**Lesson 03: Types of research**

**Introduction:**

There are many types of research, for example:

* Pure and applied.
* Qualitative and quantitative.
* Descriptive and analytical.
* Conceptual and empirical.
* Experimental and diagnostic.
* Comparative and historical.
* Action research.
* KAP study.
* Survey type.------ and many more- Development Res. And Ethnographic etc. [[1]](#footnote-2)

We are going to learn all of them in this lesson

**1-Types of scientific research:**

* 1. Application- Pure and Applied Research
* Applied- Finding solutions for immediate problems facing a society/industry
* Pure- Concerned with generalization and formulation of a theory
* 2. Inquiry Mode- Quantitative and qualitative
* Quantitatative- Measurements of quantity or amount
* Qualitative- Concerned with qualitative phenomena (reasons for human behavior).

**1-1-Research Studies:**

* **Based on research objectives:**
* Exploratory or formulative research- To gain familiarity with a phenomenon or to achieve new insights into it

Explanatory research Describes phenomena and attempts to explain why behavior is the way it is (often theory driven).

Enables us to understand the very nature of what we are actually looking at. [[2]](#footnote-3)

* descriptive research- To study accurately the characteristics of a particular individual, situation or a group-includes survey

Descriptive research describe phenomena and is not particularly concerned with understanding why behavior is the way it is.

Starting point of a research project into phenomena (known as an exploratory study) of which we know very little(manipulation of online reviews). [[3]](#footnote-4)

* Diagnostic research- To determine the frequency with which something occurs or with which it is associated with something else
* hypothesis-testing research- To test a hypothesis of a causal relationship between variables.[[4]](#footnote-5)
	+ 1. Predictive research Not only to explain behavior but to predict future behavior given a change in any of the explanatory variables relevant to a particular phenomenon.
		2. If we can understand physical or human phenomena then we will be in a much better position to predict their future paths and possibly even to change them.
		3. Inpractice,most research work will include aspects of all this research‘types’.[[5]](#footnote-6)

**2-Classification of Scientific Research:**

Scientific research can be classified in several ways. Classification can be made according to the data collection techniques based on causality, relationship with time and the medium through which they are applied.

* According to data collection techniques:
	+ Observational
	+ Experimental
* According to causality relationships:
	+ Descriptive
	+ Analytical
* According to relationships with time:
	+ Retrospective
	+ Prospective
	+ Cross-sectional
* According to the medium through which they are applied:
	+ Clinical
	+ Laboratory
	+ Social descriptive research

Another method is to classify the research according to its descriptive or analytical features. [[6]](#footnote-7)

**3- The purposes for each type of research:**

The 2 primary purposes of research are to gather information or test an existing theory. When broken down further, you can see 5 more specific purposes:

* **Exploratory research:**

 is an early-stage inquiry that explores a topic for further study down the line, like exploring the deep ocean with a submersible vehicle.

* **Descriptive research:**

 aims to explore and describe a specific substance, person, or phenomenon.

* **Explanatory research:**

  is about figuring out the causal relationship, why something happens.

* **Predictive research:**

  is all about trying to predict what might happen in specific situations based on the properties of the research object.

* **Meta-research:**

  looks for overarching insights from multiple sources and tests the validity of common hypotheses.[[7]](#footnote-8)

Collection and analysis of data to develop or enhance theory.

Collection and analysis of data to examine the usefulness of theory in solving practical problems.

**4-The interaction of basic and applied research:**

* + Basic research provides the theory that produces the concepts for solving problems
	+ Applied research provides the data to help support, guide, and revise the development theory.

Evaluation research:

* + The collection and analysis of data to make decisions related to the merit or worth of a specific program
		- Merit relates to a program accomplishing what it was supposed to accomplish
		- Worth relates to the value attached to a program by those using it

The development of effective products for use in schools

The collection and analysis of data to provide a solution to the practical, valued problems .[[8]](#footnote-9)

**5-The Scientific Method :**

What is the scientific method?

