



SCIENTIFIC METHODS IN RESEARCH

Dr. Wardikar Vijay Ganeshrao

Librarian, Mahila Mahavidyalaya, Jog Chauk, Amravati. 444601 Maharashtra State, India.

ABSTRACT This article throws light upon the eight main steps involved in the research process. This article focuses on new researchers who are completely unknown about research by suggesting ways to do research in the simplest possible way through descriptive methods and developing new approaches and presenting a systematic roadmap for new researchers. In this article, the author has tried to analyze in detail the eight scientific steps to be used while conducting research and the focus has been on how to make the research simple and standardized by using those steps. In this article, the new researchers have tried to systematically sequence the eight steps that should be studied before conducting research. According to the conclusions drawn by this article, the scientific steps outlined by the author are easy for new researchers to use methodology and with equal intensity can contribute to qualitative research.

KEYWORDS : Research, Scientific Methods, Descriptive Method, Roadmap, Inquisitiveness

INTRODUCTION

Research is as old as the academic consciousness of human mind. Man has all along tried to look back at his history for better understanding of the evolutionary process leading to the present stage of mankind. He has also endeavored to re-examine and whatever possible to re-interpret the things he has already gone through. Present has its roots in the past and the seeds of future are shown in the present itself. Man's urge to understand the present has obviously induced him to look into his past more carefully and present his interpretations more scientifically in order to give purposeful direction to his intellectual efforts in pursuit of diverse ends to which the human activities are devoted. This urge of human brain to re-examine and re-understand thing may rightly be called research at least, to being with the concept of research is thus closely linked with human endeavor for better understanding of this evolution, environment and growth through diverse stages of human history.

Objectives Of The Present Study

1. To find ways to make research as possible and easy.
2. To develop a new point of view by introducing these steps.
3. To present a methodological roadmap for new researchers in the research process.

Scope Of The Present Study

The scope of the present study has confined to research conducted in various disciplines of higher education. The study is restricted to all those faculties of higher educational institute in which research process has been implemented.

Methodology

Present study is concerned to academic research which is to be done in various disciplines of higher education. The author has used the research methodology which is applicable for research in higher education.

This study is a descriptive study that's why the author has conduct this study by descriptive method because the data about related topic is collected and described it.

Review Of Literature

Howitt, Dennis & Cramer, Duncan.(2000). First Steps In Research and Statistics: A Practical Workbook for Psychology. London. Routledge. The aim of this book to provide clear and relatively short introduction to basic research ideas and statistics which researcher typically need when doing research in the early part. however it is expected that the structure approach will also be useful at later stages of training in methods and research.

Wood, Marilyn J. V & Ross-Kerr, Janet. (2011). Basic Steps in Planning Nursing Research: From Question to Proposal. Boston. Jones and Bartlett.

The essence of book found in the idea that the way you ask a question will irrevocably determine the way you will answer that question. This is the unique feature of our approach to research and distinguishes this

book from others that offer different views of research and the research process.

Pitchai Balakumar, Inamdar Mohammed, Naseeruddin & Gowraganahalli, Jagadeesh. 2013."The critical steps for successful research: The research proposal and scientific writing". In essence, research is performed to enlighten our understanding of a contemporary issue relevant to the needs of society. To accomplish this, a researcher begins search for a novel topic based on purpose, creativity, critical thinking, and logic. This leads to the fundamental pieces of the research endeavor: Question, objective, hypothesis, experimental tools to test the hypothesis, methodology, and data analysis. When correctly performed, research should produce new knowledge. The four cornerstones of good research are the well-formulated protocol or proposal that is well executed, analyzed, discussed and concluded. This recent workshop educated researchers in the critical steps involved in the development of a scientific idea to its successful execution and eventual publication.

Santos, Mark Kevin Gabriel. "The Seven Steps of the Research Process". This is very useful and informative article. it has given deep explanation the steps of research process in a simple way.

Steps Involved in the Research Process: Top 10 Steps. This article throws light upon the ten main steps involved in the research process. The steps are: 1. Formulating the Research Problem 2. Extensive Literature Survey 3. Development of Working Hypotheses 4. Preparing the Research Design 5. Determining Sample Design 6. Collecting the Data 7. Execution of the Project 8. Analysis of Data 9. Hypothesis-Testing 10. Generalisations and Interpretation.

Concept Of Research

Research therefore, has been an integral part of academic pursuits in the past. It has served two-fold purpose of intellectual sharpening and evolving new theories to explain diverse phenomenon through which mankind has survived to its present form. It may not only be for academic interest but more for human enlightenment that one should study history to understand the dimension of development of mankind.

Research in common parlance refers to a search for knowledge. One can also defined research as a scientific and systematic search for pertinent information on a specific topic. In fact research is an art of scientific investigation.

The Advanced Learner's Dictionary of current English lays down the meaning of research as "a careful investigation or inquiry specially through search for new facts in any branch of knowledge."

Redmen and Mory define research as a "systematized effort to gain new knowledge". Some people consider research as a movement, a movement from the known to the unknown. It is actually a voyage of discovery. We all possess the vital instinct of inquisitiveness for, when the unknown confronts us, we wonder and our inquisitiveness makes us probe and attain full and fuller understanding of the unknown. This inquisitiveness is the mother of all knowledge and the method, which

man employees for obtaining the knowledge of whatever the unknown can be termed as research.

Research is an academic activity and as such the term should be used in a technical sense. According to Clifford Woody "research comprises defining problems, formulating hypothesis or suggested solution; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whatever they fit the formulating hypothesis.

