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Grupo de capacitación e investigación pedagógica

Teaching research methodology

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CHAPTER 1:

Introduction

A research methodology is considered very important as it provides research legitimacy and scientifically sound findings (Abutabenjeh & Jaradat, 2018). Moreover, research methodology is also important as it has the capability to deliver a detailed plan that helps the researcher to keep the research on track along with making the entire process smooth, effective, and manageable. Furthermore, in the context of the development of the research, the researchers' method enables the reader to understand both the approaches and methods that are used to derive an effective conclusion regarding the overall research. The research methodology is categorized into two types such as qualitative research and quantitative research.

Qualitative research mainly deals with collecting and analyzing written and spoken words as well as textual data (Mohajan, 2018). Moreover, in the context of effective research methodology, qualitative research mainly focuses on body language as well as visual elements in order to create a detailed description of the researcher's observations. In qualitative research, the research methodology is mainly subjective and more time-consuming compared to quantitative research (Mohajan, 2018).

The researchers sometimes use the qualitative methodology in order to make the research exploratory. On the other hand, Boeren (2018) asserted that quantitative research is mainly used as it focuses on collecting, testing, and measuring numerical data. In order to analyze the data with the

help of quantitative research, statistical analysis and comparisons are mainly used. The research methodology in quantitative research is objective and it is often quicker as researchers use software programs to analyze the data.

Research has its special significance in resolving various operational and planning problems of business and industry. In this context, the research methodology showcases its significance as it helps in the proper investigation of the structure and formulation of efficient attributes for the development of the research in this contemporary business world (Pandey & Pandey, 2021).

1.1 Trends in qualitative research teaching

Gough & Lyons (2016) articulated that qualitative research has been conducted since the inception of psychology including some disciplinary methods such as introspection, clinical interviews, and close observation.

On the other hand, Pomerantsev & Rodionova (2022) opined that qualitative analysis is an essential part of analytical chemistry as it is in high demand in different fields such as food science, pharmaceutical chemistry, oil industry, and many more. The definition of qualitative analysis was mainly introduced to minimize the rate of biases in the research. KISHI *et al.* (2018) elicited that the latest trends in qualitative research are mainly used for the findings to design learning in the environment in the research. In the context of research technologies, the new trend of qualitative

approach is mainly focused on the specific case studies and mainly case study-based observation.

However, in the scenario of the trends in qualitative research and under the light of a logical positivism approach, the trends of qualitative research are mainly used to determine the universal norms that govern the behavior and society in the context of generalized findings. On the other hand, in the context of the focal point of the research, the qualitative research teaching focuses on observable behavior and is highly committed to the object in the context of the research; the qualitative research takes an objective stance and maintains its distance from the sample.

Though, KISHI *et al.* (2018) also articulated that with the help of qualitative research, the researcher gets involved in the setting of the research participants and aims to learn from the subject. Furthermore, at the same time, the researcher also becomes an instructor whose main aim is to raise critical consciousness through the research.

Similarly, Tuan & Grandi (2018) elicited that Qualitative research has undergone transformative changes, and traditionally qualitative data has been gained through interviews and focus groups and by considering the evolution of technology and the emergence of various research processes the qualitative research is fundamentally changing. In this context, Tuan & Grandi (2018) asserted that various strains have been explored due to the changing environment in qualitative research. Katsirikou & Skiadas (2012) elicited that trends in the qualitative research

are considered as the consecutive episodes in which episodes are depicted by a particular starting point along with a significant qualitative state.

Kovács*et al.* (2019) elicited that qualitative research has received much attention in the past 25 years and this context; numerous studies have been implemented in order to monitor the trends in qualitative research. Apart from that, qualitative studies are mainly dependent on various approaches to reality and epistemology.

However, as per the opinion of Kovács*et al.* (2019), both the approach of reality and epistemology help in the development of diverse methodological choices along with several variations in a single method. In the context of the trends, transparency in qualitative research has been considered highly significant as it showcases the goals, methods, and different procedures. Additionally, the above authors also articulated that the new trends of the qualitative research teaching highlight the essentiality of self-reflexivity along with indicating the necessity of the researchers' capability in order to illustrate the used paradigms properly along with making the research much more transparent.

Considering the vast demand for qualitative studies, Kovács*et al.* (2019) segregated the studies into four parts such as positivism, post-positivism, critical theory, and constructivism. As per the analysis, it has been observed that the positivism paradigm mainly utilizes hard science along with assessing one's objective reality and using manipulative methods.

Apart from that, the authors articulated that the post-positivism paradigm mainly signifies one's real reality but its nature is imperfect. The methodology of the significant paradigm stresses hypothesis falsification. Kovácset al. (2019) also opined that critical theory mainly highlights the virtual reality which gets manipulated as well as shaped by social, cultural, ethical, and gender evaluations. Simultaneously, constructivism signifies that reality is mainly developed for the purpose of understanding the local and specific perspectives of the individuals in the context of subjective interpretations.

Del Rio Carral &Tseliou (2019) elucidated that in social research, qualitative research mainly constructs lively and consistent development along with the inclusion of various epistemological and methodological approaches. In the context of teaching, qualitative research approaches are partly manipulated by social constructionist, pragmatic and structural approaches.

Moreover, in the views of Del Rio Carral &Tseliou (2019), qualitative research has become institutionalized by the proper establishment of various scientific associations along with the foundation of different research journals in order to establish a particular methodological innovation. On the other hand, Perry, Rahim & Davis (2018) elicited that qualitative research is mainly used in order to examine the factors that help a researcher in order to develop sustained research from start-up to the growth stage. Apart from that, it has been also articulated by the authors

that the qualitative method has the capability to gain a clear understanding of the living experiences of the participants. Furthermore, in the context of the recent trends, Perry, Rahim & Davis (2018) opined that the qualitative approach of research focuses on in-depth involvement by the researcher with each participant to analyze the unique perspectives.

Research can be specified as the development of new as well as modern knowledge and the utilization of existing knowledge within a creative and new concept to generate new methods, understanding, and concepts. Research also helps to analyze and synthesize any previous research in order to extent that leads to creative and new outcomes.

As per the interpretation of Ramakrishna (2019), the aspiring researchers follow the research opportunities in order to diversify their “national research institutions, higher education institutions”, as well as companies. In addition to this, Ramakrishna (2019) has illustrated those national institutions, as well as companies, follow mission-oriented research.

On the other hand, the researchers also pursue the research through properly guided research. In addition to this, the meaning of a research pursuit in academic researchers within "higher education institutions" is diverse as well as broadly varying. Though, it has also been identified that less than only 10% of “total higher education institutions” globally deliver a beneficial environment in order to pursue research (Ramakrishna, 2019).

However, the academic Progression in the “world-class universities” as well as at that university which competing as well as aspiring for being recognized hinges on research publications as well as impact.

Nevertheless, Rudd et al. (2019) has illustrated that time in research portrays a precious commodity. Along with this, research generated for company helps researchers to portray that time is endless as well as constantly flowing, pervasive, as well as serving as a medium through which each of the moments which comprise life occurs.

Time in a research paper helps researchers to understand that maintaining time helps as well as create a person's specific history, and narrative, and makes things inherently. In accordance with the opinion of Zwicky (2019), an experience of research meaning introduces various epistemology, arguing in order to new grammar in thought, as well as a new process of understanding the connection of a human's intelligence level into the globe. The researcher gets involved with psychology, philosophy, literature, music, fine arts, as well as environmental studies within a profound process. Along with this, the research of a paper also provides an experience of the meaning that can grow the interest of a reader that reviews the question in any topic meaning as well as its interrelation for the true human expression.

The research process is mainly defined as "careful consideration of study" that represents particular concern on scientific methods. In this context, it can be stated that "in international publishing, many authors are

rather tempted to balance the recognition of shortcomings and study limitations with the risk of having their paper rejected".

Inductive research methods mainly analyze the perceived event. Instead, deductive methods mainly concentrate to corroborate the perceived event. As per the interpretation of Armat et al. (2018), it can be identified that "inductive or deductive approaches or modes of reasoning in the process of qualitative data analysis". The research process mainly pays attention to a systematic approach in order to collect accurate data. In this context, action research showcases a significant role to solve conflict situations and aiding to enhance professional practices. Corresponding to opinion of Gunbayi (2020), "Action research is a research strategy that combines research with action and participation in the field". Exploratory, Descriptive, and Explanatory are the core purpose of research. Accuracy is considered the most crucial aspect of the research process that depicts a major role to promote a "controlled environment to collect data". On the other hand, mixed methods, qualitative, and quantitative are considered fundamental approaches to the research process.

Nevertheless, Bahromov (2022) illustrated that psychologists disagree on the concept of meaning in research. Along with this, it has been addressed that the motive, as well as the meaning of research, is usually increasing for academic as well as professional career needs. Through research from many scientific resources, the research need can be interpreted such like a trait that has the efficiency to enhance a person into

action as well as activity. Though, a need for research also motivates an individual to get active. However, it has also been addressed that active behavior is hidden in research as per the basis for requirements, and proper research directs an individual to understand their potential.

As per the scholarly article by Liu, Seo & Byun (2020), it can be stated that "Literature Review can help the researchers to analyze literature, data, and information with the specific conditions, and often used in the research field of social sciences". In this context, qualitative research depicts a major role to capture essential data by utilizing conversational methods. Instead, quantitative research methods mainly concentrate on dealing with measurable forms. In this context, Aspers & Corte (2021) stated that "qualitative research is a process of naturalistic inquiry that seeks an in-depth understanding of social phenomena within their natural setting". Several approaches in the research process showcase a crucial role in fostering analytical skills and critical thinking through the procedure of hands-on learning. In this context, "Identifying the issue, Reviewing the literature, setting research questions, objectives, and hypotheses, Choosing the study design, deciding on the sample design, collecting data, Processing and analyzing data, and Writing the report" are the fundamental processes of research.

Apart from that, choosing the particular research area, formulating, regulating the literature review, identifying the data collection method, data analysis, gathering primary data, and pointing out the conclusion are the

major processes of research. On the other hand, Pramodini (2022), stated that "An evaluation of education research, with the general aim of systematically, improving an academic body of knowledge may deficits in systems be highlighted by well-designed research".

Selecting a research area is the major step of the research process that assists in "having the potential to contribute to the achievement of the career objectives" of individuals. Apart from that, "Formulating research aim and objectives" is considered another appropriate manner and also considered an essential aspect of the research process that showcases a significant role to determine the depth, scope, and entire direction of the specific research.

1.2 Historical Trends in Qualitative Research Methods

Sherif (2018) has stated that qualitative research has been astonished by a group of market researchers to define the legitimacy of the society based on Qualitative Inquiry in Psychology (SQIP). It is a recognized form of research method which includes different variants of statistics by providing different values across the market. Thus, in order to conduct the study, Association for Qualitative Research (AQR) has conducted different activities derived from the market situation obtained as well as through exchanging dialogues between people. Along with the evolving phenomena, the use of qualitative research has evolved into three distinct versions

including, audit trail, interviewer/moderating individual, and seeking confirmation of knowledge-based advice. It has been seen that, in practice, qualitative research has a neat boundary that helps to strongly advocate differing research traditions by acknowledging the artificiality of division. This research method greatly maintained a focus on improving the delivery of the products for their clients rather than focusing on the methodological diversity. KISHI et al. (2018) have depicted that identification of the trends in the qualitative study has some subjective areas, which are divided into four categories known as primary, secondary, or preschool education, higher education, adult education, and other.

1.3 Primary, Secondary, or Preschool Education about the qualitative research

Turner & Theilking (2019) have stated that in the early stages of the 20th century, it has been observed that Preschool children contain a natural tendency to discover and learn from their activities. Established on these active learning processes they are able to deliver the opportunity to make decisions through self-regulation by extending their mental skills through complicated instructions. This method and features of instructional strategies have significantly proven to have a tendency to use a technique, which is some attributes of qualitative data which they are being collected

through different descriptive studies. As well, the educational environment is one of the rich learning processes which develop the skills of children that are able to construct their learning approaches. As well as, in order to understand this, researchers have also done a qualitative test in this through in-depth analysis of a situation of a preschool event. Data has been collected in this research process thoroughly using a semi-structured interview which gathers data regarding complex personal and emotional aspects by observing instant feedback to responses. The research has been done derived from a group of 30 students attending the event among them 80% (24 students) are female and 20% (6 students) are male. Researchers have used a criterion sampling method to collect data which is also known as the purposeful sampling method (Pekdogan & Kanak, 2016).

Porter, Pearson & Watson (2021) have stated that through the development of the sense of qualitative study among the primary students developed the knowledge of persuasiveness through different randomized trials and longitudinal studies. Through different types of childhood development experiences during the time of conducting school studies. Several primary schools have adopted evidence-informed policies to establish a "gold standard" through producing knowledge. This has been done by improving the pressure on the development of reporting and accountability skills among the students. This helps to develop coordinating mechanisms among the students which are known as a curriculum framework that helps to determine the elements of preschool quality. This helps to develop the community level of understanding among the students

which helps to develop outreach practices and governance arrangements. As articulated by Yayukand & As'ari (2019), understanding of cross-country comparative study is one the effective understanding, which is done through different program evaluations of qualitative components. This helps to make understand local or national implementation issues through evaluation of policy flaws as well as helps to maintain a public/participant engagement through different qualitative components of evaluations. This helps to reinforce the initial stages of qualitative works through a systematic assessment, which is strongly associated with a better outcome of the research conducted by the students.

In the opinion of Umanailo et al. (2019), it has been also identified that the promotion of understanding of qualitative study among the primary students has witnessed different types of challenges. This is associated with the establishment of coordination of the children through national agendas which helps to bring together different education, personal health, family, and other community policies. In association with this, the establishment of parent and community engagement in ECEC is another major issue that has been witnessed. This includes increasing awareness of parents about the necessity of developing qualitative knowledge among the students which resulted in dysfunctional communities while adopting the skills. In addition to this, the parents have resulted in the development of a stimulating and supporting environment for the young children. As well as, the development of strategic focus among the children is one of the major challenges which lacks in the areas of

teaching professionals and formal programs. Due to these issues, major skill gaps in the development of qualitative skills among the students of primary school are still present. This disrupted the momentum among the students about learning the skills which disrupted the workforce quality and professional development.

1.4 The effects of qualitative data on Adult Education through integrating the learning of Total Survey Error

The qualitative study is also conducted to understand the adult learning processes by dividing it into two broad categories: among this, the students belong from any specific occupation as well as other studies. This helps to define the role of evidence-based education policy-making on the development of skills among the students. It has been seen that some of the policies of learning have sometimes resulted in a gap in expanding a traditional focus through the system of initial education. Thus, a lack of educational activities embeds issues with employment, occupational career, and leisure time activities among adult students. Based on these issues, a survey and monitoring are done on adult education and training (AET) which is known as an organized method for integrating learning among the adults. These organizations have developed an understanding of Total Survey Error approaches to defining the quality assessment paradigm of surveys which is known as content or process-related errors in the survey processes. This allows a systematic deviation of a measure by using a true

population value by emphasizing sources of errors and offering typologies. Based on the TSE paradigm adults are able to develop a colloquial sense which helps to deliver inherent sense towards the survey processes.

As articulated by Pollock & Berge (2018), systematic errors are one of the prior terms in the field of qualitative method which is associated with the errors of measurement, as well as inference of process-based survey statistics. These errors consist of coverage error, sampling error, and non-response errors in different qualitative studies, which is significantly important for emphasizing the quality of any qualitative study. As per the study of KISHI et al. (2018), the participants in the study involved educators, cleaning workers, white-collar workers, white-collar workers, nurses, workshop practitioners, and nurses, workshop practitioners. Developmental sense of these errors includes different types of psychometric measurement theories such as personality tests and aptitude tests. This includes the analysis of errors in data processing which helps to develop AET statistics by highlighting the quality of measurement. This helps to develop two standards to identify the errors, which helps to define the error sources through the use of the data source itself or via quality reports through documentation processes. This helps to process bias-related errors which is much more convenient than the variance-related errors with an understanding of the natural constituent. Whereas in contrast, Story & Tait (2019) has contradicted that sometimes total survey errors are not well defined and lack the constituent elements.

That analysis of relatively minor alterations is tough to be done. This is difficult to analyze derived from traditional sample survey design as these have major types of sampling variance at the time of their research. On the other hand, using probability sample surveys can also be done to measure a significant alteration to identify total survey errors, which can be done through analysis of the population, sampling size, access responding units, and operationalizing constructs which is one of the common methods for obtaining a response from the measurement.

1.5 Steps and scope of research

The use of qualitative research helps to answer different questions through different criticism and by accounting for the empathy of the research participants. This maintains greater visibility around the research processes as well as, helps to unpick mechanisms that use different types of variables. In addition, this helps to produce diagrams in order to demonstrate the distribution of the strengths associated with the different points of the research topic. Based on the above discussion it has been identified that prescribing different social needs during the time of conducting research studies helps to identify social behaviors among different people as well as their practical, and emotional needs. As well as, through this type of research, researchers are able to conduct non-statutory

or voluntary activities which are most valuable for the development of means of new concepts. Payne *et al.* (2020) have stated that the process of data collection of the research can be done through a purposively sampled which helps to collect data through an initial consultation, which conduction of the study can be done through a realistic perspective.

This is based on a deeper mechanism of operating systems as well as an interpretive phenomenological analysis by the involvement of the facts collected from different participants. This provides chances for researchers to interpret their accounts derived from the sound knowledge of reality and this leads authors to understand their experiences.

Through these methods, authors are able to understand different entities such as their barriers and facilitators while presenting the situation. Based on this, data can be evaluated through the use of reading entire transcripts, thematic coding, secondary coding, and theme generation. Along with this, the research process is based on different variables in terms of categorical or nominal, which helps to describe hard to quantifiable studies in a simple manner. Through the use of a variety of methods such as intensive interviews or in-depth analysis of historical methods, comprehensive accounting of some information can be done in these research processes.

Instead, Aspers & Corte (2019) have exhibited that the use of qualitative methods in some of the regions resulted in inherently unscientific results which are determined in an intrinsically less precise

outcome. Thus the research is more prone to subjective analysis and leads to a biased result, although in terms of ethnographic fields this type of study can deliver more accurate results than quantitative studies. Thus, as per the view of the author, qualitative research tends to direct both the unsuccessfully and unnecessarily emulation of quantitative standards. Thus researchers are not able to understand the nuances that underlie this hamper the achievement of descriptive distinctions. As well as, some of the qualitative studies failed to demonstrate normative statements from different observational studies that execution of the facts related to the scientific approaches to societal change cannot be devised through the analysis operations.

Based on these assumptions, it can be established that there are some positive possibilities as well as challenges of qualitative studies, derived from both the perspective of researchers and the authors about understanding the concepts. As well as what kind of trade-offs they might take themselves while delivering the answers. Established on the statement conduction of the qualitative study might be done which helps to deliver information derived from the decision of participants. Although to some extent this type of study is very effective to understand real-life phenomena in a greater manner, which helps to provide outcomes by using logical behaviors of different people. Based on this, an analysis of the study needs to be done derived from interpretative science rather than focusing on the subjective meaning of the topics.

A research paper is segmented into six key parts in most cases that include an introduction, a literature review, a methodology, findings, analysis-and-synthesis, and conclusion-and-recommendations. The introduction chapter provides the significance of the research and a basic idea of the key components that will be addressed throughout the paper. Accordingly, a problem statement defining the issue that the researcher would assess is defined followed by an appropriate statement of purpose so that the key objective to be expected at a conclusion is clear to readers.

Besides objectives, at times the hypotheses and assumptions are also added. As per Figge (2018), the extensiveness of this chapter is essential as it sets a stage for readers to understand the context of the dissertation. However, a concise and clear presentation of objectives is a quality maker for this chapter. Lukenchuk (2017) argues that the purpose of this chapter may be undermined if the researcher fails to establish the relationship between the purpose and the proposed problem.

The introduction is followed by the literature review that situates the study of the dissertation in the context of scholarly articles or previous research corresponding to the topic. The segment of the paper is associated with the scope and research questions based on available literature. It reviews the primary sources that comprise empirical studies via scholarly publications and journals and a majority of secondary articles. It is logically organized from a broad theme to a narrow one.

According to Galvan & Galvan (2017), a thoughtful and comprehensive selection of materials and finding the gaps, or shortcomings of the literature through comparison of the material from authors' perspectives serves as a quality marker for this chapter. Demonstration of a critical perspective is the key element or essence of the chapter. Furthermore, a conceptual framework that depicts the relationship between research, theory, and experience providing a theoretical basis for the study development is also a crucial element of literature review.

The next chapter is the methodology chapter which provides a detailed explanation of the designs, procedures, and aspects of the research. The research approach describes the paradigm and methodology along with their rationale regarding their suitability for the research purpose (Clark & Bryman, 2019). The research setting provides the issues and background of the problem. The research sample is used to elaborate on the participants for gathering data sources for the research. It is followed by the justification of data collection and analysis methods such as primary or secondary data collection and qualitative or quantitative analysis. The quality of this chapter is enhanced by providing the criteria for the researcher's credibility regarding the ethical considerations of the study and also outlining its limitations.

