethical Considerations of Research**

While conducting research, it is vital to take into account the ethical considerations. The researchers are required to adhere to the ethical code of conduct. The ethical considerations have been stated as follows:

While a researcher may have some requirements to his or her client in case of sponsored research, where the sponsoring agency has provided him or her, financial assistance for conducting research. The researcher has commitments to the users, the larger society, subjects, including sample and respondents and professional colleagues. The data should not be discarded that can lead to adverse conclusions and interpretations for the sponsoring organization.

The researcher should maintain stringent confidentiality about the information obtained from the respondents. No information about the personal details of the respondents should be exposed in any of the records, reports or to other individuals, without the respondent's consent.

The researcher should not make use of hidden cameras, microphones, tape-recorders or observers without the respondent's permission. In the same way, private correspondence should not be used without the consent of the respondents.

In an experimental study, when volunteers are used as subjects, the researcher should explain them the procedures completely, e.g. the experiment will go on for six months, along with the jeopardies involved and the demands that researchers would make upon the participants of the study, such as the subjects will be required to stay back for one hour after school hours and so forth.

If possible, the subjects should be informed about the purpose of the experiment or research. While dealing with school children, who are minors or in the case of mentally challenged students, the consent should be obtained from the parents or guardians. This phenomenon is known as informed consent.

The researcher should accept the fact that the subjects have the freedom to decline to contribute or to withdraw from the experiment. In field visits, refusals and negative responses are common; hence the researchers are required to be adequately prepared for the negative responses.

In order to ensure the inclusion of the subjects and continuance in the experiment, the researcher should never try to make unnecessary efforts giving encouraging treatment after the data has been collected. These efforts may include, additional marks in the school subjects, finances and so forth.

In an experimental research, which may have a temporary or permanent effect on the subjects, the researcher must take all precautions to protect the subjects from mental and physical harm, hazard, risks, stress, anxiety and pressure.

The researcher should make the data available to peers for examination. In some cases, the respondents may question the researchers behind the causes of collecting data from them. They may ask the purpose of the research study.

The researchers should provide the respondents adequate reasons regarding the purpose of study and collecting data from them. This is required for the experimental procedures as well as the findings of the study, if they so demand.

The researcher should give due credit to all those, who have been the sources of support and assistance within the research study, tool construction, data collection, data analysis or preparation of the research report. These individuals should be acknowledged and researchers need to pay them gratitude, especially the supervisors, under whom the research project has been implemented.

The researchers are required to assure the respondents that their responses will be kept in strict confidence. Only aggregate data will be made public and other personal information regarding them would not get disclosed. Due to disclosure of personal information, sometimes the respondents feel hesitant in expressing their responses.

In most cases, they require a letter from the institution or the department, with which the researcher is associated. When the respondents acquire familiarity regarding the background of the researchers, and the purpose of the study, then they usually agree to provide information.

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## Conclusion

The current education system needs a transformation and drastic changes to be incorporated in this context the present paper makes an attempt to sensitize the issue of the importance of the research in every sector of the education system. The adoption and implementation of research based education in primary and high schools, colleges, technical educational institutions like engineering, polytechnics and in medical education institutions will bring in lot of changes in the current curriculum, enhancing the thinking process leading to learn and visualize the facts in a different dimensions that focuses on leading the educational program towards attaining the required success, innovation, quality enhancement, truth finding, opportunity for growth, satisfy stakeholder's needs, eliminate flaws, continuous improvement, leading to international recognition. The research based education leads to innovation in education system. Overall it can be concluded that the implementation of the research based teaching learning will benefit both student community and society at large.

Research is an imperative aspect that is primarily implemented in higher educational institutions. When individuals are working on Masters or Doctoral thesis, they conduct research regarding various areas. It involves systematic steps and procedures and individuals are required to possess adequate knowledge regarding these, in order to carry out their research in a productive manner. In the field of education, research involves number of areas, these include, teaching-learning processes, instructional strategies, classroom environment, academic subjects, academic performance of the students, aptitude and proficiency on the part of the teachers, performance evaluation methods, extra-curricular activities, creative activities, socialization, anxiety and pressure concerning examinations and so forth. The types of research include, fundamental research, applied research, action research, quantitative research and qualitative research.

The main procedures that are required to be taken into consideration in research includes, formulating the research problem, setting objectives, collecting data, testing the hypothesis, conducting an analysis of the data, and interpreting the findings. In order to carry out these steps, it is vital to possess proficient knowledge, especially of SPSS to conduct the tests. Research is carried out by the teachers and educationists at all levels of education and not just higher educational institutions. It is conducted by making use of books, articles, journals, and internet. It helps in improving knowledge and information among the individuals. Field research involves collecting data from field visits. Researchers in this case, makes visits to various places or regions that may include schools, training centres and so forth to collect data on the basis of their research study.

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