It is a process that is used to find answers to questions about the world around us.

Is there only one “scientific method”?

No, there are several versions of the scientific method.

Some versions have more steps, while others may have only a few.

However, they all begin with the identification of a problem or a question to be answered based on observations of the world around us.

They provide an organized method for conducting and analyzing an experiment.[[9]](#footnote-10)

Make an observation: notice a phenomenon in your life or in society or find a gap in the already published literature.

Ask a question about what you have observed.

Hypothesize about a potential answer or explanation.

Make predictions if our hypothesis is correct.

Design an experiment or study that will test your prediction.

Test the prediction by conducting an experiment or study; report the outcomes of your study.

Iterate! Was your prediction correct? Was the outcome unexpected? Did it lead to new observations?

The scientific method is not separate from the Research Process, in fact the Research Process is directly related to the observation stage of the scientific method. Understanding what other scientists and researchers have already studied will help you focus your area of study and build on their knowledge.[[10]](#footnote-11)

The Scientific Method is A logical, organized way of solving problems.

* Define the Problem
* Collect Background Information
* Form a Hypothesis
* Test the Hypothesis
* Make and Record Observations
* Draw a Conclusion.[[11]](#footnote-12)

**6-Types of Scientific Papers:**

* Original article – information based on original research
* Case reports – usually of a single case
* Technical notes - describe a specific technique or procedure
* Pictorial essay – teaching article with images
* Review – detailed analysis of recent research on a specific topic
* Commentary – short article with author’s personal opinions
* Editorial – often short review or critique of original articles
* Letter to the Editor – short & on subject of interest to readers.[[12]](#footnote-13)

**Conclusion :**

Scientific research has many types, including basic research and applied research, and each type has its own methodology. For example, technical research relies on the experimental method, while social and humanitarian research focuses on the descriptive and analytical method. Linguistic research usually uses the structural approach...etc.

1. S.K. Kataria : **Basics of Social Research, Public Administration Mohanlal Sukhadia University, Udaipur.** [↑](#footnote-ref-2)
2. Geng Cui **: Introduction to Research**, Faculty of Business, Lingnan University [↑](#footnote-ref-3)
3. ibid [↑](#footnote-ref-4)
4. Thomas Varghese: INTRODUCTION TO RESEARCH METHODOLOGY, Dept. of Physics Nirmala College, Muvattupuzha, 3 October 2023 [↑](#footnote-ref-5)
5. Geng Cui **: Introduction to Research**,op, cité [↑](#footnote-ref-6)
6. [Ceyda Özhan Çaparlar](https://pubmed.ncbi.nlm.nih.gov/?term=%C3%87aparlar%20C%C3%96%5BAuthor%5D) and [Aslı Dönmez](https://pubmed.ncbi.nlm.nih.gov/?term=D%C3%B6nmez%20A%5BAuthor%5D) : **What is Scientific Research and How Can it be Done**?op cité [↑](#footnote-ref-7)
7. https://monday.com/blog/project-management/why-is-the-research-plan-pivotal-to-a-research-project/ [↑](#footnote-ref-8)
8. Gay, Mills, and Airasian **: Introduction to Educational Research** , p18-21 [↑](#footnote-ref-9)
9. https://www.google.com/search?q=definition+of+scientific+research [↑](#footnote-ref-10)
10. https://libguides.umflint.edu/research/scientific-research [↑](#footnote-ref-11)
11. Ganesh Dive : **Stages in Scientific Research Process** , p03 [↑](#footnote-ref-12)
12. Effective Medical Writing. Peh WCG &, NG K H Singapore Medical Journal 2008 49(7) 522 [smj.sma.org.sg/4907/4907emw1.pdf](http://smj.sma.org.sg/4907/4907emw1.pdf) (accessed 05 November 2013) [↑](#footnote-ref-13)