The findings chapter organizes the research's key findings inclusive of relevant presentation of the quantitative or statistical and narrative or qualitative data. Besides explanatory texts, the chapter can be arranged

suitably using tables to increase its visual attraction. Headings that depict the themes of the findings add to the vitality of the chapter. According to Storey & Hesbol (2016), the findings chapter forms the foundation for the interpretation, conclusion, and recommendations that appear in the following chapters. Quality markets for this essential chapter include clear presentation, use of graphs, and speculation that is free from any bias and relates specifically to the genre of the study. Though, errors such as manipulations to fit the findings to the research expectations disrupt this chapter's quality.

Analysis-and-synthesis, as the term signifies, is associated with discussion of the results corresponding to the research questions formed, critical literature review, conceptual framework, and findings. Finding themes or common patterns from findings as well as demonstrating the capability to depict the inconsistencies among the data sets is the key essence of the chapter. As per Bloomberg & Volpe (2018), there is no defined pattern of presenting an interpreted data however, presentation of interpretation in a systematic fashion and clear depiction of the way each interpretation links to the research question or conceptual framework add to the chapter's quality.

Finally, the conclusion chapter reflects the results drawn from the overall study. Mentioning recommendations for further research and limitations of the current research enhance the quality of the conclusion chapter. Though, over-generalization of the significance may hamper the

value of this chapter. Oftentimes, an epilogue may be added at the end of the dissertation reflecting on the researcher's efforts and learning during the entire process.

1.6 The Scientific Method, Aims, Characteristics, and Scientific Activity

Research is the combination of those terms, which imply a process of systemic approaches, considered Philosophy, including verified procedures, particular practices, and their working principles, based on the reliability and nature of the impartial work with a meaningful purpose. After researching various topics in 'Research', the researcher came up with a critical examination of the usefulness of the Research Methodology. The researcher describes the purpose, characteristics, and scientific method of research established on some evidence and critiques in detail.

The scientific method of research can be defined based on the ability of the logical thinking process which can be concluded after following multiple steps to increase sufficient knowledge across the Globe. The process is focused mainly on the way of investigating evidence that concludes the research because without a proper strategy and method, it is quite impossible for a researcher to get to know the nature and required information of research. The method is called scientific as it is established on some scientific research and activities (Newman & Gough, 2020).

Research that is established on three fundamental steps can be concluded scientific research, Categorization, and Explanation of data. These scientific methods help to validate a conclusion corresponding with their verifiability of information. The researcher argued on some evidence that the process of systemic observations does not follow a particular path of investigation as they follow only the perceptive facts but he also focused on the desires and reliability of the conclusions. There are some other arguments are there in the research such as the Scientific method mainly works on groups like a university but is not focused on the independent fact of thoughts. It can help to predict the accuracy of research. Also, the scientific method follows some factual evidence with relevant information and focuses on the commitment of the purpose of research with moral balance, and the notion of the logical reasoning process (Whicher, Philbin & Aronson, 2018).

Here in the research researcher highlighted the two ways of the logical reasoning process Induction and Deduction. In the induction method, research, and the scientific activities based on the research, the researcher concludes an inference, Based upon his study of individual instances and also performs a particular observation on every single point of the collected data. It means depending on the data collection the researcher can move to the next step which is directed to Generalization.

Though there is some condition that a researcher must have to follow, like, the accuracy of data, their findings must represent all

perspective of their research and there should be enough evidence and instances. And the final words should be relevant to the research. Here also induction method can be decided in two approaches, one is Enumerative and the other is Analytic. In the Enumerative type, the researcher starts with a definition of the particular topic relevant to research, after that he has to formulate an assumption, depending on the cases which he studied. If it is found that the hypothesis disapproves the facts, the research should be redefined in that case. And the process goes on until it touches the accuracy level (Pandey & Pandey, 2021).

The other method is deduction; deduction can be defined as the opposite of induction. Here the researcher focuses on verification of the research from the conclusion level to the specific case. This is also bounded by some steps which are the major and minor premise and inference. Major premises are mainly established on the previous assumptions whereas minor premises showed a specific part of the major premises. And when both of these processes combine, the conclusion can be drawn by the researcher. This process helps to find out a solution but is not directed to innovating a new concept. In deduction there are some essential conditions such as the assumptions should be correct and Based upon the context of the said research (Kumar, 2018).

Usually, researchers conclude that defining a problem with appropriate assumptions on the relevant topic and analysis of individual

data helps a researcher to draw a conclusion which is the main fundamental of the scientific method of research and scientific activities.

1.7 Aims of Research and Scientific Activity

The main purpose of the research is to find the authenticity of research which is concluded based on some systematic methods and applications of some factual data. They are as follows:

Development of Superior Perception of the topic: The researcher noticed the perception and familiarity of the research topic as it is focused on every individual point regarding the topic. The main purpose is to highlight every feature with specified analysis and depict all the aspects properly. The researchers termed this method a fact-finding method (Cr, 2020).

Systemic Strategy and Formation: Research methodology focuses on the process of completeness of research. The implementation of various tools, the methods that are used to conclude a solution and the process of accumulating and analyzing data are considered the main pillar of research (Nilholm et al., 2021).

No Compromise with the Quality of Research: A research paper is done Based upon the information collected from reliable sources and their validation, which makes a research quality to its maximum level.

The researcher can find out easily the authentic sources and data which further helps them to conclude some other research.

Directed to get Greater Solutions: Research methodology aims at finding different data which can solve the hurdles related to research easily and helps to execute a better understanding of all the topics and cases to identify the problems and solutions (Sakyi, Musona, & Mweshi, 2020).

Helps in Decision-Making: Research Methodology helps in supporting the management-related issues and plays an important role to generate a new concept of research. The methods help the manager be skilled enough to take prompt decisions.

Enhancement in Logical Ability: Logical thinking can be boosted with the help of research methodologies. As the process mainly gives insight into the facts in detail with an acute analysis of every data, it helps a researcher to think more logically and also in a broad spectrum. Scientific activity is defined as the activities established on the interpretations of some beliefs which can do mastery over the researcher's mind. Mainly it helps to grow and create specific questions related to research and gives a direction to find the answer in an independent systemic way.

1.8 Characteristics of Research and Scientific Activity

From the previous data of research, it is proved that research mainly focuses on 4 steps Questions, Assumptions, Analysis of Data, and finding the appropriate Answer to the said question. So basically, the methods refer to the knowledge which is embraced, Based upon various facts. A well-known researcher must have the qualities as follows:

Deliberate: A researcher has to be conscious of his work. The researcher has to gain knowledge about the purpose, and objective of the research. The research which contains a clear thought of the objective and purposes can easily project towards the final goal. There should be a clear idea in the researcher's mind about the differentiation of the initial point and final destination. Scientific research depicts the ability to embrace factual data and requires all kinds of reflection regarding the cultures, beliefs, and values of their research (Snyder, 2019).

Properly Managed: In the matter of management, this methodology helps to do the research in a controlled way which is easier to conduct other than some specific science-related research. For example, if it is done on some practical on anthropology where the factors are independent, there might grow an issue to control those (Bairagi & Munot, 2019). The various factors of the human body can't be controlled easily. In

social science, it is hard to control meticulous factors whereas pure science plays the opposite role.

Diligent: The whole research process must be done attentively with extra care. The way of conducting the research should be accurate, topic-related, and advocated. The levels of research can vary from person to person but there should be a standard level where every research can be acceptable at that point.

Comprehensive: The process of research should be comprehensive. As the researcher has to follow consecutive facts and data, their work should be comprehensive otherwise they won't be able to reach the accurate destination (Rinjit, 2020).

Verifiable: Good research is examined based on validity and verification. Based upon these two points a conclusion is drawn. Sometimes poor reliability makes research of inferior quality; in that case, the researcher should give preference to reliability more than validity (Kanu, 2019).

Accuracy: The researcher finds that research established on scientific activity has limited knowledge regarding the process, for example, if a doctor examined a patient who has got a fever without a thermometer, he never concludes the exact value or level of fever. But if he uses the thermometer, he can conclude exact data of the fever of the patient. This shows that the accuracy of data makes research more trustable, and lessens

the probability of unjustified conclusions in research (Waring, Hedges, & Ashley, 2021).

Some characteristics exist derived from which a research paper can be utilized at its maximum level, conceptualization, critical analysis, accuracy, abstraction, and predictability make research well-performed. The researcher uses 5 sense organs of the human body to evaluate, examine and criticize all the data from its root level so that research reflects the best quality. From the researcher's point of view, one can make his research of its premium quality, if he maintains the fundamentals of research.

CHAPTER 2:

Fundamentals of Research

Research is always considered a wide term and is prevalent in almost every area and department of any sort of investigation and knowledge. Often considered as a scientific procedure of investigations that are thorough and systematic in nature, research is usually taken as a field of knowledge to reveal some of the hidden facts involved or can be used in establishing many principles by observation, theorization, and experience and ultimately paves a way in order to attain and achieve many objectives and goals.

In almost every field or area of subject matter, utility and knowledge, it might be observed the usage and conduct of research. There is always a variation in the approaches, processes, and procedures of research depending upon the objectives of the research, the study purpose, the pattern of people and their psychology under investigation, the production outputs, the desired or anticipated result, the funds available for the entire process, the degree of efficiency of the personnel involved, time and equipment (Villarino, 2020). It can also be portrayed as an activity that paves a path to generate new facts and information which helps in assisting and verifying and tallying with the existing knowledge and information and questioning them to get a vivid picture of clearance and clarity (Majid, 2018). Research is often looked upon as a continuous and subconscious activity that provides aid in critical assessment in a systematic approach to attain the desired objective.

2.1 Meaning of Research

In simpler words, research is a process of finding out and discovering new information. If the research is segmented into two parts can be observed two aspects- re which means again and search which means to find thus establishing the fact that there is a continuous activity of looking into an aspect repeatedly till an answer or objective is attained which satisfies the questions. Research is always undertaken by creating a framework under the cover of certain prescribed philosophies which can be depicted as a proper discipline under which the training has been made with a specific number of the persons involved and the constraint of time (Majid, 2018).

It is also to be noted that research is also bounded by only valid and reliable methods, procedures, and techniques that are unbiased in nature and each one of them must be drawing conclusions or result-driven. Strict monitoring must be made to ensure that the person who is conducting the research must not change or not take any attempt to change the involved procedures according to his or her known facts or information. Research can be portrayed as a structured inquiry that is pre-arranged under systematic and scientific observation after classified and interpreted data which is formal in nature. A thing to be noted is that the method used for finding the results of attaining the objectives must have the potential to generate repetitive results whenever the conditions are similar which will prove the scientific and systematic nature of that method in the true sense

(Nayak & Singh, 2021). Whatever the outcomes of the results might be, they must not stick themselves in only one or particular situation only but it must be prevalent and useable in solving comparable issues. Research is often depicted as a process that is very much creative in nature to get a better understanding and a well-highlighted picture of various sorts of issues involved in economy, culture, society, and even also in mankind and hence a development mindset is to be followed for the benefit of the public. Research is often looked upon as a continuous and subconscious activity that provides aid in critical assessment in a systematic approach to attain the desired objective.

Good quality research is when the purpose or the objective of the research is clearly defined and well depicted and the common aspects of the methods involved must bring clarity to everybody's thinking for better understandability. The characteristics of research involve credibility, reliability, accuracy, analytical, systematic, controlled, generalized, rigorous, validity, empirical, relevant, justified, and employed hypotheses (Villarino, 2020). The research is categorized as fundamental research and decisional research. A broad definition of research is given by Martyn Shuttleworth –" In the broadest sense of the word, the definition of research includes any gathering of data, information, and facts for the advancement of knowledge". Another definition of research is given by Creswell who states that – "Research is a process of steps used to collect and analyze information to increase our understanding of a topic or issue." (Islam & Samsudin, 2020).

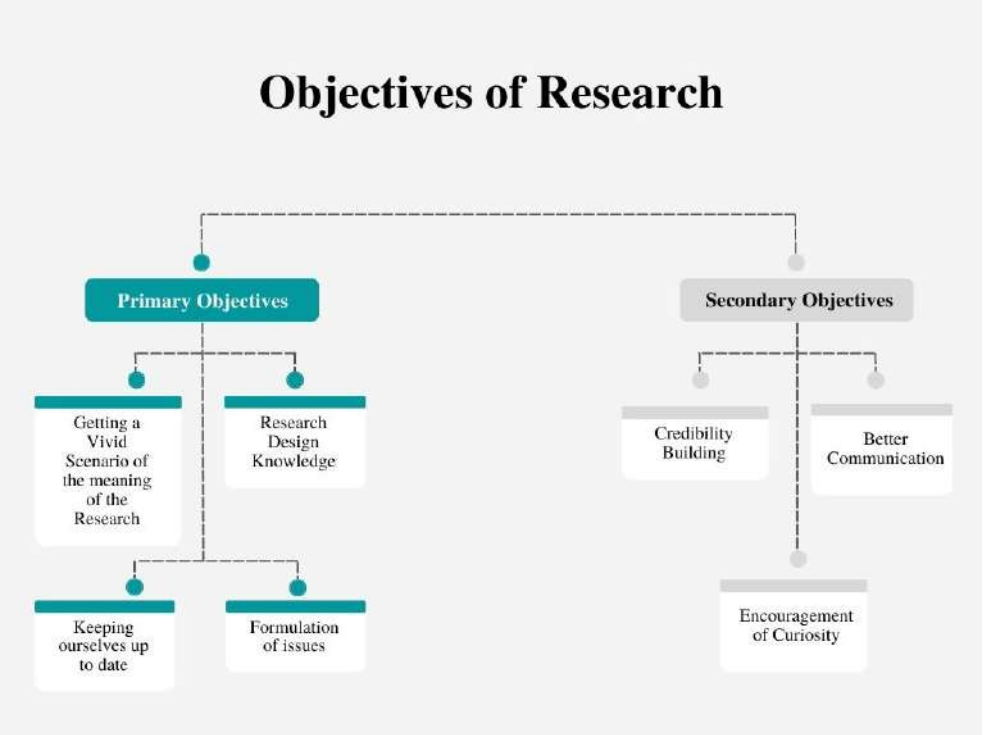
2.2 Objectives of Research

The importance of research objectives is that it provides direction clearly in a study. When a researcher describes the objectives, the scope is also defined. There are further processes that are implemented like a secondary and primary collection of data, analysis of data, drawing interpretation, research conclusion, and many more. All these processes in research rely on objectives and they are implemented according to it.

Objectives help in avoiding deviation from the subject. As and when the researcher begins to collect data, mainly the data from secondary, abundant data comes up regarding the subject of research. The researcher gets confused seeing so much data that is available from different sources and often deviates from the prime subject. It creates so much confusion that researchers cannot understand which data needs to be used for current research as well as which one to be discarded. Therefore, objectives help to cling to the present research and thereby avoid diversion and also minimize resource wastage. Hence, it enhances study efficiency.

All research becomes useless unless the audience who is targeted, that is, the research beneficiaries understand it. The objectives allow the audience to understand the particular research purposes perfectly and hence, it eases understanding. Thus, objectives make research meaningful to the audiences who are targeted.

Figure: Objectives of Research



Source: Prepared by the authors.

2.2.1 Primary Objectives

Getting a Vivid Scenario of the meaning of the Research:

The first and foremost objective of conducting research is to get a clarified

picture of what the research foretells and understands its meaning in the depth. Research can be portrayed as a structured inquiry that is pre-arranged under systematic and scientific observation after classified and interpreted data which is formal in nature. A better knowledge of the need, importance, and significance of the conducted research is obtained.

Research Design Knowledge: An understanding of research design is quite vital and the process of research must be well followed and well monitored to obtain a better knowledge of the entire method for future appliance in common issues. It will help the person involved in getting and gaining familiarity or attain the improvised insights into a phenomenon (Islam & Samsudin, 2020).

Keeping ourselves up to date*:* Connecting different ways of conducting research and results of final assessment is an important factor in research process (Jia et. al., 2018). Accurate findings and updated knowledge always prevent from being backdated and develop ideas that are better equipped with the latest inputs.

Formulation of issues: When research is conducted it leads to such a stage where the person's mind gets active with better knowledge and he or she could easily identify and formulate upcoming issues and categorize them either they are common or new (Nayak & Singh, 2021)

If these are common a tendency to use the same research method is recommended but if the issues seem to be new, new research must be

initiated. A degree or frequency of occurrence of something similar or common with the researched things is also determined.

2.2.2 Secondary Objectives

Credibility Building: The first secondary objective of research can be marked as assistance in building credibility as it is always observed that maximum time people tend to follow the information which is backed up by accurate and reliable research. This brings confidence and develops a great foundation for the future development of ideas and knowledge.

Better Communication: Better communication is developed only when the connections between the parties are sparked by relevant and genuine researched information which makes the communication more impactful and crystal clear. A direct and open channel of communication where a better understanding of the facts is present due to enhanced justification is developed among them (Kheryadi, 2018). It would also help in describing and explaining the accurate characteristics of a specific situation.

Encouragement of Curiosity: It is known that the positivity level gets higher when curiosity is developed in the mind of people and other researchers. It creates enthusiasm inside the people and encourages them to explore more and more and go deep into a subject and have a deep insight of it and create various new ideas and lots of opinions (Jia et. al., 2018).

2.3 Motivation of research

Motivation simply means the process of encouraging people to intensify their willingness and desire for executing or performing their duties in order to achieve the objective. But it is believed that human nature influences almost all research work (Ommering, 2020). Many researchers argue the fact that their research is based on their objective but in reality, it cannot be said that research is objective. Before performing research, a researcher needs to make decisions regarding what to research, how to perform their research, how to present the research conclusions in front of people, and who is going to pay for their research (Dolmans, 2020).

All these choices they make are influenced by the material sources and the motive behind their research. While doing a research methodology, there are certain objectives one needs to keep in mind to execute their research workings. To meet the requirements or the objectives behind performing research work, it is very important to be motivated. The researcher performing such research methodology should identify and understand the motive of their research (Anderman, 2020). Thus, it is of fundamental importance to identify the motivation of research. There are certain motivations of research that researchers focus on while executing their research work: -

Desire to achieve a research degree as well as its consequential benefits

In completion of research work or research methodology, researchers get a research degree as an honor for their immense contribution to research. There are some benefits of this research degree for which researchers stay motivated while performing their research. With the help of their research degree, researchers get ample opportunities in their careers (Meeter, 2021).

Desire to face the various challenges while solving an unsolved problem

Researchers perform their research established on a new topic where they have to solve a lot of theoretical as well as practical problems which in turn enhance their problem-solving capability (Blankenstein, 2019).

Desire of getting joy from doing any creative work

While solving any unsolved problem, or finding out something new in creative work, researchers go through an immense feeling of joy and satisfaction.

Desire to provide service to society

Researchers work on a topic derived from any theories or practical matter concerned with society. They contribute their efforts to solving the

problems faced by society established on such matters. So there is a sense of responsibility of the researchers toward society (Todorova, 2021).

Desire to gain respect

Respect is one of the most important motivations for researchers that they intend for. While performing any research work, researchers seek respect from society for their contribution to society.

Desire for getting fellowship from the government or private agencies

Researchers desire to get good pay for their contribution in their research work for the party they are researching for be it the government or any private agencies.

Getting in-depth knowledge

While working on research, researchers achieve detailed knowledge concerned with the respective topic or matter they are working on (Shrestha, 2019).

2.4 Research approaches

A research approach can be defined as a systematic and compact plan availed to conduct thorough research or study. Combining the articles from

most the scholars, it can be deduced into three categories of which research categories can be divided into-

- Deductive Approach
- Inductive Approach
- Abductive Approach

The main relevance of this study is to bring out and focus on the distinctions between the above three approaches, especially Deductive and Inductive Approaches. Deductive Approaches provide a validity or regularity of any occurrences within a timeframe linked with various assumptions on the same. On the other hand, an inductive approach provides an insight into the new theories which are emerging or coming up. Below are the main differences between the three approaches:

2.4.1 Deductive Approach

***Logic*:** If the data collected is true in nature and assumptions fall into place, then conclusions derived or arrived at must also be true

Generalizing ability: This approach flows from data that are quite general in various other scenarios, turning out to be specific and accurately specified

Data usage: Data is often taken or proposed from a previous theory or hypotheses

***Theory*:** Theory adapted is for falsification or to verify facts

2.4.2 Inductive Approach

Logic*:* In this approach, general assumptions are not tested but are assumed to be true

Generalizing ability: This approach makes the specific data flow from being a specific identity to being general in nature

***Data usage*:** Data collection in this approach makes the use of patterns and themes to create a conceptual framework on which a conclusion is drawn

***Theory*:** This approach generates new theories and helps them build the process of defining things as per the research

2.4.3 Abductive Approach

***Logic*:** This approach observes known data and facts to be taken into consideration, and the conclusions reached are testable

Generalizing ability*:* It brings out assumptions on data that are derived from both general and specific considerations

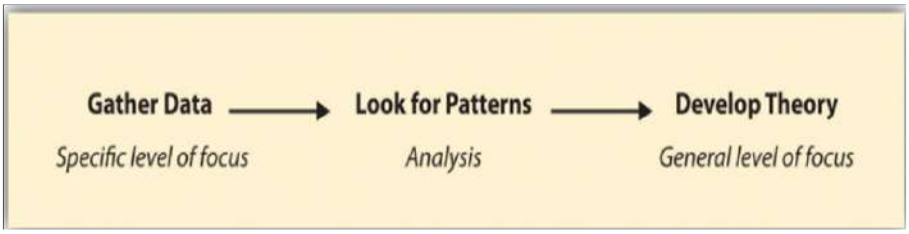
Data usage*:* Data collection is driven through various patterns and techniques, and they are again tested through various data collection methods

Theory: This approach deals with the modification of the existing theory to incorporate something new which builds a new theory

2.5 Deductive Approach

Researchers in a Deductive Approach will pick up an existing theory and check all its assumptions with accurate data and compare them. They move from general classifications to be specific in nature. These are mostly associated with investigations that are specific in nature and have a particular segment of an idea to focus on. The researcher gets and collects data from existing research, studies the same data which others have studied and derived their research, studies the theories with varied assumptions and generalized data, and tests hypotheses that finally emerge from those assumptions which are specific and are true in nature.