Research should never be treated as piece of compilation work. By reading a number of books and compiling their material in yet another book is no research. Research is always expected to be something original or a piece of work that advances human knowledge. This may be done in several ways.

Scientific Steps in Research

Any research process consists of series of actions and activities, or steps necessary to effectively carry out research and desired sequencing of these steps.

1. Selection of Problem

The research problem undertaken for study must be carefully selected. The task is a difficult one, although it may not appear to be so, help may be taken from a research guide in this connections. Thus a research guide can at the most only help a researcher choose a subject and also some resources are useful for the selections of problem as bibliography, periodical literature, conferences, seminar proceedings etc.

2. Definition and Scope Of Terms

Defining a research problem properly and clearly is a crucial part of a research study and must in no case be accomplished hurriedly. However in practice this is frequently over looked which causes a lot of problems later on. Hence, the research problem should be defined in a systematic manner, giving due weightage to all relating points. The techniques for the purpose involves the undertaking of the following steps generally one after the other.

- i. Statement of the problem in a general way;
- ii. Understanding the nature of the problem;
- iii. Surveying the available literature;
- iv. Developing the ideas through discussions;
- v. Rephrasing the research problem into a working proposition. The resources use for defining the problem are Dictionaries, Encyclopedias, Hand Books and Basic Literature etc.

3. Literature Search

Once the problem is formulated, a brief summary of it should be written down. It is compulsory for a research worker writing a report for research. At this juncture the researcher should undertake extensive literature survey connected with the problem. For this purpose, the abstracting and indexing journals and published or un-published bibliographies are the nature of the problem. In this process, it should be remembered that one source will lead to another. The earlier, if any which are similar to the study in hand should be carefully. A good library will be great help to the researcher at this stage.

4. Formulation of Hypothesis

After extensive literature survey researcher should state in clear terms the working hypothesis or hypotheses. Working hypothesis is tentative assumption made in order to draw out and test its logical or empirical consequences. As such the manner in which research in hypothesis are developed is particularly important since they provide the focal point of research.

The role of the hypothesis is to guide the researcher by delimiting the area of research and to keep him on the right track. It sharpens his thinking and focuses attention the more important facets of the problem. It also indicates the type of data required and the type of method of data analysis to be used.

By using following approach hypothesis can be formulate.

- a. Discussions with colleagues and experts about the problem, it's origin and the objectives in seeking a solution;
- b. Examination of data and records, if available, concerning the problem for possible trends, peculiarities and other clues;
- c. Review of similar studies in the area or of the studies on similar problems; and
- d. Exploratory personal investigation which involves original field interviews on a limited scale with interested parties and individuals with a view to secure greater insight in to the practical aspects of the problem.

5. Preparing the Research Design

The research problem having been formulated in clear cut terms, the researcher will be required to prepare a research design, i.e he will have to state the conceptual structure within which research would be conducted.

There are several research designs, such as experimental and non experimental hypothesis testing. Experimental designs can be either informal designs (such as before and after without control, after- only with control, before- and after with control) or formal designs (such as completely randomized design, randomized block design, latin square design, simple and complex factorial designs), out of which the researcher must be selected one for his own project.

6. Data Collection

There are several ways of collecting the appropriate data which differ considerably in context of money costs, time and other resources at the disposal of the researcher.

Primary data can be collected either through experiment or through survey. if the researcher conducts an experiments, he observes some quantitative measurements or the data with the help of which examines the truth contained in this hypothesis. But in the case of survey data can be collected by any one or more of the following ways.

- i. By observation
- ii. Through personal interviews
- iii. Interviews through online mode.
- iv. By mailing of questionnaires
- v. Through schedules

7. Analysis of Data

After the data have been collected, the researcher turns to the task of analyzing them. The analysis of data requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation on the drawing statistical inferences. The unwieldy data should necessarily be condensed in to a few manageable groups and tables for further analysis. Thus researcher should classify the row data into some purposeful and usable categories coding operation is usually done at this stage through which the categories of data are transformed into symbols that may be tabulated and counted. Editing is the procedure that improves the quality of the data for coding with coding the stage is ready for tabulation. Tabulation is a part of the technical procedure procedure where in the classified data are put in the form of tables. The mechanical devices can be made use of at this juncture. A great deal of data, specially in large inquiries, is tabulated by computers.

8. Interpretation and Report

If a hypothesis is tested and up held several times, it may be possible for the researcher to arrive at generalization, i.e to build a theory. As a matter for fact, the real value of research lies in its ability to arrive at certain generalizations. If the researcher had no hypothesis to start with he might seek to explain his findings and the basis of some theory. It is known as interpretation. The process of interpretation may quite often trigger of new questions which in turn may lead to further researcher.

Finally the researcher has to prepare the report of what had been some by him. Writing of Report must be done with great care keeping in view the following.

The layout of the report should be as follows:

- i. The preliminary Pages
- ii. The main Text
- iii. The End Matter

Findings and Conclusion

Conducting research is a tiresome task because it is a year-round activity. You have to be committed to become successful in making a good research which would benefit not only you but of everyone. The willingness in you in making future researches should always be there because doing research without your 'heart' and 'mind' on it is a burden on your part. Always enjoy doing it. Enjoy the ride. The more that you enjoy doing the task, the more that you ease the burden in conducting this difficult endeavor. The scientific steps outlined by the author are easy for new researchers to use methodology and with equal intensity can contribute to qualitative research and make it easier to find previous research and sources when needed at a later point in the research process.

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