Figure: Data Collection in Deductive Research



Source: Made by Learner

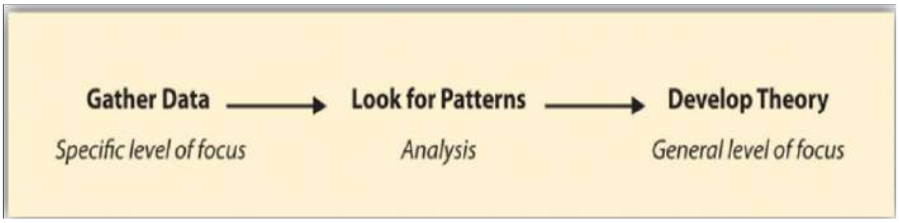
In a Law enforcement response against crimes in the US, as per the judgment, the law enforcement and its responses to crimes against racial violence will be less vigorous in areas of the country which have a strong historical background of such racial violence. In this research, the authors developed their ideas on the topic from previous theories and researches that were made by analyzing different crime responses. At last finally, the authors were rewarded by supporting their research which came to be actual.

2.5.1 Inductive Approach

In this approach, the researcher starts collecting data from different sources which all are relevant to the concerned topic, and after that breaks

the data as per categories to have a detailed view of the entire chain of events captured by him. Then the researcher develops a theory that will explain all those patterns.

Figure: Data Collection in Inductive Research



Source: Made by Learner

Hence, it is evident from the above structure that the Inductive Approach, unlike the Deductive Approach, begins with a set of specific observations and slowly moves towards the general proposed versions or theories which can be concluded. In other words, this moves from data to theory.

To understand this better let one look at an example by Kristin Ferguson and colleagues (Ferguson, Kim & McCoy, 2011) which was a research made on young men in America about the problems faced by them while being homeless, and regarding meeting their basic needs. The author here analyzed and collated data provided by 20 young men who are experiencing homelessness and residing at a homeless shelter. It included the problems they are facing as well as their expectations from the government and society. With this data, the researcher developed

recommendations for those researchers who are willing to come forward and help these helpless young men. A hypothesis was also developed by these researchers for people who might be interested to come forward and dedicate time to helping them and conduct further research and investigation on the same topic. It was not tested by Ferguson and her colleagues, but they did lay the foundation for a Deductive Approach in their research.

2.5.2 Abductive Approach

This approach is primarily derived from finding the weaknesses or loopholes which can be pulled out from the Deductive and Inductive kinds of Approaches, and addressed accordingly. The concept of the Abductive Approach comes from criticizing the Deductive Approach technique, which lacks the method of selecting the theory of testing the methods via proper hypotheses. Also, criticizing the Inductive Approach is realizing the significance of empirical data to critically build the theory. Hence, researchers resort to this Abductive Approach which at the end of the day eventually overcomes the shortcomings of both these approaches from a pragmatist perspective.

2.6 Significance of Research

Research is considered to be the pursuit of knowledge derived from observation, analysis, exploration, and explanation of any unexplored fact, idea, or methodology. Research helps to unfold various unexplored ideas that improve the working capability and helps in developing a better understanding and decision-making power (Armijo-Olivo, 2018). Proper research enables us to carry on with a definite project by evolving proper strategies. The main purposes behind research work are to gather information, develop knowledge in a field, and find theoretical and practical solutions, and so on. But before executing a research methodology it is important to know and understand the significance of the research which is imperative (Dougher, 2018). Following are the significance of research one needs to know for stimulating better results from their research

Achieving the Goal

Conducting research work regarding any matter helps to achieve the goal for which the research is being performed. Every organization has an aim for which they conduct research regarding their products or services or matter as per their concern. Many companies conduct research through online surveys, through consumer satisfaction programs, and ask for feedback from the customers in order to know customer satisfaction which helps them to know the issues where they are lacking behind and improve their products or services. Research work is performed with proper

exploration and observations keeping in mind the objectives of their research, which helps a research scholar to achieve the target of their research work (Armijo-Olivo 2018).

Novel Insights

A research methodology on any topic requires a detailed study in order to conclude such a topic. This detailed study not only helps researchers to gain ample knowledge; however, it reveals various new facts and ideas regarding the topic. The more a researcher dives deeply into a topic the more he may get to know about new unexplored and undiscovered facts about a particular topic. It can be said that research is the gateway to exploring different dimensions of a particular idea. Exploring new facts and ideas edges a great learning curve that infuses positivity among the researchers. These new facts and ideas discovered also further help to raise awareness among the people (Prasad, 2021).

Better Understanding and Decision-Making

Research is a very significant tool that helps an individual to understand the complexities regarding an issue and create knowledge that is authentic and reliable. While researchers analyze the details regarding a topic, it helps them to know observed and explored facts and ideas through research for better results which enhance their capability of understanding the problem and making decisions accordingly (Singh, 2021).

Identifying the Issues

Many times while working on a research project, many issues happen to not coordinate with the project. Research provides the opportunity to explore, investigate and detect the facts that act as an issue for the project. It helps one to identify the various antagonist elements that are not suitable for the topic on which the research is being done. While performing research work, a researcher gets to identify what is beneficial for their research work and what is not. This in return helps the researchers to work on the issues and find solutions and alternatives to remove such problems that were acting as a barrier to the project.

Building Credibility

While doing research work; it helps an individual to create a strong foundation with the explored and experimented ideas and facts that explains the organizations and the learners for accelerating their success in order to gain credibility regarding the research project. The conclusions or the statement concluded affects the reputation or the credibility derived from the subject research (Prasad, 2021).

Enhancing Knowledge and Facilitating Learning

Research plays as a very essential component in building knowledge. It helps to chalk out various new ideologies and facts regarding a topic which in return enhances the knowledge as well as helps to make people know and learn about those explored ideologies and facts (Chilisa, 2019).

2.7 Research and Scientific Methods

In order to get a clear perception of research, it is very important to know the actual meaning of the scientific method. These two terms, research and the scientific method are very closely related and go hand in hand. Research as the term suggests is a process of detailed study regarding a topic to get a better idea and knowledge about the topic, identify the issues related to it, finding solutions for such issues, and finding new ideas and facts, and analyze and conclude a statement regarding it. But the philosophy is common to all research methods and techniques, although the researchers may vary considerably from one to another; they usually are given the name of the scientific method (Wolf, 2019).

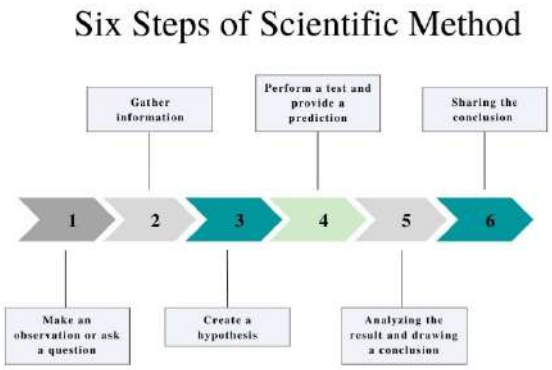
The scientific method is considered to be the pursuit of truth and facts as determined by logical considerations. The idea behind the scientific method is to achieve a systematic interrelation and inter-connection of ideologies and facts. The scientific method aims to achieve the idea by experimenting, observing, identifying the logical arguments from the various postulates, and combining the three in varying proportions (Yada, 2019).

With the help of scientific methods, various logical aids are formulated explicitly and accurately that make their possible alternatives very clear and precise. These logical aids further help in developing

consequences of such identified alternatives which becomes easier for the researchers or the scientists to compare them and choose the best possible alternative that harmonizes with the observed facts (Wolf, 2019). This whole process of identifying alternatives, comparing them, and choosing the suitable one is based on survey investigation and detailed experimentation which is considered to be an integral part of the scientific method. The experimentation is performed to test the presence of hypotheses and to discover new ideologies.

The conclusions drawn from these experiments can be criticized for various reasons like improper assumptions, ineffectively executed experiments, the wrong interpretation, and so on, which pressurize the researchers to pay their utmost attention while performing such experiments and provide probable conclusions and inferences (Somers, 2018). This scientifically gathered information is then utilized to draw conclusions by the researchers. This scientific method is established on certain postulates as it relies on empirical evidence, it is based on relevant concepts, it results in probable predictions, it is derived from objective considerations, and many more.

Figure: Six Steps of Scientific Method



Source: Prepared by the authors.

***Make an observation or ask a question*:** the very initial step of the scientific method is to ask a question that the researcher is willing to know the answer to.

***Gather information*:** from the answers collected by the help of the first step, to analyze the information and do the research derived from it.

Create a hypothesis: it focuses on drawing the explanation regarding the observation of the answers gathered (Mumford, 2018).

Perform a test and provide a prediction: this step involves creating a prediction derived from the hypothesis. These predictions are made by performing a test.

***Analyzing the result and drawing a conclusion*:** this step involves analysis of the results of such tests and predictions and providing a conclusion derived from them.

Sharing the conclusion – next step is to share the conclusion drawn with the people to increase their knowledge and to make them aware (Davies, 2018).

2.8 Research Process

The research to be made expects the researcher to follow the research process thoroughly and abide by the steps of the same, to conclude the final lines of his conclusion on the topic. A typical research process includes the following steps as mentioned below:

2.8.1 Selection of Research Area

The researcher must understand the need for this research and make sure of selecting the accurate research area which fulfills both the researcher's personal and professional interests and this should be proved true in any research. It is said that once the research area and the research

problem both are understood and properly kept in mind so that it gives the researcher ownership in conducting the research as well as makes him or her find interest in the same, then the entire research is bound to give the researcher a delightful result since the entire dissertation becomes a lot easier. Hence, this stage is crucial from the standpoint of every research and should be taken seriously while conducting research.

2.8.2 Formulation and Development

Formulation here stands for understanding the areas and aims of the research, the objectives associated with the same, and questions that are connected to the research which help in developing concluding hypotheses. It is the research approach that determines the selection between the formulation of questions about the research and the hypotheses development. Several attempts are required to proceed with the accurate research aims and objectives.

A researcher continuously has to revise and develop the aims and objectives to finally reach the concluding versions. Also, getting approval from the senior is equally important for any researcher to continue with the assigned work.

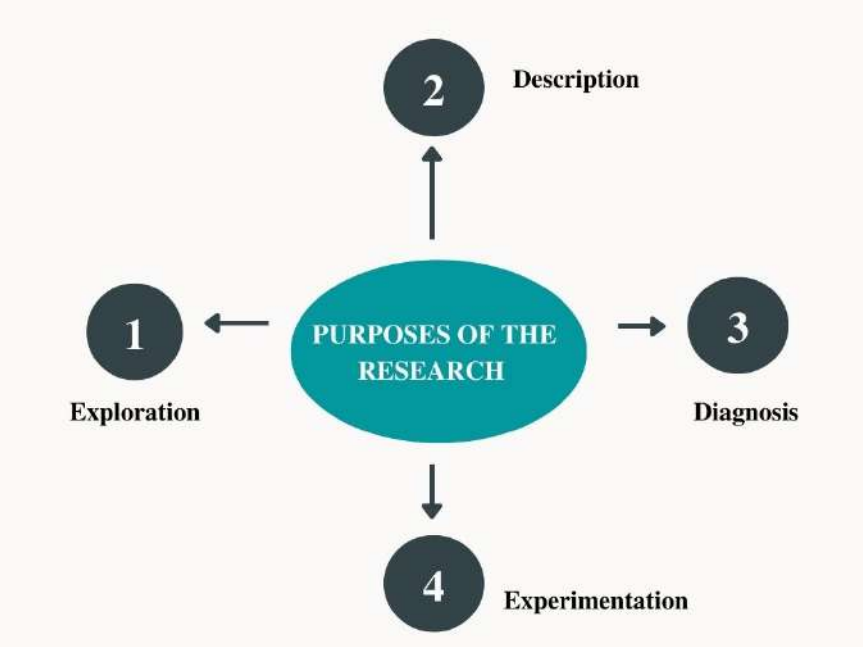
2.8.3 Literature Review

Starting much before the research aims and objectives, a literature review should be the longest stage in the process of this research. This is mainly because the literature review, as the name suggests, is related to reviewing what exactly the researcher has undertaken and has planned to progress the research. In this section, a thorough analysis is done on whether the same research was ever done before with the same objectives and scenario being kept in mind. Though, after the formulation of the said aims and objectives of the research a literature review is prepared, which is derived from a large number of secondary sources of data like books, media, newspapers, and journals.

2.8.4 Preparation of Design

The research problem has its terms and conditions, the researcher need to develop a research design that should coincide with the work. It is a standard structure prepared by the researcher within which the entire research will be conducted, and this causes the research to be more efficient and a one-stop source of maximum information for the reader. The design of the research is done to collect the maximum quality data with minimum effort, time and money. These mainly depend on the purposes for which the research work is done, namely:

Figure: Purposes for which the research work is done



Source: Prepared by the authors.

Exploration: This helps when the study is considered appropriate considering various aspects of the research design.

Description: It helps in understanding the best design which minimizes biases and maximizes the reliability of the data which has been collected and analyzed.

Diagnosis: Proper diagnosis of the data whether it is experimental or non-experimental, and whether they are informal or formal designs. There are multiple and a variety of designs amongst which the researcher should select the best alternative.

***Experimentation*:** After selecting the best design, it is the term of experimenting with the same, where the researcher gets to know whether he or she will be able to proceed with this design. If not, then the researcher has to start again by exploring the different available techniques, and if this method fits, then the entire research becomes an easy task for the researcher.

2.8.5 Data Collection Methods

The next task for the researcher is to select the methods available for data collection and finalize the one best suited for this process. Different methods are associated with the research process and determining the advantages and disadvantages of those methods helps in selecting the best possible method of data collection. In methodology, the researcher has to write in detail about the method which has been undertaken by him or her and its corresponding advantages and disadvantages.

Primary data collection: A strong mindset and thorough preparation are very much vital to start collecting the primary data. Sampling may prove to be very handy in this stage and might prove to be very effective in analyzing the data.

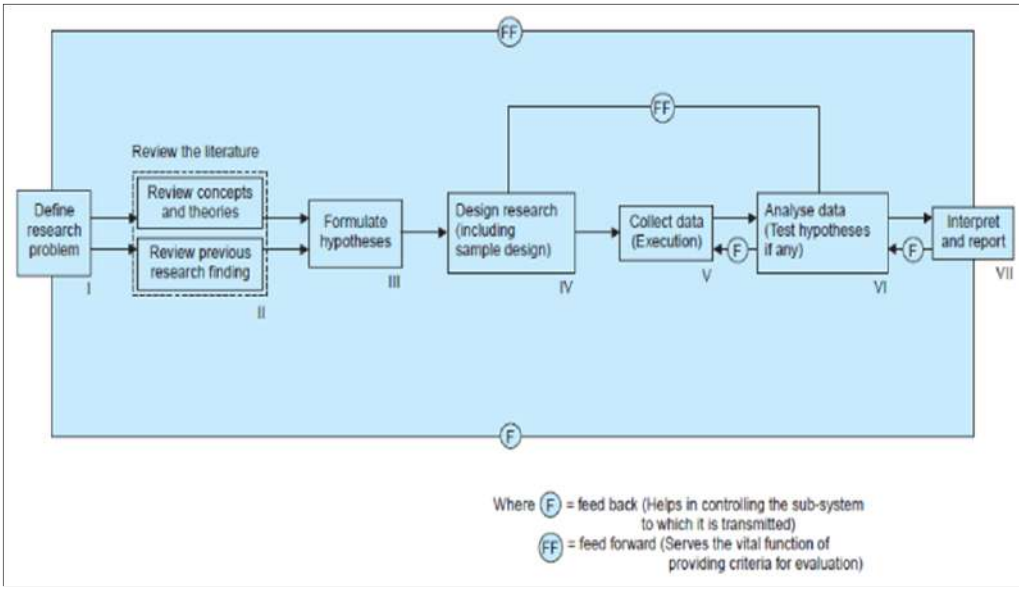
The questionnaire method of collecting primary data may involve the method of 'pilot data collection, which includes data collection at a preliminary stage and using the planned and decided methods but with the least required sampling.

Analysis of the data collected: Data analysis and understanding of the data collected pose to be a major role in the process. This stage of data analysis varies between both primary and secondary studies along with quite determining quantitative and qualitative studies, with varied ways of editing and coding the collected data. Primary data thus collected plays a crucial role and it reduces the responses received from a sample to a more manageable form for future purposes.

Conclusion: The conclusion always marks the achievement of the researcher that he or she faces at the end of the project. It is the final level of the dissertation and it focuses mainly on the justification by the researcher as to why he or she thinks that the said objectives and aims have been achieved, along with explaining the research limitations and the suggestions that need to be followed while conducting future research on the same topic.

Research completion: All the stages stated above being followed and preparation of the file containing all the chapters organized marks the end and preparation of the first draft of the dissertation, and this should be done well ahead of the timeline, which in most cases is one month before submission. This is because sufficient time needs to be kept in hand to go through the work done and provide feedback to the concerned researcher or developer as per the management. Moreover, any research submitted should be iterative in nature, which means that the researcher should be able to get back to any part of the document done at any stage several times to bring any further development or to make any edits on the same for improvements.

Figure: Steps in the Research process



CHAPTER 3:

Teaching Research Methods

This chapter will create an understanding of different research methods for teaching, which helps to enhance the learning of students through a different perspective. As this chapter will guide to make the choice of research approaches, philosophy and design which helps to integrate different theories in research studies that the study might conduct through an application of different scientific knowledge. Through this, the researcher is able to depict the outcome of the research derived from an existing specified method, which helps to make sure the goals of research studies. The ontologies of research studies are also being demonstrated in this chapter, which helps to select the philosophical paradigm of research studies.

3.1 Approaches to the Curriculum: The Role of Theory in Research

The paradigms of curriculum development include implementation, planning, and evaluation. Factors which include teachers, learners, societal culture, psychology of learning, and philosophy of education are considered the elements of curriculum development. Higher Education (HE) research as a topic of study tends to give a fairly broad realm of educational studies. According to Riding et al. (2020), one of the most noticeable contrasts among curriculum research techniques is the amount of study in compulsory education, which has been a subfield within its rights, specialised journals, and high-profile thinkers committed to the issue. Even textbook authors and material teachers have a variety of educational beliefs

and curricular methods. The emphasis of curriculum methods is mainly on the composition of curriculum desig***n***. As a result, while there are several curriculum ideas, "Technical" and "Non-technical methods" are particularly important. This curriculum is incorporated with following steps of completing a research. First, the teacher should teach students regarding research approaches, then research philosophy, research design, data collection method, data analysis, sampling method and research ethics.

A critical realist approach can be utilised for the investigations of diverse curriculum theories within the research paradigms. In the views of Khan & Law (2017), some of the common approaches that fall under this category are pragmatism, empiricism, and critical realism. Unlike other meta-theories, critical realism has just a few characteristics that might be a good beginning point in studying the many theoretical perspectives within curricular studies. According to Seidel & Shavelson (2017), it is important to highlight those curricular theories and curriculum models are not the same things. Curriculum studies encompass far more than curriculum theory, although few researchers identify as belonging to the area of sociology education rather than any larger topic of education under curriculum studies.

3.2 Usefulness of Theories in Research

The theorists of education have found several theories about education which are relying on the overall global view that governs the society. They also received guidance from sociology and psychological theories. These diverse educational theories in turn can inspire the curriculum planning associated with the theory-makers (Kentli, 2019). Several attempts are made to upbringing the classification within the curriculum theories. These approaches are entirely dependent on viewpoints of complexity, maturity, and classification. Numerous philosophical theories aid in the analysis of the curriculum from a broad perspective, including a learner's encounters with constrained perspectives of academic subject topics.

Idealist Curriculum Theory: The theory is highly significant since the days of Plato; however, the idealists view a curriculum as a body comprising the intellectual subject matters. In the views of McCutcheon (2020), the learned disciplines leveraged by the theory are highly conceptual and ideational. Hostry, mathematics, and literature for instance are equally ranked higher. Though, the overriding goal of education through the idealist approach lies in encouraging students to be the seekers of truth.

Realist Curriculum Theory: Aristotle is the founder of realism however; the realist curriculum maintains the most effective ways of finding

out about the realities of studying through systematically organised disciplines of subject matters (Mugisha & Mugimu, 2017). The curriculum of a realist involves various intrusions in the aspects of writing, learning, and computation. Though, gaining knowledge through research methods of realism can be stressed.

Existential Curriculum Theory: This curriculum is inclusive of subjects, and skills that provide explanations for physical, and social realities (Miller, 2019). The phase of crucial learning is not just a structure of knowledge within the curricular organisations but rather the construction of students of its meaning. The goal of existential education is derived from training students towards the development of their own understanding of life.

Conservatism Curriculum Theory: This theory focuses on transferring cultures to every learner and providing appropriate education to every stratum of society. This curriculum also provides the basis of foundations, skills, and programs which includes mathematics, writing, and reading (McCutcheon, 2020). This implies that this theory of curriculum is much more involved with teachers thinking on the basis of various principles. The principles are the conservative principle based upon the past guiding the future.

3.3 Theories of curriculum and its role in teaching and education in relation to research

The requirement of teaching and theoretical planning within the learning paradigms is a very common thread running through entire education at a global level. The current administrators of the school are currently faced with one of the most challenging and exciting times in educational history. According to Ylimaki (2017), the teachers of the curriculum are required to be recognisable with a broad range, of curriculum theories range beginning critical, to behaviour. The best who are the teachers are required to completely appreciate the mirror association fostering flanked by practice, and theory within learning paradigms in research. They must be effective enough in moulding as well as defining others. Fowler (2018) opines that the group of teachers in reviewing the relationship within the theory and practices can be a vital element in the future failure or success of curriculum changes or bringing future impacts in learning, and teaching. There are no rules or procedures in place for teachers to be followed, simply broad notions and principles. In this day and age of technological innovation, successful teaching must comprehend curriculum theory if they are to be fully involved in generating educational reforms for a better future.

Theories are especially true when trying to review evaluation, methodologies, assessment, or procedures. As per the opinion of

Bridgeforth (2020), quality of teaching in educational aspect means obtaining an understanding of curriculum theories and approaches. The teacher must be effective enough to alter the administrative responsibilities, and roles when required for meeting the novel challenges within curriculum designs. It is rather an art to know when and how it is flexible and yet within the same time making crucial decisions within the curriculum. Fataar & Terhoven (2018) states that, it is an art to be able to modify the administration by changing focus upon the systems and the learners equally. Such shifts within the divergent teaching styles allow for the inclusion of curricular changes that will allow for the maximum influence on learning. The inclusion of the review process is highly supportive of change, and open to the development of fresh teaching methodologies, providing keys to future success in research and education.

3.4 Ontology in Teaching Research Methods

Ontology is a study of 'being' and is derived from 'what is', in simple words to know the nature of existence and the structure of reality. It can also be defined as a concept of the existence and relationship among different aspects of the society which social norms, cultural norms, social structures and social actors (Dewaele, 2019). The Ontological issues are generally derived from the questions pertaining to the kinds of things that are present within the scope of the society. It is the assumption made on the kind and nature of reality and that exists. It can also be said that ontology is

a philosophical consideration in research which is concerned about the nature of the social entities.

Ontology is concerned with the question “whether or not there is a presence of reality that is said to exist independently derived from the human conceptions and interpretations.” As stated by many scholars, ontology is concerned about the thought of “what kind of world we are investigating in, what is the nature of existence, what is the structure of reality”. While performing a research study, researchers need to know and identify and provide assumptions regarding the concept that the world they investigate consists of human beings who have their different intellectuality, thoughts, interpretation and so on (Naum, 2019). The investigation of the researchers is mainly manifested by the usage different research methods and techniques derived from interpretive designs that consists of response paper and interviews.

In this paper, it is focused on the ontological conceptualisation of relevant information, with the argument that the stake is more in comparison to outcomes and impact. The ontology of teaching and learning is characterized in terms of meaningful movement of people in the continuous changing world, that propose the relevance of educational research what we call “ontological synchronization”. This continuous atonement of what happened matters in the present, and the future is generated in inclusion of values, judgements and researchers (Jacksi, 2019). The ontological synchronisation that is concluded hinges the ethical

commitment towards the principles of generative and actuality, such concepts are relevant for the implementation in educational research method. Teachers and professionals care about teaching proper educational research that intends to provide to the learners.

Educational researchers have the tendency to judge the relevance of the research derived from the outcomes and the societal impact. This orientation provides evidence in the views of the research publications and the research proposals (Don-Solomon, 2018). Researchers focus on the happenings of the outcomes and understand and analyse the research findings. The ontological perspective answers the following questions about the nature of learning of the research, how to identify the educational researchers, respond and intervene regarding the matter concerned. Thus, while teaching research methodology; the ontological inherence helps to know the consequences of knowledge (Pineda, 2018).

The goal of this course of research methods is to communicate the various research processes with the use of practitioner-oriented method that consists of data gathering, analysis and learning the language of social science research (Zamojski, 2019). It is observed that both undergraduate and postgraduate students are weak in empirical research that varies from the other research methods. This becomes a great challenge for both the instructor teaching the research methods as well as the students. While simultaneously teaching the various research methods, instructor is able to remove some of the major pitfalls relevant to the production of empirical

research. An instructor needs to communicate the importance of asking questions of relevant social scientific questions, analysing the issues addressed by previous researchers, collection of data, interpreting cryptic statistical output (Ławrynowicz, 2020).

The primary concern of the instructor is to manage the task and the progress of research methods. The instructors assign topics to work research method on, for which they provide backgrounds and citation to the students. From the background readings the students need to form a set of intuitive hypotheses followed with a various set of questions which leads them to write literature review of their research (Keet, 2020). Under the guidance of the instructors, students generate the entire possible hypothesis from the various topics assigned. This process of using student generated hypothesis in order to teach research methodology, foster the interest, motivation and better understanding of the research results.

Thus, it can be said that ontology of teaching research methods seeks classification and explanation of entities. As discussed earlier, ontology is concern about the nature of being and existence, thus ontology in teaching research methods focuses on identifying the nature of how the teaching of research methods is being proceed (Windchief, 2019). It is said that one of the longest standing ontological questions in philosophy is concerned about the existence of various research methods that provides a springboard for philosophers to question regarding many things like the purpose behind existence, the nature, understanding the experiences and constituting a

valid argument. The idea of ontology appears to be very abstract. Ontology is considered to be in the topmost position in the hierarchy of epistemology, methodology and all other methods. Researchers need to deal superficially with the questions related to ontology (San Pedro, 2019).

This is a process of quantitative study or action research. However, it is observed that when ontology is examined, research often ends up being incoherent which sets put under the ontological position and results to working within the scope of other. Thus it can be concluded that ontological exercise instructors teach research methods to the researchers with the view of an alternative standpoint research for better understanding of a position (Ahlgrim-Delzell, 2018).

Akkerman, Bakker & Penuel (2021) have stated that the teaching research methods have a constant relation with the conceptualization of relevance, which is significantly associated with the alteration of the ontology of the study. It has been evident that most educational research contains information from a scientific perspective, which needs the understanding of education, and learning through life is necessary. As well as the intersection of disciplines such as psychology, learning sciences, behavioral, social, subject-specific, and organisational is necessary while recurring relevant concerns. Henceforth, the delivery of educational research needs to be done through the establishment of an ontological approach on the basis of its outcomes and their lasting societal impact through different arguments and judgments of relevance.

Nature of the Reality

Understanding the nature of reality is one of the major approaches to establishing an ontological perspective on educational research. Nature of reality refers to the approach of the research process, which might be defined in a subjective or multiple manners. Understanding the nature of reality also helps to create the perceptions of values and beliefs of the person from whom the collection of the data is done which can be also termed a shared world. Selection of nature can be done derived from constraints, resources, and other requirements. Understanding the nature of research is necessary as derived from this, prediction of the societal impacts can be done through criticism of approaches and undesirable consequences for the study. As an example, it might be stated that the research-based learning style has significant effects on the social impact derived from educational and personal development perspectives.

There are a significant number of ontological perspectives for research studies in education, derived from this selection of epistemology and axiological manner of the research can be done. The nature of the research ontology can be derived from the following patterns such as logical inference, empirical observation, Constructed, Objective, Subjective, Empirical, and Instrumental manner. Moreover, educational research is mostly derived from the objective and constructive types of ontological manner, which is used to deliver useful findings or products by exploiting the questions in different factors.

3.5 Epistemology in Teaching Research Methods

Epistemology in the research studies has connected with several branches, which have increased its popularity with subaltern science, which helps to address some of the misconceptions during the time of educational research. Derived from this there are different types of division of epistemology present which act according to the needs of the study, the distinctions are, "essentialism, historical perspective, perennialism, progressivism, empiricism, idealism, rationalism, and constructivism". Derived from these types, identification of the misconceptions such as "postmodernists and constructivists, ethno epistemologists, bricoleurs and culturalists" can be done. In this manner, the researcher is able to represent a thorough and rigorous argument in the study (Horsthemke, n.d.).

The notion of the act of epistemology in the case against 'scientism', 'crypto-positivism', and 'hyper rationality' misconceptions

Some of the educational research has a tendency toward pervasive scientism which embraces the chances of crypto positivism. In order to establish the outcome of this research study proper addressing of the logic of inquiry-derived from the cutting-edge approaches is necessary which judgment can be made through the vision of positivism. It has been found out by the research by Keser & Köksal (2017); research that has been done

in an epistemological manner, the researcher can interpret their outcome derived from their reliable knowledge. Thus the study can be conducted in a detailed way and the data collected through various sources might be employed for the purpose of answering questions of the research. In order to reduce the misconception, the ontological manner in the research studies helps to maintain a community-based participatory understanding of the value of the issue through a former approach.

The misconception of scientism refers to the belief that needs to be developed through the use of physical sciences, which is known as a form of qualifying knowledge for answering research questions. As articulated by Iacob, Popescu & Ristea (2015), the domain of study of epistemology is majorly derived from the respective body of science through the formation and structure of different scientific concepts and theories enacted by different practitioners. There is a whole set of beliefs that are also present to define the outcome of the research studies through an ontological approach. Derived from the mixed approach of conductive research studies the researcher can find out solutions to concrete problems pertaining to the facts of normal science.

The term Positivism in the ontology can be defined as the reflection of the knowledge of the world to define value objectives through adherence to the scientific method. Park, Konge, &Artino (2020) have stated that there are different parts of the epistemological positivism present, which are known as ‘Crypto-positivism’, or ‘neo-positivism’. Both of these are known

as covert operatives for research positivism in the contemporary world. This type of misconception in the research study is also known as hidden positivism which is one of the essential parts of epistemology in educational research. Various researchers have witnessed that educational research has a neo-positivist nature of the study, most of the findings are derived from an objectivist tradition that the research is done through a transcultural, Trans historical view.

Hyper rationality is another major type of misconception that is associated with the educational research epistemological approach, which is derived from instrumental rationality and creates obsessions derived from means rather than ends (Horsthemke, 2019). Effects of this limit questions formed through the research study and act as a resistance to such hyper nationalism through the embrace of irrationality in the research studies.

This can be characterized as nihilism and relativism which restrict the scholarly growth or ethical action in the research studies, and researchers might face difficulties to establish their positions. In order to eliminate this, researchers have to maintain a greater focus on objectivity and neutrality to escape from the narrow dimensions of human experience. An objectified view of students might help to establish the perspective of subjectivity and context-dependency during the time of knowledge production. The elimination of a hyper-rational behaviour allows researchers to hear individuals melodiously as well as helps to fervently

embrace scientific objectives with a coherent action. Derived from this, researchers are able to do close scrutiny of different research methods derived from under-girding philosophies.

Some of the researchers have shown the application of Constructivism in educational research to handle different misconceptions. This is known as one of the problematic epistemological methods which help to maintain inquiry primarily through confining the domains of knowledge. As defined by Bogna, Raineri, & Dell (2020), constructivism is known as the process which supports the research study through different provisions of tools through addressing the foundation of the research topics.

Derived from this the researcher is able to maintain an interpretative approach while developing the discussion and findings. Decisions on this method are formed derived from cognitive psychology. Through this researchers are able to confirm the research hypothesis through the construction of it through dispenses with any tests. Derived from this, researchers are able to imply cognitive relativism through the creation of a logical outcome by using the reality of the external world. Although the term constructivism has gone with some of the criticism as shown by the study of Vogl, Schmidt, & Zartler (2019), are expelling that the epistemology is filled with empty meaning whereas it is derived from an ideological concern of the individual. This is helpful for the research of “child-centred, caring, inclusive, or derived from inquiry" as well as, some of the research that is connected with some kind of violations.

Derived from the above discussion it can be assumed that the paradigms of epistemology in educational research studies might provide a point of the legitimate choice which provides the ability that helps the concrete problems be solved. That can act as a source of scientific knowledge which can create knowledge through a normative, global and local perspective by coordination of some specialists in that area which helps to share the knowledge in an in-depth analysis and helps to explore it by students in a pluridisciplinary or Trans disciplinary manner. Understanding the epistemology by the students might be helpful for their educational research as a paradigm of this is majorly connected with the real-life sciences and their deliveries. This helps to meet the need for knowledge of the 20th century through different multidisciplinary researches on the topics that are emerging across various countries.

The role of transdisciplinarity, pluridisciplinary, and interdisciplinary on the epistemology of educational research

Halloun (2020) has stated that pluridisciplinary concerns refer to the establishment of an object following one's own discipline, which helps to eliminate the theoretical perspective of different studies while conducting a research study. Interdisciplinary refers to a process of transfer of paradigms through different methods, in which the researcher can learn the discipline of another while researching. This is derived from three degrees, which are known as "***degree of application***", "***epistemological degree***" and

"***degree of the generation***". Along with this, Transdisciplinarity is known as the approach that helps to create an understanding of the present world. Derived from this, the researcher can conduct their studies in a precise manner which is also known as the framework of disciplinary research. Considering the concern while conducting research studies are essential as this can impact the knowledge regarding the accomplishment of research studies.

3.6 Methodology in teaching research methods

Teaching has been observed as a systematic enquiry for several years, and inquiry within teaching has been implemented for several purposes. The researchers and the practitioners, aim toward an improved sympathetic of the procedures concerned. It helps in the development of the base of teaching and contributes toward theoretical frameworks (Onwuegbuzie & Leech, 2019). Second, the inquiry within teaching has equally been persuaded to improve practice. This is particularly in the case of research studies generally flowing through a cycle. Third, these questions are inherent in expert training, and investigate methodologies may be used by both students and teacher. Interpretation of teaching observations and the development of individual practices are important.

Several research methods can be utilised with the teaching paradigms to gather information about teaching (Terrell, 2017). Most

common are survey techniques, systematic observations, concept mapping, narratives, and commentaries. Each has yielded their distinctive procedures of data about teaching much more, sometimes less appropriate for diverse purposes. However, the diverse methodologies applied for the teaching research methods are as follows:

3.6.1 Systematic Observation

In 1970, Ned Flanders was the primary to popularise the utilisation of surveillance schedules within the teaching paradigms. Flanders introduced the "Flanders Interaction Analysis Categories" (FIAC) recognised by the ten category of behaviour that characterises the interactions between the student and teacher inside the classroom. Learners once taught for identifying and categorising the behaviours can then cipher their explanation, which can be later deliberate for interacting patterns (Brewer & Jones, 2020). Since then, the work of Flanders has been elaborated with diverse schedule fundamentally providing a checklist of behaviours that the researchers are involved in.

In some instances, the schedule can be more oriented towards studying the dealings and the sequence of teaching behaviours. Rather than focusing on the quantified diverse types of behaviour, it might be used for identifying the ways in which behaviours can alter over time resulting in new interference. The procedure of methodical surveillance in research is

highly beneficial in providing a relative objective accounting of classroom behaviour.

3.6.2 Case Study and Ethnography

Case studies have consequently proved the ways in which teacher can cope with the demands of multifaceted rival demands that they increasingly face in the place of work. Instead, beginning teachers tend to encounter as well as overcome the first differences in learning to teach. According to White et al. (2019), case studies along with ethnographies are frequently involved with the analysis of vast amount of qualitative data. There lie little writers who have haggard concentration to the option that researchers would be able to extract from the individual exacting interpretation. The possible of ethnographic research is to yield generalisations about teaching which can be debated by some researchers. The merit of the advance is arguable and lies in the insight of particularised aspect of education that such study can provide.

3.6.3 Techniques of Survey

Surveys of teacher and teachers highly rely on the usage of questionnaires, checklists, prepared interviews, attitude scales, and tests. Surveys have been utilised to describe the kind of teacher as a collection of

professionals. The factors considered are their attitude towards children, their opinion about particularised novelty, job satisfaction, and aspirations.

They are also utilised for the collection of teacher descriptions, practices, and professional concerns through various stages of their careers. Wang et al. (2019) state that a survey allows the collection of a large number of data, therefore, appropriate techniques of sampling are utilised to obtain a sufficiently higher rate of returns. In this case, the utilisation of this research method makes it easier to create generalisations about the teacher as an entire or group of teachers such as those of basic school, or the teacher in an exacting subject area.

3.6.4 Simulations

A diverse diversity of simulation techniques is being developed that engage present teacher with a job or similar situation. In the views of Baudrillard (2021), it is similar to one that would be encounter in their usual labour and observation of methodical variation like different situation affect the ways in which teacher contract with them. These strategies have been used to investigate how instructors prepare their classes, how they are impacted by decision-making in external restrictions, and how they are prejudiced in developing relationships with students by various student traits. Further, by examining the relationships between the decisions, and judgements of the teachers the factors tend to vary within the vignettes. It

was likely to the identification of those kinds of children that are influenced by the teacher's thinking about problem situations.

3.6.5 Commentaries

Understanding the diverse procedures of teaching provides insight into the meaning that teachers quality through their functions, performance, and rationale for behave as they do so. The attempt toward the right of entry to the ongoing decision-making and thinking of teacher have necessitate the utilisation of methods which are particularly geared toward eliciting the knowledge of the teachers and their thought processes (Mookherjee et al., 2019). This has equally included the think-aloud protocols where the teachers exhibit their actions while engaging in an assessment or planning tasks. Thoughts and choice making throughout lively education procedures can be stimulated by recall techniques in which lessons are videotaped the played back to the teachers. There leis some theoretical issues concerning these types of investigate methodologies. Nevertheless, steps can be engaged to minimise such influence through cognitive aspects.

3.6.6 Concept Mapping

Several strategies roughly referred to as idea mapping has also been used to convey the understanding of various areas of their job. It is often a three-tier technique that begins with brainstorming on a certain topic and progresses to defining its ideas. Further concept mapping analyses the ways in which these concepts are unified, finally identifying the relations between the concepts (Clayton, 2020).

The end-product is always an ocular presentation sympathetic and teaches as it relates with the particularised topics. For example, some teachers, and students might link the management of classroom concepts related to mutual respect, personal relationships, sanction, praise, and rules. Such technique can further assist in illuminating the different understandings those students and teachers hold and the key concept that can be utilised for the identification of changes, and understanding of the results over time.

3.6.7 Narratives

Narrative studies aim towards providing a brief explanation of teaching from teacher perspectives. They highly hold up an empirical approach to telling the work of a teacher. Taking exacting memo voice of

teachers and inserting knowledge within the context of other life events. Narrative researchers have constantly argued alongside the majority of the mechanistic approach for telling education and contain argue for the storytelling move towards. This is an approach where the researcher chooses to act as a catalyst for serving teachers to narrate their experiences with the due credit of background factor. According to Fojkar et al. (2017), each narrative highlights key images towards guiding metaphors which are influential in shaping the ways in which teachers believe learning and teaching. In this field of experience, the major difficulties for students arise in gaining insight from the construction of narratives.

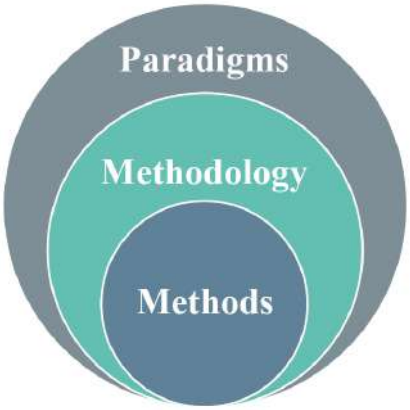
CHAPTER 4:

Quantitative research

Quantitative research is defined as a systematic process of collecting data and analyzing the collected numerical data. This research methodology is used to identify the patterns and averages, forecast the predictions, test the relation between and generate results from them for the wider population (Zhang, 2018). Quantitative research is mainly used in the field of natural and social sciences like chemistry, psychology, economics, biology, marketing, sociology, etc.

It is considered a systematic investigation of various phenomena by collecting quantified data with the help of different mathematical, statistical, or computational techniques. It mainly collects data using sampling methods like online surveys, polls, questionnaires, etc. from the potential customers (Asenahabi, 2019).

Figure: Systematic process of Quantitative research



Source: Prepared by the authors derived from https://the-sra.org.uk/SRA/Blog/Paradigmsformixedmethodsresearch. aspx

4.2 Quantitative Paradigm

The quantitative paradigm dominated the research methodology during the late 20th century. But by the end of the 20th century, other research paradigms gained importance. Quantitative research is defined as the process of testing objective theories with the means of examining the relationship among various variables. The variables are measurable, typically derived from instruments that the numerical data can be easily analyzed under statistical procedures (Pollalis, 2018). Quantitative research paradigms are performed on the basis of the philosophy that the entire phenomenon can be only explained with a sense of positive paradigm. Almost every phenomenon can be converted to empirical indicators which are the representation of truth.

By the usage of Quantitative research methodology, it is believed in the existence of only one truth and explanation of a phenomenon that can be achieved using quantitative methodologies and empirical methods (Arisha, 2018). Quantitative researches are mainly inductive in nature. The scientific method followed by quantitative research uses the deductive approach to testing of theory.

Quantitative research is said to use numerical assessment while solving problems and quantifying various variables. The data collection techniques used by quantitative research focus on gathering complicated data in the form of numbers that provide evidence presented in quantitative form. The ontological view of quantitative research is the existence of a reality that is independent of human interference and perception (Scheim, 2019). The goal of quantitative research is to measure and analyze the causal relationship among variables present within a framework. Quantitative research adopts a methodology that is mostly experimental focusing on hypothesis testing, which in turn helps to find the cause and effect in the relationship between various variables. Due to its easier adaptation of standard ways for conducting research, quantitative research gained quite a prominence and even war considered to be more generalizable in comparison to the qualitative research paradigm. Techniques that establish quantitative research include structured protocols, written or oral administered questionnaires with limited predetermined responses, and the process of randomization blinding (Brachle, 2021).

The sample size of quantitative research is larger as compared to those of qualitative research, as a result, the statistical methods represent that the samples can be used. The quantitative research paradigm is a positivist paradigm that is derived from the ideas of August Comte who believed that observation and reasoning to understand human behavior, a sense of experience that can be obtained by experiments and observation. Quantitative research primarily follows the scientific method of research as

it focuses on hypothesis testing which follows by theory testing. Quantitative research gives primary importance to identifying one's hypothesis and testing those identified hypotheses that consist of empirical data to check their relevance (Jaworsky, 2019). While using quantitative research methodology, it is assumed that the behavior of people and cognition can be predicted and explainable to some extent. Most quantitative researchers work to identify the cause-and-effect relationship in order to draw probabilistic predictions. It can be said that Quantitative research often uses a "narrow-angle lens" as the focus is on one or other casual factors at one time. These Quantitative researchers are considered to hold the factors constant that is investigated. This investigation or study can be accomplished under the influence of laboratory conditions where an experimenter assigns candidates to different groups, manipulating one factor and examining the outcome.

The Quantitative research paradigm is said to operate under the assumption of objectivity (Cheema, 2018)). The assumption is on the existence of a reality that is observed by the observers who view the similar phenomenon agreeing on their existence and characteristics. They mostly remain value-free and neutral as much as possible and try to avoid possible human bias. Quantitative research generally uses standardized questionnaires and other similar quantitative measuring tools for measuring in order to conclude observation. In the quantitative research paradigm, statistical criteria are utilized to conclude.

Quantitative research is mainly distinguished from qualitative research derived from data collection, data analysis, and presentation. Quantitative researchers present statistical results that are used to represent numerical or statistical data. This methodology uses questionnaires, experiments, and surveys in order to collect data in revised or tabular form, which helps to characterize the data by using statistical analysis (Maarouf, 2019). It is observed that quantitative research measures different variables on subjects to express the relationship between variables using the effect statistics such as relative frequencies, correlations, or different means focusing mainly on the testing of theory. All quantitative research needs a hypothesis to start a research work. They generally are known for reducing measurement to numerical form. While survey research, attitudes are usually measured with the help of rating scales (Raghavan, 2019). The questionnaire presents a statement where the various respondents reply with their opinion from the given allowable response categories. After the respondents have already provided their answers, the researchers then calculate and average the responses to draw observations and conclusions from the survey. Quantitative research is made on the basis of two studies, experimental studies, and non-experimental studies.

Experimental studies are also classified under true experiment, a quasi-experiment, or a single case study. This type of study generally offers a high level of control on the elements of the research that provides the possibilities for other researchers to observe the study under similar

circumstances. While in non-experimental studies the researcher cannot manipulate the variables which are then observed and interpreted accordingly (Hastings, 2021). Thus, it can be said that quantitative research methodology is concerned with the intention of qualifying the different social phenomena and collecting numerical data which are then analyzed focusing on the relationship among different small attributes.

A quantitative research paradigm can be defined as that philosophical framework on the basis of which the research is developed. The paradigm is derived from the pattern of beliefs as well as the understandings that regulate the theories and workings of the project. It was the quantitative research paradigm that regulated every scientific research till the late 20th century after which other paradigms slowly gained prominence. Quantitative research paradigms are developed on the philosophy which insists on the fact that every phenomenon in the world develops only through a positivist paradigm (Park, Konge & Artino, 2020). Only one truth and explanation of a phenomenon is valued as the way to reach empirical methods and quantitative methodologies. The belief is that every research needs to be generalizable at least to some extent in case of similar situations.

The reason for the prominence and acceptance of the Quantitative research paradigm is the ease with which it adapts itself to the standard ways in which the research is conducted. It is very often the case that Quantitative research gets generalized when compared to qualitative

research. In conclusion it can be said that the quantitative paradigm works on the basis of positivism. The science here relies on empirical research. Thus, the entire phenomenon has the capacity to be reduced to empirical indicators.

4.2.1 Quantitative Methodology

Quantitative methodologies state a set of methods that mainly accomplishes the detective measurements and numerical analysis that helps to collect data through questionnaires, and surveys and focus to implement techniques that help to analyze existing numerical data of research. Quantitative Methodology is an effective framework that helps to develop a set of strategies, techniques, and processes and it helps to accomplish the outcome of the research (Bleiker *et al.,* 2019). In the case of developing a qualitative research methodology, a researcher systematically measures variables and tests the hypotheses of the research. This methodology specifies the analysis of the numerical value of research. The methodologies help to use a set of methods and techniques that helps to gain depth insights into research and obtaining accurate data helps to mitigate doubts of research. It helps to deal with the statistical data with the use of a set of techniques that includes experiments, observations, and structured interviews of research (Oster & Enders, 2018). In order to use quantitative methodology, a researcher can use specific methods for identifying research problems and develop methods to test the hypotheses

of the research. The methodologies of quantitative research are helpful to explore numerical patterns of research.

The different types of quantitative research methodology include survey research, descriptive research, experimental research, correlational research, and causal-comparative research. In this aspect, survey research is one of the most effective tools to collect detailed data from the pool of respondents. Besides, in the case of developing survey research, a researcher can use different strategies of the survey that helps to collect detailed opinions of a larger population (Garrad & Hyland, 2020).

The wide range of data helps to gain better outcomes of research with the help of a random collection of data. Experimental research helps to develop a strategy for analyzing the relationship between the cause and effect of variables of research. The correlational research helps to investigate different variables of research and the Causal-Comparative research helps to determine the cause of consequences among the target population of research. In order to conduct different quantitative research, a set of quantitative methods is used to collect detailed data of research.

In the case of developing quantitative methodology, a researcher needs to identify participants, collect data, analyze data and focus on judging ethical issues that may need to be solved during research. The ethical considerations help to maintain ethics and guide a researcher to maintain a clear distinction between right and wrong perspectives of research. The ethical norms include the consent of respondents, the right to

access data from participants, and the duty to maintain the confidentiality of research (Arifin, 2018). In order to maintain the quality of research, ethical considerations in quantitative research help to develop a set of principles that helps improve research designs and practices.

These principles not only save participants from potential harm but also help to get an expected result of research. One of the main purposes of quantitative research methodology is to collect explicit data of research and for managing the successful completion of research; a researcher uses various forms of survey, interview, observation, and various effective methods (Rashid, 2021). In this aspect, various forms of the survey include online surveys, offline surveys, telephonic surveys, longitudinal studies, online polls, systematic observations, and many more.

In order to use quantitative methods, a researcher can develop a quantitative approach that allows a researcher to reach a high level of sample size and it helps to get reliable information about research that helps to maintain authenticity for conducting quantitative research. This method helps to use random samples that help to support detailed insights of research (Wilmot *et al.* 2019). In order to get a large amount of data through interviews and surveys, a researcher maintains the high credibility of research because statistical data have the ability to do a thorough review of research. This set of methods helps a researcher to study a specific group and that helps to develop further scope of research. For instance, with the use of a survey, a researcher gathers data about the weight and height of a

specific group. As a result, a researcher gets recent data about weight and height. Here, weight and height are considered variables of research. Therefore, the gaining of numerical data will be changed in the future and a researcher gains scope to conduct further research for identifying changes in population. Thus, it can be said that these sets of methodologies are effective to expand research topics.

Furthermore, a researcher collects information quickly and real-time scenarios encourage respondents to get quick responses. In this aspect, experimental, interviews, and surveys help to achieve immediate responses. In this way, quantitative methods help to develop a data-centric approach to research. A data-centric approach is used to develop a set of activities that helps to manage, store, and utilize knowledge of the information of research. Besides, the quantitative research methods assist a researcher to clinch accurate information and avoid duplication of data. It helps to deal with the actual data of research. For instance, in the case of reviewing a document like the annual report of an organization, a researcher obtains the real facts of a company regarding revenue, profits, and others. This information is helpful to fulfill the need for future outcomes (Rahman, 2020). Besides, it helps to focus on a series of information and a series of data helps to gather concrete data of a specific demographic. In this aspect, observation plays a major role in analyzing the overall events of research.

However, this research can be expensive, and sometimes it can create a lot of doubts to obtain better outcomes. For instance, in the case of

developing an online survey, a researcher cannot capture the exact feelings of respondents and that can make it challenging to clinch the authenticity of the research (Ball, 2019). Moreover, this research uses a random approach that helps to achieve effective results. Nevertheless, this research method encourages participants to get biased while answering questions and they may reveal partial truth of the research (Depaoli *et al.* 2018). It will make it challenging for researchers to maintain the reliability of research. However, in order to get randomized data, a researcher acquires a large amount of data but in order to develop quantitative research, a researcher must exclude biases for obtaining factual information of research.

Research that is done following the Quantitative research method emphasizes on the objective measurements. These involve the use of statistical data, mathematical calculation along with the numerical analysis of the data that has been collected through the use of polling, questionnaires, and surveys. It might also be done through manipulating the already existing statistical data. This is done by using computational techniques (Salminen et al., 2020). The section of research dealing with the methodology of quantitative research allows the reader to make an evaluation of the study's quantitative validity as well as reliability.

It is through numeric checking that the variables are quantified and problems are solved. The ontology in quantitative research is said to be a reality that exists in only one form. The methodology that gets adopted in quantitative research has been seen as mostly experimental. Here the focus

lies on the hypothetical testing of the data collected. The way in which Hypothesis testing can be defined is two-sided. It can be defined as finding the cause as well as the effect of the variables that are operative. It is basically focused on finding the cause-and-effect relationship.

4.3 Quantitative Methods and Techniques

Quantitative research methods mainly emphasize the analysis of the statistical data of the research and these methods highlight the outcomes of numerical data that are collected during the conducting of quantitative research (Ahmad *et al.*, 2019). The collecting of detailed analysis is done with the help of techniques and those techniques help researchers to make decisions to acquire the best outcome of the research. Here, quantitative techniques contribute a major role to collect information quickly and as a result, the researcher can save time. Moreover, the techniques are an open process that helps a researcher to analyze a large amount of quantitative data. The set of techniques and methods that help to show the best perspectives of quantitative research are going to be discussed in this chapter.

4.3.1 Sampling Method

Sampling is one of the most effective methods to gather data from the target population of quantitative research (Mweshi & Sakyi, 2020). The main goal of sampling methods is to gain a small collection of units from a larger population. As a result, the researcher obtains accurate information which helps to get the best outcome of the research. In the case of selecting an ideal population, a researcher has the opportunity to capture a deep understanding of the research. Therefore, a convenient sampling is helpful to allow a researcher to get accessibility of high-quality data.

In order to systematically use sampling methods, a researcher can use two types of sampling techniques that include probability sampling and non-probability sampling methods (Yang, Kim & Song, 2020). In order to classify probability sampling methods, there are four types of probability sampling that can be used that include simple random sampling, systematic sampling, stratified sampling, and cluster sampling. In the case of a random selection of samples, a researcher collects data randomly from a larger population. On the other hand, in a non-probability sampling method, a researcher uses sampling methods like convenience sampling, purposive sampling, snowball, and quota sampling. In the case of developing convenience sampling, a researcher chooses a convenient location where a researcher collects explicit data of research. Besides, in order to choose purposive sampling, a researcher chooses a sample in order to fulfill a

specific objective of the research. This method helps to maintain flexibility and control the cost of research (Rahi, Alnaser & Abd Ghani, 2019). This practical method helps to get a larger amount of data within a short period. The sampling method leads to developing chances of bias while conducting research and it makes it difficult in case of not to choose the right representative of research.

4.3.2 Observation Method

Observation is a significant method that implies an objective collection of data and the detailed analysis is done with the development of the statistical and numerical value of research. The observation depicts the perspectives of variables of research in terms of analyzing the quantity of research (Pandey & Pandey, 2021). The main purpose of observation is to analyze the values and statistical data of research. It is one of the effective methods where a researcher closely notices an event or any natural setting that helps to acquire a detailed outcome of the research. The observation encourages a researcher to analyze depth understanding of the research. In order to apply this method, a researcher deciphers events to achieve a desirable outcome of quantitative research.

Various observation techniques are found that include participant observation, non-participant observation, structured observation, and unstructured observation. Participant observation guides a researcher to take direct participation in research and it helps to collect data by observing the day-to-day activities of research (Shin & Miller, 2022). Instead, non-

participant observation does not involve the direct participation of researchers. In this research technique, a researcher can observe an event with the use of knowledge but not be able to take active participation in research. Structured observation aims to observe things that are well-formatted and the aim of unstructured observation guides a researcher to observe things randomly.

The main advantage of quantitative observation is to maintain accuracy within the research and constant observation leads to comprehending deep facts of research (Ciesielska, Boström, & Öhlander, 2018). It is an effective method that helps to maintain the flexibility of research. On the other hand, the observation method takes lots of time to gather detailed data for research and by observing things, a bias can be developed that makes it challenging to capture a better understanding of research. The techniques of quantitative research are going to be discussed below:

One of the foremost techniques of quantitative research is the interview technique and in the case of conducting quantitative research technique, a researcher develops an interview scheduling process that helps to develop systematic conducting of research. In this interview scheduling process, a researcher develops a set of questions that respondents have the liberty to answer shortly (Rutberg & Bouikidis, 2018). In that case, a researcher generally uses closed-ended questions for respondents. The researcher may record the interview as a researcher generally asking close-

ended questions to respondents and recording is effective here to make less disruption of research. On the other hand, in the case of developing qualitative research, a set of open-ended questions are generally used by researchers for conducting research (McGrath, Palmgren & Liljedahl, 2019). In this aspect, it is said that quantitative interview data mainly highlights the numerical value of respondents.

In the case of managing interview techniques, a researcher can use three types of interview techniques that include semi-structured, unstructured, and structured interviews. Nevertheless, in order to conduct quantitative research, a researcher uses a structured interview technique where they use a methodological set of questions which helps to get a logical perspective of respondents.

In order to analyze the advantages of structured interviews, a researcher gets more effective in order to conduct structured interviews and it helps to get explicit information during the research (Castrodale, 2018). It helps to reduce the biased opinions of respondents.

In order to apply interview techniques, a researcher cannot get elucidated information during research, and this makes it sometimes challenging for them to attain the best outcome of the research.

4.3.3 Survey and Development of a Questionnaire

The survey is useful to gather data from a pool of respondents and it is effective to get the most accurate and meaningful insights of research. The survey is one of the most common techniques in quantitative research where a researcher can develop a set of questions with options and respondents choose the suitable answers from providing options (Story & Tait, 2019). A researcher can conduct surveys either online or offline according to the accessibility and timeline of research. The quantitative survey questions are considered the most objective questions which are intended to obtain detailed insights into research.

In order to conduct a survey, a researcher can use a direct survey and an indirect survey. Direct surveys help to guide a researcher to develop direct interaction with respondents. In this aspect, a researcher gets data by making questionnaires. A questionnaire is a set of questions that helps to collect data during survey research (Nayak & Narayan, 2019). In that aspect, a researcher develops a set of questions for respondents and encourages them to participate in the research. Apart from that, in the case of conducting a direct survey, a researcher can develop a strategy to yield detailed data from video recordings or any written records from the survey (Dalati & Marx Gómez, 2018).

The survey is effective to get a large amount of data from a larger population and for this reason, a researcher can get a chance to take a larger amount of data within a specific time of research. Besides, it helps to get a larger opinion of respondents which helps to get the best outcome of conducting quantitative research (Moser & Korstjens, 2018). Besides, it helps to get precise results of research.

Instead, in order to conduct an online survey, a researcher may face a challenge to encourage respondents to answer authentically. The respondents may face barriers to feeling comfortable answering questions (Ball, 2019). Besides, the respondents may face a hurdle to comprehend all survey questions and lack of awareness makes it an issue to get a desirable outcome of the research.

4.3.4 Document Review to Collect Quantitative Data for Research

Document review is an effective technique that helps to guide a researcher to analyze the existing documents and it is an efficacious way to clinch numerical values of research (Gronvall *et al.* 2018). Document reviewing is an effective way to manage the authenticity of research and that helps to accomplish the objectives of the research.

Different types of document reviews are found to analyze quantitative data of research. For instance, public records help to guide a

researcher to review official documents and ongoing records of research and that helps to acquire detailed analysis of research. Besides, personal documents are effective documents that help to analyze the personal accounts of data of an individual. Apart from that, physical evidence helps to collect the accurate numerical values of research.

The document review is a systematic process that helps to identify, analyze and drive effective useful information for acquiring better research insights (Huber-Fliflet *et al.* 2019). The most effective attribute is that the document review process is cost-effective and it helps to maintain the authenticity of the research. The document review can create bias within the research and the reviewing of documents does not get detailed data of research.

It is concluded that these techniques help to get reliable data for research and it helps to develop an open process that helps to remove biases within the research. The techniques are used to target the population and it helps to get opportunities to develop specific insights of research. Besides, it helps to obtain a numerical value that helps to maintain the authenticity of the research.

Quantitative methods of research are concerned with the collection of the numerical data which is then generalized across different groups of people. This is done to explain a given particular phenomenon. In case of a quantitative method of research the final conclusion is a set structure which comprises a set of topics. These are the introduction, literature along with

the theory, methods of research, results that have been found, and discussions regarding the results found.

In case of quantitative methods of research, the research design is either descriptive where the subjects are measured only once or experimental where the subjects are measured twice, before and after a treatment. The approach that is used for the quantitative method of research is the inductive approach where the research starts with the collection of the data which are relevant to the topic of the research.

Quantitative methods of research are focused on the numerical part of the research that is being conducted (Smith & Zajda, 2018). The methods used therefore are very structured and organized so as to make the entire mode of collection quite systematic and structured. Quantitative techniques can be defined as all the techniques that are applied to the process of research in order to be able to take decisions in a more systematic manner through the application of powerful means of analysis (Rehman, 2021). The research is derived from the usage of quantitative data. Thus, quantitative method refers to the scientific method that is employed in order to solve problems and make decisions through proper management. There are various techniques that can be used for the collection of both primary and secondary objective and definitive data in quantitative research.

The very common techniques of data collection in case of quantitative research are as follows:

Probability sampling is a form of sampling in which the data is analyzed and utilized through some form of random selection. This enables the researchers to develop a unique probability statement which is again derived from the data that is collected at random from a particular set of people (Richards et al. 2019). It can be further divided into three forms depending on their nature- simple random sampling, systematic random sampling and stratified random sampling.

Interviewing of the participants is one of the standard modes that are used in research for the purpose of data collection. In case of the interviews that are conducted to collect quantitative data, the form is far more structured and organised. Interviews can be done over telephone, face to face or through Computer-Assisted Personal mode.

Surveys or questionnaires are the next most common form of data collection which is created through the use of online survey software. This type of collection helps in simplifying as well as quantifying the opinions or behavior of the respondents quite easily. It can be done through both Web-based questionnaires as well as mail questionnaires.

Observation is another common method. In case of the quantitative data collection, the researchers approach the matter through naturalistic observation which requires them to have keen observation of the skills as well as the senses in order to get the numerical data regarding the “what” and not about “why” and ”how.” It is more often

structured observation that is used in case of quantitative research so as to have the correct numerical data.

Document Review refers to the process of data collection which is done after reviewing all the existing documents. This is often regarded as an efficient as well as effective way of getting hold of data. The sources of data for document review are Physical Evidence, Personal Documents, and Public Records. All these documents are reviewed to reach the conclusion.

4.1 Quantitative research criticized

Research methodology is said to be the backbone of a research investigation. Among the various research methodologies, quantitative research is another prominent research methodology. Quantitative research methodology mainly focuses on the quantification of the data. It measures the views and responses collected from their surveys and questionnaires, allowing generalizations. Since quantitative research methodologies only deal with numerical or statistical data, as a result, it cannot be used under any circumstances as it fails to meet the needs of the research where understanding human instinct and behavior is of importance (Panthee, 2020). Due to the inductive nature of quantitative research methodology measuring data in quantitative form, this quantitative research is criticized by many for its various limitations and lack of application under various

circumstances. Following are some of the major limitations rather criticisms of quantitative research methodology:

- **Inappropriate representation of the target population** – Inappropriate representation of the target population may cause a hindrance for the researchers to achieve their aims and objectives. The application of an appropriate sampling plan represents the subject's dependence on the probable distribution of data collected and observed. This led to the issue of miscalculation of a probability distribution that leads to falsity in the proposition (Taherdoost, 2022).

- **Lack of resources** – Using quantitative research, there is a requirement of collecting data from different sources. But there are very limited resources from which data can be collected. Due to this lack of resources, large scale researches are difficult to perform (Mancia, 2019). Thus many developing countries, government or non-government bodies, educational institutes, and public service providers face problems to conduct thorough quantitative research due to a lack of knowledge resulting from a lack of resources.

- **Lack of controlling power of the environment** – Researchers faces problems in controlling the environment many times when they collect answers from the respondents from their

survey. Responses are dependent on the conditions occurring at the particular time frame when the survey is performed (Pham, 2018).

- **Limited outcomes in Quantitative research** – the method of quantitative research requires a structured questionnaire with relevant questions. This leads to limited outcomes that outline the research proposal. Due to this issue, the result does not represent the actual or real outcomes occurring in a generalized form. In addition to this, the respondents have limited options derived from their choices formed by the researcher (Bergin, 2018).

- **Expensive and time consuming** – Performing quantitative research is quite difficult and expensive in comparison to other research methods. It also requires a lot of time for performing analysis. As a result, to execute such research there is a need for planned research for ensuring proper designative of groups and proper randomization. For the representation of target people, there is a need for larger proportions of appropriate respondents. In order to collect so many respondents, and for data collective, quantitative research methodology is too expensive as compared to qualitative research methodology (Taherdoost, 2022).

- **Difficult in analyzing data** – Quantitative research needs extensive statistical data for analysis, which is rather difficult to perform for researchers coming from non-statistical backgrounds.

As statistical analysis is derived from scientific discipline and required proper knowledge and hence it is very difficult to perform for the non-mathematicians researchers (Panthee, 2020). It is observed that quantitative research is quite complex for the field of social science, anthropology, psychology, and education.'

- **Failure in distinguishing people from social institutions** – Quantitative research methodology is criticized by several phenomenologists who accuse quantitative researchers of treating the social world similar to the natural world. While doing so, quantitative researchers fail to consider the fact that the social world mainly represents the people interpreting the world, whereas this capability of self-reflection is not present among natural objects (Mancia, 2019).

- **The measurement is derived from the artificial and spurious sense of accuracy and precision** –It is observed that the connectivity between the measures developed from social sciences and the analyzed concepts is derived from assumptions rather than reality. This concept or measurements are basically made up effectively by the researchers and are not derived from the outcomes of reality. Further, quantitative researchers assume the interpretation of the answers collected from the respondents in a similar sense which in reality is not similar in nature (Panthee, 2020).

- **Reliability of instruments hinders the connection of research with everyday life** – The methods of quantitative research mainly relied on the administered research instruments or controlled situations for determining effects. These administered instruments do not consider the real life experience of the people. The lab experiments clearly do not reflect the reality of people, while surveys do not present the attitudes or the environment, derived from which it can conclude how people react towards the environment on day-to-day basis (Bergin, 2018).

- **The analysis of relationships creates a static view of people's independent life** – In quantitative research, the studies bring out the relations between variables collected from the process of interpretation or human groups (Vargas, 2019).

All these above-mentioned criticisms together concluded on another additional problem of isolating out the variables, this quantitative research methodology creates fixed, unreal, and artificial data. The criticisms of quantitative research are seen to carry an ontological objective that generally reifies the social nature of the world.

CHAPTER 5:

Qualitative Research

Qualitative research has often been described as a form of empirical research in which the data collected is not in the form of numbers or statistical units. The data collected during the research is derived from factors that are experienced, realized or observed. It is not derived from theory. The data collected could be in various forms. It can be in the form of videos, images, or even artifacts.

The data that is collected and used for the research do not indicate any ordinal value. The focus of Qualitative researchers is in having a better understanding of the meaning that people have consolidated over time. It is to say that data gives information about how people make sense of their surroundings along with the experiences that they have in the world. Qualitative research therefore avoids every form of intervention into the natural world. In Qualitative research, the studies that are conducted do not put any influence on the natural environment. Instead, the naturally occurring data are analyzed within the natural setting. The sense of phenomenon, of events, of any particular case, or of an object, or even an experience is done with the natural setting in which it has developed. To some of the researchers it appears to be quite a simple data collection method. Though, for many others it can be a complex mode of research which requires intense and meaningful insight into the matters of the world. The main idea of the form of research still remains the same. The focus is on the non-numerical aspect of data collection, analysis and interpretation to come to a conclusion.

5.1 Qualitative Paradigm

In the realm of a highly modernized education system, teaching practitioners and professionals are subject to select heterogeneous paradigms to improve their research quality for the magnificent presentation in regard to career enrichment. In accordance with the academic perspective of Arseven (2018), Experiential Learning Theory is strategically deployed by teachers in order to enrich the qualitative case study paradigm to improve their teaching methods. This academic perception of the theoretical concept is unquestionably relevant in relation to the qualitative paradigm. This succinctly analyzed academic concept is also the provider of information about the case study qualitative research paradigm that eventually implies a plethora of teaching principles in the name of subjectivity, holism, contextualism and constructivism. Therefore, it is conspicuous that the amalgamation of these research-driven principles can conveniently contribute to the wider utilization of the qualitative case study research paradigm to perceive positive outcomes during the school experience. Furthermore, it has also been claimed by Prestridge (2019) that a self-generating professional learning paradigm is also constructively deployed and maintained by teachers on the grounds of harnessing social media platforms. Considering this academic precept, it can also be conceptualized that social media platforms are instrumental to the research qualitative paradigms that are effectively discerned as well as implemented

by teachers with the penchant for ameliorating self-learning and self-teaching behavior to prosper career development. Therefore, teachers or learning staff of universities and schools are becoming more ambitious and career-oriented in conjunction with the enhancement of careers by amplifying the areas of knowledge and expertise for various domains of the qualitative research paradigm.

The research masterpiece of Gálvez Suarez & Milla Toro (2018) reflects that a teaching performance evaluation model is considered an applied-projective method or a qualitative educational approach that is passionately practiced by 94 teachers and 6 managers from 4 public educational institutions to measure the effectiveness of the current level of the teaching profession. This brief account of academic concepts about the qualitative paradigm in the realm of teaching vividly presents the perception of the wider utilization of qualitative educational methods for attaining a myriad of qualitative data to assess the functionality of the profession. In this way, observation is an unavoidable research instrument that is inherently carried out by researchers or teachers of educational services for generating remarkable insights in order to cherish career enhancement. In this context of the discussion, Wagner, Kawulich & Garner (2019) also delineated that using peer groups or collaborative work to learn qualitative research methods has been reported by a wide number of researchers to be useful for students. This account of academic perspective is depicting the awareness for teachers or teaching staff to provide relevant information to access pupils to get necessary data regarding their core

syllabus of academic learning. In relation to this scholarly defined concept of qualitative paradigm for teachers or learning professionals, it is also worth conceptualizing that collaborative work is an inherent or underlying qualitative paradigm. This identified qualitative paradigm is useful for teachers to gain concepts or precepts carried out or manifested by previous researchers in the form of multiple techniques to intensify the in-depth of the developed discussion. Derived from this revelation and interpretation, the qualitative paradigm is found to be a coherent research paradigm that contains heterogeneity and variety to help researchers in evaluating a wide range of data to help readers access essential information about the chosen research context.

In light of reviewing the scholarly masterpiece of Hoover et al., (2018), the qualitative research paradigm is ubiquitous and embodied in three crucial intangible domains such as procedural, interpersonal and reflexive. In conjunction with this academic concept, it can be elucidated that teachers or learning professionals primarily aim to discern three identified domains to discuss every research context to make the concept of the research context transparent and comprehensive to readers or disciples. Procedural, interpersonal and reflexive domains amplify the areas of expertise of teachers or professionals to amplify the areas of discussion in a consistent method on the grounds of improving research skills to make the readers better comprehensive. The active conceptualization of these three different research domains is an instrument to up skill teachers' or learning professionals' competencies and efficiencies for making a discernible

reflection about the subject being analyzed in their masterpieces. As per this contextual information and delegation, teachers are impulsively passionate to deploy qualitative research methods in order to elucidate the research context. On the other hand, Farghaly (2018) regarded the positivist paradigm or constructivism paradigm as a subset of the qualitative research paradigm that plays an unavoidable role to emphasize the responsibility of a researcher in the construction of meaningful knowledge. Academic professionals or practitioners who are instrumental to the role of researchers seek the available and discernible research paradigm to use constructively in order to present or elucidate the research context succinctly. With the aim of discovering the relevance of this desire of researchers, Farghaly (2018) persuaded that when researchers possess little knowledge about new research phenomena, qualitative research becomes pivotal for deep comprehension of these phenomena. Shedding acute interest and enthusiasm about this scholarly driven information, it can also be emphasized that teachers aim to increase their adaptive nature through the process of learning, deciphering and implementing new academic phenomena for presenting the research context in a more developed and concrete context. This is the reason why Farghaly (2018) claimed that qualitative research uses the inductive research approach with the penchant for exploring the observed data for data patterns and relationships that can be further developed and tested hypotheses to generate theory. This academic impression is explicitly emphasizing that the qualitative research paradigm is associated with a variety of research concepts that determine

the research quality and enhancement and this fascinating factor eventually impels researchers or academic professionals to use key methods for the improvement of the research standards in order to help readers grasp the content with transparency.

In accordance with the scholarly concept of O'Donoghue (2018), it can be grasped that the qualitative research paradigm is extremely reliant on great depth and breadth in the context of following an interdisciplinary research approach. From this gathered conceptual academic information, it is transparent that an underlying and specific theoretical position within the research paradigm is highly important for the cultivation of frequent and prevalent knowledge in relation to the progression of the research project. Therefore, teaching professionals or academic practitioners are also inherently cultivating a myriad of information and expanding areas of expertise in conjunction with the accumulation of theoretical emphasis for maintaining research consistency in the parallel context. With the aim of identifying the necessary elements of the qualitative research paradigm, the findings of the academic masterpiece by O'Donoghue (2018) possess an inclination towards the embracement of the interpretivism research paradigm since this specific research philosophy is symbolic interactionism that helps researchers use several techniques to conduct the qualitative research project. This scholarly emphasis can also be supported by Zahle (2021) since this academic researcher has emphasized that the interpretivism research paradigm is intrinsically associated with the employment of qualitative philosophical discussions in relation to the

advancement of the considered research. In this ample and lucid context of the developed discussion concerning the phenomenon of the research paradigm for the qualitative research study, it is extremely unambiguous to remark that various philosophical stances are directly correlated in order to make the qualitative research context argumentative and coherent in the manner to generate insights from the minds of students. The incorporation of these research paradigms such as positivism or constructivism, interpretivism, observation, interviews and other previously mentioned paradigms is the critical success factor for the progression or the advancement of the research context in the realm of qualitative research.

As every research study has a greater social impact, referring to a particular philosophy while conducting the study is necessary, this also has a major effect on the epistemological choices of the research studies. In alignment with this, the effects of selecting the necessary epistemology are also demonstrated in this chapter along with their misconceptions. Derived from this, this chapter will exhibit the major concern of the researcher that needs to be established before doing research on a particular social concern. As well as define how this approach can distinguish steps of educational studies with a logical outcome.

One of the major problems faced by students is in data gathering which poses an issue for the social science researchers, resulting to new challenges regarding research method courses (Boje, 2018). The goal of this part of the course is to educate students about the archived availability of

raw data and which are conveyed into a statistical software method. Students submit different survey questions on the basis of their original research questions, in order to understand the relationship of the research they were investigating. Further in order to determine whether the questions have properly operationalized the concepts, the questions were vetted. This helps the instructors to understand the various opinion and ideas of the students regarding any topic they are researching on. The next is to administer a survey by the students (Privitera, 2018).

Every instructor, professor, institution or department emphasize on different goals for training in research methods. Some emphasizes on the diversity of the society and the various types of question related to various sub-disciplines. Others might advocate ontology and the importance of understanding the role of scientific knowledge. This course briefly covers the important issues of methodology literature.

5.1.1 Approaches of Curriculum

An approach is a collection of varied views and ideals that aid in the establishment of a value system and curriculum (Gagnon et al. 2019). Curriculum design in education is primarily focused on expanding skill sets and competencies that will last in a learner's everyday working environment. Therefore, a few significant approaches to curriculum in the educational context are:

Behavioral Rational Approach: It focuses on creating an end approach, where the instructors completely rely upon behavioral orientations. According to Applebee et al. (2017), a mean-end view can often be regarded as an unavoidable language under teaching pedagogy. In the current scenario, this approach is the blueprint for educational procedures.

Managerial Approach: The general manager is responsible for setting up policies, priorities, instruction, organizing, planning, and innovation. The school administrators are often less concerned about the content of their organization (Graves & Garton, 2017). Therefore, curriculum managers are held responsible to look after these changes, and innovations, and administering the resources.

Systems Approach: The systems method is aided by an organizational chart informed by systems theory, within which the whole school district is reviewed in terms of how they connect (Richards, 2018). Counseling, administration, education, and assessment are all important aspects of the systems approach.

Intellectual Academic Approach: This approach assists in finding the fundamental factors which the learner and the society must be concerned with the organised subject matter (Pui-Wah, 2020). The main focus of this approach lies in elevating the competency of learners, contemporary life needs, and suggestions of subject experts. It provides high emphasis on cognitive principles, and theories.

Non-technical Approach: Personal, subjective, aesthetic, and transactional perspectives are addressed by the non-technical approach. The emphasis is on the learners rather than the products they can create (Craddock et al. 2019). Through activity-based learning and teaching, non-technical techniques are used.

Technical Approach: There are three sub-approaches within this paradigm which are traditional, critical, and learner-driven. These approaches are a congregation of learner-driven incorporate theories (Biggs, 2019). They perceive education such as to be a political act and curriculum development as functioning in politically empowering ways.

Naturalistic Curriculum Theory: The naturalist curriculum theory exhibits that learning is a process of the active involvement of the offspring in settling with the surroundings, utilizing their sanity, and solve trouble (Hayes, 2019). Naturalists tend to maintain that real teaching can be based upon the requirements, and readiness of the human being.

Pragmatic Curriculum Theory: The approach of pragmatic curriculum theory approaches are derived from earning through experiences. They cover children's needs, experiences, and interests (Esi et al., 2018). A pragmatic curriculum is the integration of activities, and subjects. Pragmatists look forward to constructing a dynamic and flexible environment formulating away toward the demands of the situations.

5.2 Qualitative Methodology

With the inexplicable fondness for evaluating the connotation and necessity of the qualitative research methodology, Daniel (2018) has evidently discovered that the development of a TACT Framework stands for Trustworthiness, Auditability, Credibility and Transferability is served as an indispensable theoretical tool for academic professionals in terms of following or abiding by the principles of the qualitative research methodology. The inclusion of this qualitative research framework is the personification of learning practitioners' capabilities to discern and deploy key theoretical concepts in the qualitative research to ensure the high quality of the research. In this context of the discussion, the dependability and credibility of teachers or academic practitioners are extremely correlated with the active inclusion of the research paradigm in the research context. In this sense, qualitative research projects or any proposed work are extremely associated with the phenomenon of maintaining credible data to enhance the quality of the work in conjunction to create impressive behavior on students' trustworthiness about the functional role of academic researchers.

Furthermore, it has also been mentioned by Castleberry & Nolen (2018) that the thematic analysis is also subsequently labeled as qualitative research that passionately influences researchers to follow five steps consequently such as compiling, disassembling, and reassembling,

interpreting and concluding the data to ensure discernible analysis. From this accumulated academic perception from the depth of contemporary academic literature, it can also be further conceptualized and personified that teachers are also equally responsible to follow those previously mentioned rudimentary steps in light of conducting the qualitative research.

The concept of qualitative thematic analysis is also notably emphasized and valued by contemporary academic researchers as Scharp & Sanders (2019) represented that qualitative research methods such as thematic data analysis are inherently practiced by teachers in order to provide students with an experiential comprehensive steps such as categorization of themes and review of them in order to represent data with concrete coherence. With the adoption of this qualitative research methodological concept, teachers or academic practitioners play an active role to aid pupils to comprehend the value of peer briefing and referential adequacy for their better learning (Scharp & Sanders, 2019). According to this academic-oriented information about teachers' proficiency behavior for the conduction of qualitative research methodological procedures, it is worth indicating that thematic qualitative research methodology is a commonly associated methodological framework that helps teachers segment various themes for exploring them constructively with the inception of illustrations and argumentative thoughts. Along with this significance of the qualitative research methodology, Kalpokaite & Radivojevic (2018) argued that sometimes qualitative researchers struggle

with themselves in the context of figuring out how to approach their qualitative data analysis amidst the wide range of possibilities as well as vulnerabilities.

This argumentative connotation of this scholarly driven data simply interprets that teachers face intangible and inexplicable bulwarks in the name of confusion, frustration and dread at the time of approaching the qualitative data into the intended research masterpiece. Hence, it is extremely defensible to comprehend and elucidate that qualitative research methodology is not completely a convenient research approach since the researchers frequently start fearing some factual parts that unknowingly create challenging situations or hindrance to hamper the quality of the qualitative research. Otherwise, Supriyanto et al. (2019) emphasized that academic counselors or the researchers predominantly throw acute interest in key rudimentary elements such as the data collection methods on the grounds of selecting books, journals, scientific journal articles and relevant social policies in relation to conduct qualitative research methodology. This brevity about the phenomenon of the qualitative research methodology is the conceptualization of different categorized precepts about the data collection tools that are unavoidable as well as irreparable techniques for the researchers. Qualitative research methodology is assessed as a feasible methodological practice ever used by teachers or learning staff through the process of shedding primary knowledge and insights about the existing current phenomenon with the aspect of capitalizing on them to further

elucidate and interpret the data with a coherent approach and authentic rationalistic thinking ability.

It has also been determined by Mohajan (2018) that qualitative research methodology is inherently developing in the areas of research development in which researchers take active participation to reveal prevalent information about the chosen research contexts by exploring key areas of business organizations. This accumulation of the scholarly data simply analyses that teachers intend to conduct research on different research topics associated with business organizations and empirical findings in order to create more accessible opportunities for learners to gain abstract knowledge about the existing data about real-world organizations. In conjunction with this developed idea and thought, it is exquisitely transparent that qualitative research methodology is associated with the existing data phenomenon that is considered by academic researchers in the pursuit of highly modified and structured data. This is the reason why previous academic researchers have articulated that the qualitative research methodology prioritizes values and harnesses the potential of qualified data (Braun et al. 2021). Assumptions and concreteness are the two inseparable aspects that are correlated with the phenomenon of qualitative research methodology and these two phenomena are evaluated and interpreted throughout the entire research concept with the aim of diminishing the propensity of the preconceptions. Similarly, researchers who personify the role of teachers or learning practitioners are more likely to abide by the key aforementioned domains of qualitative research in regard to throwing focus

on flexible options to gather and interpret the qualitative data for helping students understand the analyzed data without any misunderstandings. Derived from this account of information, it is understood through the elucidation of previous academic researchers that teachers and students are intertwined with each other in the realm of providing and analyzing the qualitative data to grasp the content with more coherence and consistency.

With the unspeakable fondness for gaining more accountable knowledge about the essentiality of qualitative research methodology, it can be conceptualized from the generation of thoughts by Sherif (2018) that secondary qualitative research methodology possesses pivotal implications for researchers, students and practitioners enthusiastic in imbibing new knowledge through the broader use of prevailing qualitative information. In the context of internalizing this academically oriented information to signify the qualitative research methodology, it has been easily ascertained that teachers play an agile role to generate a plethora of possible opportunities for students to fathom the notions of widened analyzed qualitative data. Along with this connotation of the grasped academic concept of the qualitative research methodology, it is also justifiable to indicate that a second is a key form or category of the qualitative research methodology that is conducted by the researchers in light of gaining information from the existing data sources such as books, articles, contemporary academic masterpieces and other credible data sources. On the contrary, it is also determined by Moser & Korstjens (2018) that qualitative research methodology is also conducted via primary data

collection methods on the grounds of selecting key techniques such as observation, focus group discussions and face-to-face in-depth interviews. This gathered information about the qualitative research methodology distinctly interprets that teachers can easily diffuse the awareness about every layer of the research onion to learners by adopting a primary qualitative research approach besides a secondary qualified research approach. Derived from the preceding analysis of the contemporary academic literature in relation to the assessment of qualitative research methodology, it is found that primary qualitative research methodology and secondary qualitative research methodology are well-practiced and well-implemented by teachers in order to help readers acquaint themselves with the relevant and accessible research processes that can further expand their areas of knowledge and intellectual development to glorify their academic studies.

5.3 Qualitative Research Criticized

Derived from the above-discussed elucidation about the significance and contribution of qualitative research methodologies in the areas of research studies where teachers play an instrumental role to enhance the academic intelligence of students about the relevant concepts of research methodology, it is also worth finding the existing criticism against this categorized research type. With the penchant for the assessment of criticism against this qualitative research methodology, one of the findings gathered

from the research work by Sherif (2018) insinuates that qualitative secondary analysis is a comparatively under-used method in the field of education and social sciences since researchers deal with key challenges such as lack of easily accessible, relevant, trustworthy and complete information about the chosen research context. Therefore, this pursuit of academic qualified data coherently criticizes the qualitative research methodology in the context of highlighting that teachers or academic practitioners can portray irrelevant or inaccessible data to readers which can deteriorate the hamper the research quality. Derived from this academic rationale about the criticism of the qualitative research methodology, it is worth criticizing that teachers or learning professionals can be victimized by the glimpses of inaccessible or irrelevant data with an unintentional approach that can simultaneously create unorganized or fragmented data to raise wrath or dissatisfaction of readers. Along with this context of the critical discussion, Kalpokaite & Radivojevic (2018) also agreed that academic researchers fail in coping with fear or confusion at the time of making an approach to elucidate qualitative data in their research studies. Derived from the context of this academic phenomenon, the inclination of the qualitative research methodology is well-deserved to be criticized since academic researchers deal with intangible psychological impediments creating vulnerable situations to falter the research progression. In one of the preceding research analyses about qualified research methodology, it is evidently grasped that teachers use primary and secondary qualified research concepts and therefore, the acquisition of any

fear or confusion about these two concepts can simply consume a great deal of time. Derived from this data interpretation, it is well-criticizing the qualitative research methodology by considering this a time-consuming method for teachers or academic professionals.

Melnikovas (2018) in their research paper has also delineated that qualitative research methods imply the accumulation of enormous descriptive data. Considering and grasping the connotation of this academic doctrine, it can also be personified from the author's articulation that the accumulation of a vast qualified descriptive data is the rudimentary factor behind the previously mentioned time-consuming challenge for qualitative research methodology. Teachers consume a great deal of time to accumulating and analyze the descriptive data to hone students' intellectuality and this is the reason the qualitative research paradigm makes this research dreaded with the fear of gathering irrelevant data. In this sense, this critical overview of the qualitative research methodology is ubiquitous in the form of representation of previous academic masterpieces.

Qualitative research, predominantly in the context of education is involved with questions of ethics as the study design often comprises human subjects. As per Stahl et al. (2019), research ethics implies application of certain fundamental ethical principles in research activities; ethics involve demonstrating respect to the society and others, proper use of research outputs, regulation and scientific conduct of research. Research ethics may

be regarded as the moral principles guiding researchers conduct and report their findings without any intention to harm and deception towards the participants or members of a study or the society deliberately or without deliberation. While completing a dissertation, it is vital to practice ethical guidelines as it ensures validity of research.

Barrow, Brannan & Khandhar (2021) stipulates ethical guidelines that are issued by the regulatory committees to ensure participants safety must be followed by researchers to ensure the safety of not only the society at large, but also the researchers themselves. Besides, following ethics guidelines make sure the research is error-free and considerably authentic that allows researchers to gain validation, support, and credibility from the public. Therefore, it is vital for researchers to abide by ethical guidelines while conducting research even for their university dissertation purpose. Two essential benefits to students recognized by Moulton & Falcone (2018) include verified and plagiarism-free data while evoking a sense of responsibility in the researchers which makes it easier to respond to misconduct.

There is often a prevalence of perceptions such that secondary data collection does not comprise any requirement for ethics approval. However, Castleberry & Nolen (2018) argues that any research irrespective of primary or secondary data inclusion requires ethical considerations to be followed. It starts at the core of the initial study design that should be targeted at the good of the public and must continue until the results are communicated.

Secondary data are those data that are derived from existing research articles that were accomplished with different purposes than the researcher that will use it. These data often include statistical data such as administrative data or census data collected by other researchers, government or commercial operators.

Corresponding to weighting the ethical risks associated with these secondary data sets, it may be stated that secondary data is perceived as a considerably ethical practice as it reduces burden on the respondents, increases value of investments involved in data collection, assures replicability of the findings of the study and ensures more transparency of integrity and of research procedures. Nevertheless, the value of these secondary data can be realised completely only if the benefits surpass the risks of disclosing sensitive information and re-identifying individuals. Stahl et al. (2019) articulates that secondary data needs to meet certain ethical conditions at all times. Firstly, the data ought to be de-identified prior to releasing them to any researcher. De-identified data implies an individual involved in the secondary data can no longer be apparent or reasonably ascertained from the available data or information. Secondly, the consent of the subjects of the study must be presumed in a reasonable manner. Thirdly, the analytical outcomes should not allow re-identification of participants. Finally, using the data should not cause any potential harm or distress to any individual.

Farghaly (2018) suggests that the choice of secondary data plays an integral part in aiding researchers to act ethically. Major non-for profit and public data producers such as research-led data gathering enterprises like "European social survey (ESS)" and national statistical institutes such as France's INSEE and Britain's ONS are well aware of the ethical aspects. Hence, these enterprises set up infrastructures and services that manage secondary data by abiding with the above-mentioned principles. The administrative records and the survey data released by them are put under such frameworks that they ensure informed consent of respondents while preventing disclosure and re-identification risks.

They also involve strong anonymity by eliminating any direct identifier. In case of synthetic data in which identification may not be prevented, the organizations enable "safe settings". In such cases, releasing highly-detailed data becomes essential for research purposes. Safe settings either allows only authentic users to access such data or prevents analysis of data without downloading or providing a scope or mimicking the data. Therefore, it becomes easier for researchers to abide by the key ethical principles while using secondary data if the data source is a public or non-for profit data-producing enterprise. The burden of complying with ethics shifts from the researcher to the organizations in such cases.

5.4 Qualitative methods and Qualitative techniques

Qualitative research refers to all that research that is done using methods such as the participant observation or the matter of case studies. All these are derived from narratives that give rise to descriptive accounts of a particular setting or a form of practice (Bergin, 2018). In this particular method there is no place for positivism. The approach that they choose for their survey is the form of interpretive approach.

Qualitative research is often regarded as the situated activity where the observer places himself or herself into the world. It is again derived from a set of interpretive, material practices that are expected to transform the world. These practices convert the world into a collection of representation. These include the field notes that were collected, the information during interviews, and the information from conversations, the photographs that were clicked, and the recordings that were done, and even those short memos for personal use. Therefore the approach of the qualitative methods of analysis is an interpretive, naturalistic approach made towards the world. The study of all the information and data are done by the observers and researchers in their natural settings who try to attempt to make sense of or even to interpret or have phenomena in regard to the meanings people put into the setting. There are various types in which qualitative research is conducted. It can be phenomenological or ethnographical or historical. The

research can be done through grounded theory or case study or even action research. The approach that is used is deductive approach often through interpretivism philosophy.

Qualitative Research Techniques refer to all those modes of data collection methods through which both primary and secondary data are collected for the purpose of analysis and interpretation (Rahman, 2020). In all these cases the data collected is in the form of words and narratives and so the collection methods are not very structured. They are most often modified according to the needs and expectations of the respondents and researchers. The following are the techniques used for data collection in qualitative research:

Figure: Techniques used for data collection in qualitative research

Source: Prepared by the authors.

- **Focus Groups-** This process of data collection involves the involvement of a relatively small group of people. This set of people come together in order to discuss the topic of their interest. This group of people allows the researcher to collect data. The data collected is in the form of perspectives of the group. This can be put together to form a collective idea. In this particular process, the group that is selected for observation and collection of data engages in a discussion where they put forward their personal opinions and perspectives in an informal environment. They are regulated by a moderator.

- **Questionnaire and Surveys-** In the case of qualitative research, a questionnaire is a set of questions which are prepared in relation to a particular topic. The main aim is to learn the respondents' perspectives while also testing the hypothesis with the responses (Kelley-Quon, 2018). The set of questions used to gather information are more often open-ended and not stiffly structured.

- **Interviewing** is the next most common form of data collection. The method involves directly asking the respondents some open-ended questions to understand their perspectives and expectations. The direct connection becomes helpful to have a better understanding of the respondents.

- **Direct Observation** is the method that requires an observer to analyze and understand the activities, actions and behavioral responses of all the individuals in their given natural settings. The process does not require the researcher to interact and ask questions to the respondent (Bazen, Barg & Takeshita, 2021). They do not even need to prompt the respondents to act and respond in a specific manner. The researcher simply observes the actions of the individuals involved to draw ideas and interpretations.

- **Document Review-** Just like in quantitative research, here too documents are involved to check and analyze information. The data that gets collected is secondary data. In the case of qualitative research, this data is qualitative in form and nature (Ahmad et al. 2019). The data do not involve any numeric value.

CHAPTER 6:

Research ethics, plagiarism, and the impact of research

Research ethics are so ubiquitous that it's easy to dismiss them as common sense. On the other hand, why are there so many ethical debates and dilemmas if morality is just common sense? One plausible explanation for these differences is that everyone understands conventional moral principles. Nonetheless, depending on their values and life experiences, various people interpret, implement, and balance these rules in different ways. While these are important considerations in academic integrity, there are indeed broader concerns about behavior norms. These include the importance of disclosing findings in a clear manner, not using other academic stuff, and not misrepresenting perspectives. It is, therefore, crucial to study research ethics so that everyone is on the same page.

Research guidelines advise the future researchers and researchers on recognized research ethics. These rules provide ethics, advice, and direction. They promote sound scientific practice by assisting researchers in developing ethical discernment and preventing them from engaging in scientific misconduct. This chapter will define research ethics, explain how they are implemented, how important they are, and how they affect research and research principles. Research misconduct that might affect the researchers directly or indirectly will also be discussed. The researcher must be well aware of the dos and don'ts of research ethics. This chapter will teach the researcher how to overcome hurdles in the research process and ensure a smooth research procedure.

6.1Research Ethics

6.1.1 Ethics

Ethics establishes criteria for conducting research responsibly. In simple terms, ethics can be defined as a set of rules for determining what is right and what is wrong. Because there are no absolute or permanent standards of right and wrong, it is a subjective term with varying implications. It's all about morals for the sake of comprehension. The word ethos comes from the Greek word meaning "custom, habit, character, or temperament."

Ethics is a personal code of conduct derived from what is morally right or wrong. It is governed by the principles or assumptions underpinning the way individuals or organizations ought to conduct themselves (Krishnamurthy & Prabhakar, 2011). . Ethics deals with the aspects of universal fairness. They are the set of principles that are acceptable and meant to be correct and fair. It deals with the common good approach. According to the common good perspective, ethical activities are those that serve all community members (Sison, Ferrero, & Guitián, 2018).

6.1.2 Meaning of Research Ethics

The application of basic ethical standards to research operations in order to establish facts and achieve reasonable new conclusions is known as research ethics. It instructs researchers on how to maximize individual and societal advantages while minimizing risk and harm. The research will be

authenticated if ethical rules are followed. It will provide the researcher credibility as a result of the study. When it comes to moral dilemmas, ethics does not always provide the best solution.

Indeed, an increasing number of people believe that there is no single right answer to many ethical questions, only a collection of principles that may be applied to specific instances to provide all concerned with clear options. For researchers, a diligent mindset is critical. To safeguard research subjects from harm, it is critical to follow protocol, follow informed consent processes, maintain openness and integrity, and maintain confidentiality while doing research. Professional norms of conduct and applicable laws should be followed at all times (Kar, 2011).

Ethics in research are the guidelines. It shows the standard path, following which the researcher will be able to reach their destination. To conclude, the researcher should use fair means. The objectives achieved from the research will be accepted universally. Research ethics addresses the questions, dilemmas, and issues related to the ethical conduct of scientific research. In short, research ethics leads to fair and transparent conduct of research. Ethics are the morals and principles that govern researchers' behavior in society. It distinguishes between acceptable and unacceptable behavior.

6.1.3 Impact of Research Ethics

Ethical principles and guidelines play a vital role in conducting research. A researcher needs to adhere to the moral norms in research. Ethics are a researcher's responsibility. Researchers are wholly and solely responsible for the fair and honest conduct of ethics in the process of research. Ethics are central to the research process. The researcher needs to adhere to the ethical norms in the research.

There are various reasons to follow research ethics. First, ethical norms help to build trust and rapport between the researcher and the respondent. The purpose of establishing a good relationship with the respondent is to collect information and data access required for the research. Building positive interpersonal relationships between the researcher and the respondent is a crucial factor to consider, especially while conducting interviews and observations to generate rich data (Guillemin & Heggen, 2009). Research ethics will develop a sense of trust and understanding between researcher and respondent. This will lead to the smooth conduct of the research process.

Second, research ethics ensures that researchers are accountable to the public. Research Ethics will not allow the undue indulgence of researchers in practices like misconduct, misrepresenting data, and fraudulent acts. A researcher has to ensure transparency in all the stages of his research. Accountability to the public is devoted to promoting integrity in research. The public trusts that researchers will perform ethical research

and that it has the potential to benefit society and will hold the researchers accountable for their conduct.

Third, it provides public support. People are more inclined to sponsor a research endeavor if they are confident in the research's integrity. The research's trustworthiness is determined by ethical standards. Unethical and unlawful research practices can jeopardize research's integrity, resulting in scandals and bad political ramifications that weaken public faith and support for research (Resnik, 2011).

Fourth, it should promote research aims by prohibiting errors, falsifications, and the fabrication of data. It ensures that the search concludes with knowledge and the intention to avoid an error. Since ethical breaches, such as data fabrication or falsification, and ethical issues, such as conflicts of interest, can lead to biased or incorrect research, ethical behavior plays a critical role in supporting objectivity.

Fifth, ethical norms regulate research. Research should not violate the laws and regulations. Ethics are at the core of any research. It guides the study throughout. Every decision made during the research process is made with research ethics in mind. It minimizes the risk of harm to people, society, and nature. A written rule, contract, or agreement that specifies ethically right behavior by persons inside an organization or industry is frequently used to apply ethics in a professional context (Vanclay, Baines, & Taylor, 2013).

Sixth, research ethics gives confidence to the researcher to publish its findings transparently. The results should be free from any errors or misconceptions. Research ethics guides the researcher to conclude research without any misconduct. It authenticates the conclusion of the study. It guarantees transparency in demonstrating how the different stages of the study were conducted to ensure their objectivity.

Finally, ethics in research should find a balance between benefits and the risk of harm (Avasthi, 2013) . The research findings should be credible and applicable. The public's knowledge of research ethics appears to be growing as a result of different ethical challenges that are occurring around us. As a result, it is regarded best approach for study to adhere to all ethical guidelines.

6.1.4 Research Ethics Code of Conduct

Considering the importance of ethics in research, some specific codes or norms are adopted to carry out the research. A code of conduct sets out ethical guidelines. It explains the best practices that a researcher has to follow. This moral compass is crucial to maintaining unethical behaviors in research at a minimum. In short, it provides directions, following which it becomes easy for the researcher to conduct their research ethically. Resnik has mentioned various codes in his book "The Ethics of Science" (Resnik, The ethics of science: An introduction, 2005). Here are Resnik's norms:

Figure: Principal Research Ethics Code of Conduct

Source: Prepared by the authors.

Honesty is the basic norm. The research data should not be fabricated and falsified. The research results should be reported honestly in papers, presentations, and other forms of communication. Overall, research should not be manipulated or misrepresented. In any case, the respondents or the public should not be deceived. **Openness** in sharing the research data, results, methods, and materials with anyone who wishes to explore is the code of conduct in research. The findings of the study should be published and accessible to everyone. Research ethics also expect the researcher to be open to criticism and new ideas.

Carefulness should be observed in the conduct of research. Errors should be minimized for the report to be authentic. Research ethics entails that data records, experimental protocols, and other research documents are maintained for critical scrutiny. The importance of the research findings should not be exaggerated or minimized to maintain their credibility. **Freedom** of inquiry in any kind of research environment should be supported. Researchers should not prevent themselves from engaging in investigation and debate. The ethical code guides the research to conduct the study in a free and transparent manner. At the same time, researchers should take care that the freedom to express data in research should not be misused but carefully published in the best interest of society.

Due credit should be given wherever it is needed. It is ethical conduct on the part of a researcher to acknowledge the work and ideas of

other scholars. In order to comply with the norms, the source should always be credited. It also proves that proper research is done before publishing any report. Due credit authenticates the information, and its credibility is never doubted. **Respect for colleagues** should be observed in the conduct of research. To comply with research ethics norms, collaborators, students, and other colleagues should not be discriminated against or exploited. **Respect for intellectual property** means honoring patents and copyright. It should not be plagiarized. Norms require that the research report properly acknowledge the intellectual property work.

Human subject protection involves respecting human dignity, privacy, and autonomy. Norms impose the need to take extra care so that no one is harmed or exploited in research. **Animal welfare** should be given due importance in the study. Research ethics norms protect and promote the welfare of animals used in research. Personnel records, trade secrets, patient records, and respondents' personal information should all be kept confidential when papers or grant proposals are submitted for evaluation.

Legality must be followed. It is critical to follow all relevant laws, procedures, and institutional structures when doing research**. Stewardship** towards resources, such as biological samples, laboratory equipment, and anthropological sites, should be observed and taken care of. **Social responsibility** is a must as the researcher owes it to

society. The researcher should engage in activities that benefit the community and minimize harm.

Research ethics norms are justified with reference to the code of conduct in common morality. The standards depend on each other and cannot function independently. The researcher takes guidance from the norms to make their research ethical and credible. The validity of the research is validated if the code of conduct is obeyed.

6.1.5 Ethical Decision-making in Research

Norms, codes of conduct, and principles are important sets of rules. Though, they frequently clash and put the researcher in a bind. The term "ethical dilemma" refers to ethical choices that are exceptionally difficult. An ethical dilemma occurs when several moral norms, rules, or standards appear to support two or perhaps more options equally (Fox & DeMarco, 1990). When faced with an ethical dilemma, a researcher may find it hard to hold a decision.

Researchers face ethical issues at every level of the research process, from design to reporting. It needs considerable interpretation on the part of the researcher. When make an ethical judgment, researchers must follow a rational process. It is necessary to employ judgment and intellect in order to thoroughly assess the various possibilities in light of important facts and ethical ideals. All of the parties involved must have their interests considered. It is necessary to investigate many points of view. A rational,

ethical decision does not have to be faultless, but it should reflect a genuine desire to do the right thing for the right reason.

Individual researchers have a crucial responsibility and accountability for their research. The researcher is responsible for maintaining the highest ethical principles and practice standards. Responsibility means the researcher is answerable for the conduct of research. Accountability is the acceptance of responsibility for research's honest and ethical conduct. While responsibility can be shared, accountability for the study lies with the researcher.

Researchers' Accountability and Responsibility

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Responsibility of the Researcher

Responsibility for the conduct of ethical research lies with the researchers themselves. Researchers will be expected to recognize the ethical principles and conduct the research accordingly. The researcher's

research ethic directs them to take responsibility for participants, the research community, society, and the research endeavor.

Responsibility towards participants is the prima facie responsibility of the researcher. Researchers should responsibly select participants fairly and equitably. Researchers must gain informed consent from participants and should operate with transparency. The confidentiality and anonymity of the participants should be respected. It is the responsibility of the researcher to protect the interests of the participants in their research and should not cause any harm to them in the process of research. Researchers should employ sound study design in accordance with the standards of their discipline. Researchers design studies in a manner that minimizes risks to participants.

The researcher's responsibility towards the research community is to conduct the research in strict compliance with the protocol approved by the respective committee. Researchers must abide by the policies of research ethics as laid down by the committee for the best interest of the study. Researchers must use legally acceptable methods of research. It must comply with the prevailing law and order of the place where research is being done. It is the responsibility of the researcher to take ownership of the research work.

Responsibility towards society is the ownership of the researcher towards the environment. Researchers must not harm society in their conduct of research. It should take due care of the environment and

safeguard the resources. The resources that will be used in the process of a research study should be used wisely. The findings of the research should do more benefit to society than harm.

Responsibility for research study is the honesty and integrity of the researcher in dealing with the research. The research study should reflect the value of conducting research. The necessary credentials should be mentioned in the research. The findings from the research should bring valuable change to society. It is the responsibility of the researcher to conduct research in the field whose conclusions will make a positive difference. The research study should be conducted in-depth and exploit knowledge to benefit the economy and society as a whole. Researchers have a responsibility to behave honestly and ethically in the course of their research.

Precisely, the researcher's responsibility is 360 degrees. They have to cater all around them. The researcher's responsibility is to compile the information from various sources and develop a research report that provides findings that will benefit society at large. In the process, researchers have to ensure that all the stakeholders involved are not harmed in any way. Researchers' most important responsibility is to follow protocols and abide by the code of conduct for research ethics.

The Researcher's Accountability

Accountability in research refers to conducting research in an ethical manner. A researcher is accountable for all the practices in the research process. Accountability holds the researcher and absolves him of all the acts done in the conduct of research. Therefore, it is very important for the researcher to be cautious in his every act. Shelby Martin quoted that accountability requires mindfulness, acceptance, honesty, and courage for what we are working on/performing. Webster's Dictionary defines accountability as having four pillars, i.e., responsibility, answerability, trustworthiness, and liabilities. The 4 pillars of accountability explain that what and where we are, we have to contribute/perform our role for what society are paying us whether it is in form of money, time, or manpower (Gawadekar, 2017).

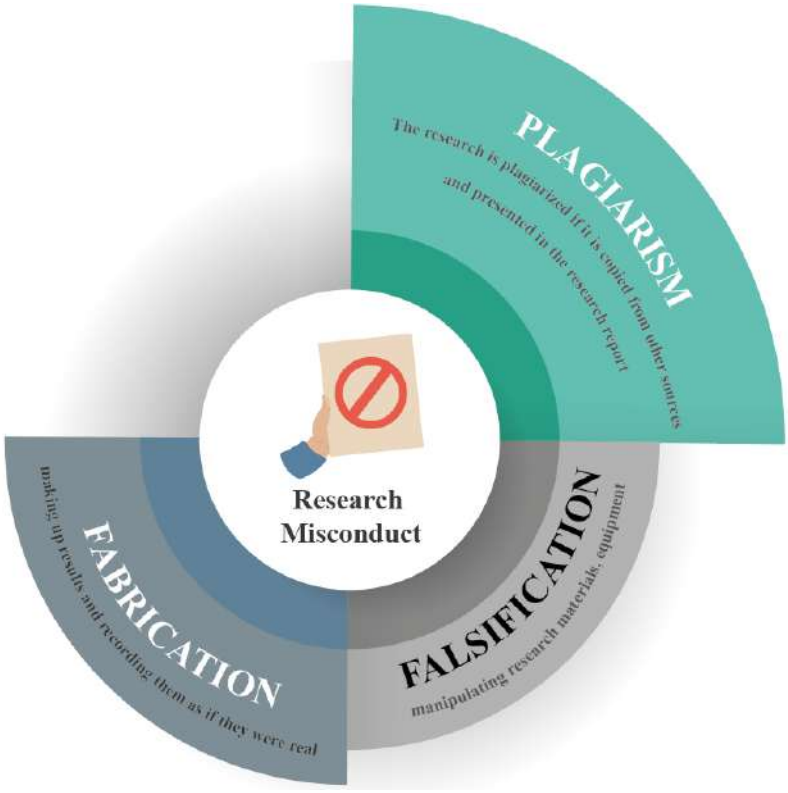
Any wrongdoing will make the researcher liable for it. Since 1980, when several cases were disclosed, it appears that scientific research deception and malfeasance are on the rise. Earlier cases were handled in an unpleasant manner; however the scholarly fraternity has since organized and published guidelines on how to respond to claims of wrongdoing and how to conduct research responsibly. (Woolf, 1991). Fostering a culture of accountability in research helps in avoiding any kind of research misconduct. Researchers are held accountable for any kind of misconduct in research. It is critical to comprehend what misconduct means, how it

occurs, and how it may be avoided in order to support ethical research practices.

6.1.6 Research Misconduct

Misconduct is unethical and wrongful behavior. Misconduct includes violations of human or animal research regulations, exploitation of sensitive documents in peer review journals, unworthy authorship, abuse of subordinates, theft or damage of property, and harassment. Misrepresentation of the study report is referred to as misconduct. Fabrication, falsification, and plagiarism are only a few examples of research misconduct.

Figure: Principal Research Misconduct



Source: Prepared by the authors.

Fabrication, in layman's terms, is invention or making up. In research, fabrication is making up data or results and recording or reporting them. In the European Code of Conduct, fabrication is defined as "making up results and recording them as if they were real" (European Science Foundation, All European Academies, 2017)**.** It has the potential to have

major ramifications, making it research misconduct. When a researcher fills out an experiment with presumed personal data, this is known as fabrication. It's possible that the studies weren't done at all, or that they were done with inflated figures (Martyn, 2003).

Falsification is defined as manipulating research materials, equipment, or processes or changing or omitting data or results such that the research is not accurately represented in the research record. It also includes manipulating images, removing outliers, changing data, and adding or removing data points, among other unethical practices. It is done to give a false impression. Falsifying data is a severe form of research misconduct. Falsification of information is to be discouraged and prevented.

Plagiarism is research misconduct. The research is plagiarized if it is copied from other sources and presented in the research report. It is basically the theft of information. "It involves stealing someone else's work and lying about it afterward" (Sox, 2012). Plagiarism can be deliberate, negligent, or unintentional. Plagiarism is unethical because it fails to give acknowledgment where recognition is deserved to the work's original creator. If the original creator or author is not given credit, they may lose their benefits or face other financial consequences. Stealing copyrighted intellectual material is illegal and often results in legal consequences.

The researcher is directly accountable for all data used in the report. So, it is very important for the researcher to be very careful in data selection

and reporting. The data should be original and not copied. It will only be acceptable for plagiarize by copying the procedures and not revealing where the idea for doing it that way came from if the output of intellectual labor is a novel notion about a technique to process a specific task (a method). That is to say, a method I used without admitting that it was devised by someone else, it could be accused of plagiarizing it (Helgesson & Eriksson, 2015).

A researcher is accountable if the report is plagiarized. So, in addition to expressing unique ideas about a topic, a paper, project, or other piece of writing should clearly document the sources consulted while developing those ideas. Plagiarism is more than deliberately copying someone else's work. Failure to cite source material is also plagiarism. Most cases of plagiarism can be avoided by citing sources. Simply acknowledging that specific material has been borrowed, and providing the report with the information necessary to find that source, is usually enough to prevent plagiarism.

6.1.6 Research Misconduct and the Accountability of Researchers

The public's trust in researchers, funding bodies, and the community at large may be affected or damaged by research misconduct. If declared guilty of scientific misconduct, the person may be imprisoned or barred from performing any further research studies for the remainder of his or her

life (Gerrets, 2016). The unethical activity has a psychological and financial impact on the parties involved. As a result, it is suggested that researchers be held accountable. This can be accomplished in a variety of ways, including raising awareness of the dangers of data fabrication and falsification. The government and research institutes should also advocate for good policies that guide global research projects. Publication incentive systems tend to steer and restrict researchers away from unethical activities such as withholding or adding data to reach a certain conclusion (S.Sengupta & Honavar, 2017).

Researchers should be cautious and consider ethical decisions since they are answerable and held accountable. Any misconduct on the part of a researcher will cost heavily. Society demands accountability from researchers. This is especially true when particular research results affect individuals and communities. Accountability in research is essential for research to be accepted in society.

Ethical Considerations

Ethical considerations consist of principles and values that should be followed. The ethical considerations ensure that researchers do not operate in a manner that is detrimental to society or a person. It rebukes researchers for indulging in misconduct. It indicates what the researcher's behavior would be or not be in certain situations.

Ethical considerations in research are a collection of guidelines that guide the design and conduct of research. The guidelines of research ethics are the guidelines for responsibly conducting research (Bryman, 2007). The research will be validated and accepted only if ethical consideration is followed. Ethics in research ensures that no human rights are abused and ensuring the research is carried out with no hidden agenda.

Principles of Research Ethics

Researchers are responsible for doing their study in an ethical manner. The researcher needs to follow specific vital considerations for the research to be righteous. A researcher must comply with the code of conduct. The validity of the study will depend upon the authenticity of the report and an obligation on the researcher's part to follow principles. The ethical considerations make sure that researchers will not act in a harmful way to society. It prevents individuals and organizations from engaging in heinous behavior.

The goal of research should not just be to create good but also to avoid causing harm. Minimizing the risk of damage, gaining informed permission, ensuring anonymity and confidentiality, avoiding misleading tactics, and providing the ability to withdraw are the five basic ethical criteria for sustaining research integrity (Smith, 2003).

Minimizing the risk of harm is the fundamental principle of research ethics. The researcher needs to mitigate any harm that the research

may cause. The harm can be physical, psychological, social, legal, economic, or intangible. Physical harm means injury, illness, or pain. Physical harm may include being humiliated, manipulated, or in any other way disrespectfully or unjustly. Guilt, tension, and a loss of self-esteem are all examples of psychological injury. Although the majority of psychological risks are minor or brief, certain research has the possibility to cause severe psychological harm. Social harm means that research should not have a negative impact on the personal relationships of the participants. Legal harm is the potential litigation that might lead to unnecessary documentation. Participants may face direct or indirect consequences, such as losing professional reputation, market status, health insurance, or employability.

In a research project, it's best to think about any possible cause of danger and think up with measures to prevent it. The researcher must demonstrate thoughtful consideration of these risks and how they will be managed. Minimizing the risk of harm is integral to high-quality research. Precautions, safeguards, and alternatives can all be integrated into the study endeavor to lessen the risk of damage or to limit the severity of it.

Risk to participants must be reasonable in relation to anticipated benefits, as it is impossible to eliminate the chances of harm completely. The outcomes of a study have no bearing on the risk level. The risk/benefit analysis just considers whether the danger is acceptable, not its magnitude. So the researcher needs to manage the risk. To manage risk, participants

must know the risk of harm associated with the research. Proper research protocols should be in place to specify the measures. The research protocol should document the processes for minimizing and managing risks of harm.

Obtaining informed consent from the participants involved in the research is vital**.** Participants are involved in the majority of the studies. Before beginning the research, the researcher must inform the participants about all of the activities that will be part of the study and obtain informed consent from them in order to comply with ethical standards. When a person knowingly, voluntarily, and sensibly gives announced consent to participate in research, they are giving informed consent.

The purpose of obtaining informed consent from participants is to ensure that they are aware of what they are agreeing to. They can decide whether or not to engage in the study if they are clear of the research's goal. The respondents should be briefed about the research project's purpose, the research's outcome, the research's negative effects on the participants, their role in the research, the methods used to protect the participants' anonymity and confidentiality, and the research project's funding sources and usage. They can ask for additional information as well. They can clear all the doubts before being part of the research. They are entitled to know every bit of research work.

Knowing that what researcher is conducting and reason can help to create a sense of accountability, which can help to reinforce ethical behavior

among researchers (Cacciattolo, 2015). Once they are satisfied and clear with the doubts, the researcher can ask for the consent form to be signed. In between researcher and the respondents, the form will serve as a sign of confidence. Because informed consent is voluntary, a research participant must go through it on a regular basis. Informed permission is gained to ensure that the researcher is aware of all aspects of the participant's participation. Informed consent is a fantastic way to ensure participant happiness.

One of the most essential ethical considerations is to protect an individual's personal anonymity and the confidentiality of the data contributed by the respondent. Confidentiality refers to the participants' right to privacy. Under no circumstances can any information on participants or submitted by participants be made public or retrieved by anyone except the researcher. Because all respondents have a privacy rights, it is the researcher's responsibility to safeguard personal information. Controlling how a participant is displayed in the public realm is one way to protect a participant's privacy (Fouka & Mantzorou, 2011).

Separating or altering any personal or identifiable data provided by participants from the data is what confidentiality refers to. Because personal information is included, other individuals may be able to identify an individual's personal or institution's identity. As a result, researchers must be careful to provide information that will result in minimal exposure. Moreover, confidentiality ensures that no personally identifying

information about respondents appears in published study reports or other publications.

In all of the research publications, the volunteers are referred to be anonymous. In the research process, maintaining participant anonymity is crucial. Data is collected anonymously if no personal or identifying information is obtained. **Anonymity** refers to the fact that researchers are not aware of the identities of individual individuals. To protect the identities of study participants, ethical norms and research protocols stress the use of pseudonyms during the research process (Smyth & Williamson, 2004).

The research study can contain anonymous or confidential information. It is essential to inform participants about what information will be collected and how their identities will be protected. This information must be included in the informed consent form to explain the nature of the data collection and assure participants that their privacy will be respected.

Avoiding misleading practices is the core ethical consideration. It includes fabricating or falsifying data, distorting data analysis, or misrepresenting study findings in publications. It's a type of academic dishonesty. These actions are deliberate and have major ramifications; research misconduct is not a simple blunder or a disagreement over data processing. Misleading practice is a misrepresentation of the data. It also means deceptively communicating honestly reported data. Manipulation of research materials, equipment, or procedures and modifying or omitting

data or outcomes constitutes misrepresentation of the research in the research record.

In research, falsification and fabrication of data is also a deceptive tactic. Falsification is defined as the alteration or manipulation of data, research materials, techniques, equipment, or outcomes. Falsification might include tampering with data or outcomes in order to make the study less accurate. Fabrication, Otherwise, is more about fabricating academic information and findings and presenting them as authentic. Falsification and fabrication of information and study are both serious forms of deception. Essential stakeholders in the research, such as sponsoring institutions, funders, employers, research readers, and the general public, are deceived by misleading research.

The researcher should shun dishonest and misleading tactics that may lead to the respondent's misinformation. It entails avoiding any behaviors such as sending out improper communications, providing false assurance, and providing incorrect information, among others. Deceptive practices lead to severe consequences. It's a challenging issue of morality since it threatens scientific integrity and institutional legitimacy.

Providing the right to withdraw from the research work means a participant can leave the study. Participants are free to withdraw their participation at any time. This means the participation is voluntary and not an obligation on the part of participants. Voluntary participation means that people participate in the evaluation free from coercion. It is the right of

participants to leave the research work at any point in time. The participant should not be pressured to continue. The participants are also not liable for any explanations.

The freedom to withdraw should safeguard study participants from knowledge disparity, inability to mitigate, inherent risk, and undesired bodily invasion, as well as bolster public confidence in the research industry (Schaefer & Wertheimer, 2010). When withdrawing from the study, the participant should let the research team know that he/she wishes to withdraw. The reason(s) for leaving the study may be provided to the research team, but it is not obligatory.

6.2 Ethical considerations: an essential aspect of research ethics

Prior to freely participating in research, ethical considerations strive to guarantee that potential responders have all necessary information. A researcher must put themselves in the shoes of the participant to decide whether or not there is a realistic risk of harm. This possibility must be eliminated or at the very least minimized by the researcher. In order to address the risk of harm, the research design may need to be changed. As a consequence, ethical considerations must be incorporated when conducting the research work rather than once it has progressed.

Ethical considerations play an essential role in research. It is crucial to follow the principles of research ethics for the research to be accepted. The research efforts might go to waste if researchers fail to follow any of the ethical considerations. Research ethics is the core aspect of research work. It is the foundation of research design. Ethical considerations are not an afterthought when designing the report. It is an important aspect of research that must be emphasized in research work.

CHAPTER 7:

Conclusions

Thus, it can be concluded that research methodology is a crucial segment of research. Historical trends in research have been identified in this assignment and a clear distinction between qualitative and quantitative research is measured throughout this discussion. Different methods of analyzing qualitative data have been discussed in which descriptive and Correlational analysis is important. Research that is derived from three fundamental steps can be concluded scientific research, Categorization, and Explanation of data.

These scientific methods help to validate a conclusion corresponding with their verifiability of information. The researcher argued on some evidence that the process of systemic observations does not follow a particular path of investigation as they follow only the perceptive facts but he also focused on the desires and reliability of the conclusions. There are some other arguments in the research such as the Scientific method mainly works on groups like a university but is not focused on the independent fact of thoughts. It can help to predict the accuracy of research. Also, the scientific method follows some factual evidence with relevant information and focuses on the commitment of the purpose of research with moral balance, and the notion of the logical reasoning process.

Thus, it can be concluded that research implies repetitive hunting for a conclusion till the person conducting it reaches a certain complete sense and then still gets encouraged for a scope for some improvement in it.

Systematic Research is a vital part of any strong conclusion to attain any goal through a systemized process of firstly observing, measuring, collecting, and recording the data and then arranging and organizing them to extract their significance and importance and then writing all the vital outcomes of the study involved in research to convey the information to the readers. (Peffers et.al., 2017) Research is often depicted as a process that is very much creative in nature to get a better understanding and a well-highlighted picture of various sorts of issues involved in economy, culture, society, and even also in mankind and hence a development mindset is to be followed for the benefit of the public. It is a logical process of reasoning in any study which provides greater value to the context and creates a strong platform for decision making in the future.

Research is often looked upon as a continuous and subconscious activity that provides aid in critical assessment in a systematic approach to attain the desired objective. Well-conducted research always fills up the gap between the person who is conducting research with the most recent information and knowledge available and discovered. The concrete data obtained from any sort of research act as a sound base for guidance and paves a way to arrive at any sort of conclusion.

Concluding the above it has been identified that, conducting the research in a logical manner derived from this researcher is able to devoid their passion, emotion, and empathy in the research outcome. Through this,

the research studies are able to determine their outcome in a logical manner and derived from different scientific theories, which helps to validate the outcome of the educational research. In this chapter discussion of the approach, ontology, and epistemology of the research is done, which helps to rely the study on a thoughtful and logical operation. Demonstration of the validating process of hypothesis is also demonstrated in the above through the application of different epistemological outcomes. Derived from this the researcher is able to determine the validity of the study through association with emotion or feeling. This helps to define the research studies through an application of scientism and crypto-positivism by influence and impact of different scientific events on the educational research studies. Derived from this epistemic empathy analysis of the quest for objectivity is necessary thorough conduction of evidence-based research.

Through this philosophical argumentation research studies understanding of the phenomena can be easily done, which creates agendas for motivating the research and research policies. Furthermore, sometimes it is creating confusing developments within the educational research processes, which helps to constitute different knowledge in education. This helps to integrate an assertion of warrants this evidence through different plural manifestations, which is derived from the ontological and epistemological choices.

Thus, from this study of research methodology, it can be concluded that we got a detailed knowledge about one of the most prominent research methodologies of quantitative research. Quantitative research is used to collect information quickly as it is used to collect data in statistical or numerical form. Quantitative researchers rely on the facts or information collected from surveys, questionnaires, and so on. They believe in the existence of only one reality. With a lot of advantages, quantitative research methods are also criticized derived from several issues as it is considered to be expensive and time-consuming for executing the surveys and collecting data by reaching to every individual respondent. This quantitative approach is not suitable for research in several fields as it is unable to understand the nature of human behavior and their choices. So derived from the requirement researchers choose a quantitative approach for performing their research.

Qualitative research therefore involves the collection and analysis of any and every form of non-numerical data such as the textual data, the video recording, or the audio recordings and so on in order to understand the various concepts, the distinct opinions of different individuals on the particular topic on which the research is being conducted. The main idea of such research is to effectively gather an in-depth insight into the happenings of the natural environment. It also allows one to grasp an idea about the problems that exist so as to generate new ideas and solutions through

research or even to bring it to the knowledge of people for observation and discussion. Although there are various ways of collecting data and conducting research in the case of qualitative methods of research, the focus and idea of the research remains the same. The main motive remains to collect non-numerical data from individuals in their natural settings and not away from it.

Research ethics and guidelines are essential. They provide a way for researchers to carry out research. The validity of the findings will be assured if the research is conducted by following the code of conduct. Research must be carried out in a safe and ethical manner. Research ethics guard participants. It makes sure that research is directed in a manner that assists the welfare of researchers, participants, and society as a whole. As long as there are professional codes, laws, regulations, and ethics committees, they can make provisions for guidance. Still, the final determinant of conducting research rests with the researcher's value system and moral code.

Researchers have to take sole responsibility for the ethical conduct of their research. This chapter covered a variety of topics relating to research ethics. The impact of research ethics as well as ethical concepts was thoroughly discussed. Researchers should be entirely aware of the ethical considerations before starting the study. It shows how important it is for the researcher to follow research ethics. Failure to do so would lead the researcher to severe consequences. Following research ethics is in a

researcher's best interest since the implications might be long-lasting and possibly lead to the end of their career.

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