**Research**

the search for knowledge, or as any systematic investigation, to establish novel facts, solve new or existing problems, prove new ideas, or develop new theories, usually using a scientific method.

"a studious inquiry or examination; especially : investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws” (The Merriam-Webster Online Dictionary)
Basic Research Vs Applied Research

The primary purpose for basic research (as opposed to applied research) is discovering, interpreting, and the development of methods and systems for the advancement of human knowledge.
Scientific research

- relies on the application of the scientific method, a harnessing of curiosity.
- provides scientific information and theories for the explanation of the nature and the properties of the world around us.
- makes practical applications possible.
- is funded by public authorities, by charitable organizations and by private groups, including many companies.
- can be subdivided into different classifications according to their academic and application disciplines.
ARTISTIC RESEARCH

- also seen as 'practice-based research', can take form when creative works are considered both the research and the object of research itself.
- It is the debatable body of thought which offers an alternative to purely scientific methods in research in its search for knowledge and truth.
**HISTORICAL RESEARCH**

- is embodied in the historical method.
- Historians use primary sources and other evidence to systematically investigate a topic, and then to write histories in the form of accounts of the past.
STRUCTURAL PROCESS.

1. Observations and Formation of the topic
2. Hypothesis
3. Conceptual definitions
4. Operational definition
5. Gathering of data
6. Analysis of data
7. Test, revising of hypothesis
8. Conclusion, reiteration if necessary
REsearch Process

1. New Theory & Hypotheses
2. Build Body of Theory/Hypotheses
3. Replication & Verification
4. Testing of Hypotheses (Experiment - Observation)
5. Observation & Description
6. Problem Identification
7. Construction of Hypotheses
8. Start over
9. START
PHASES IN THE RESEARCH PROCESS:

- Description (what, when, where)
- Classification (what is similar/different)
- Explanation (how and why)
- Prediction (what will be)
- Prescription (what should be)
  - Ethical analysis (norms/standards)
  - Policy formulation
  - Testing
  - Evaluation
  - Valuation
  - Visioning
RESEARCH METHODS

The goal of the research process is to produce new knowledge. This process takes three main forms

- **Exploratory research**, which structures and identifies new problems
- **Constructive research**, which develops solutions to a problem
- **Empirical research**, which tests the feasibility of a solution using empirical evidence
RESEARCH METHODS (Cont’d)

Research can also fall into two distinct types:

- **Primary research** (collection of data that does not exist yet)
- **Secondary research** (summary, collation and/or synthesis of existing research)

In social sciences and later in other disciplines, the following two research methods can be applied

- **Qualitative research** (understanding of human behavior and the reasons that govern such behavior)
- **Quantitative research** (systematic empirical investigation of quantitative properties and phenomena and their relationships)
Academic Writing

- is usually serious,
- is intended for a critical and informed audience,
- is based on closely-investigated knowledge,
- posits ideas or arguments,
- has an objective stance,
- clearly states the significance of the topic,
- is organized with adequate detail so that other scholars could try to reproduce the results,
- consists of a number of text types and genres.
ACademic Document Types

- Book, in many types and varieties.
- Book chapter,
- Book report,
- Paper/ Articles.
- Dissertation; usually between 6,000 and 20,000 words in length.
- Essay; usually short, between 1,500 and 6,000 words in length.
- Explication; usually a short factual note explaining some obscure part of a particular work; e.g. its terminology, dialect, allusions or coded references.
- Research Article / Research Paper; longer essay involving library research, 3000 to 6000 words in length.
- Technical report
- Thesis; completed over a number of years, often in excess of 20,000 words in length.
- Translation.
Paper-Article

- In academic publishing, a paper is an academic work that is usually published in an academic journal.
- It contains original research results or reviews existing results.
- A paper, also called an article, will only be considered valid if it undergoes a process of peer review by one or more referees (who are academics in the same field) in order to check that the content of the paper is suitable for publication in the journal.
- A paper may undergo a series of reviews, edits and re-submissions before finally being accepted or rejected for publication.
CATEGORIES OF PAPERS

- Position paper, Vision paper
- Theory research paper
- Research paper
- Case report or Case Series
- Technical paper
- System paper
- Technical note
- Survey paper
- Species paper
POSITION PAPER

- is an essay that presents an opinion about an issue, typically that of the author or another specified entity; such as a political party.
- Position papers are published in academia, in politics, in law and other domains.
- Position papers range from the simplest format of a letter to the editor through to the most complex in the form of an academic position paper.
- Position papers are also used by large organizations to make public the official beliefs and recommendations of the group.
REsearch Paper

- longer essay involving library research,
- 3000 to 6000 words in length.
- may refer to:
  - **Academic paper** (also called *scholarly paper*), which is published in academic journals and contains original research results or reviews existing results
  - **Term paper**, written by high school or college students
  - **Thesis or dissertation**, a document submitted in support of a candidature for a degree or professional qualification, presenting the author's research and findings
Technical Paper-Journal Articles

The exact terminology and definitions vary by field and specific journal, but often include:

- **Letters** (also called *communications*, and not to be confused with *letters to the editor*) are short descriptions of important current research findings that are usually fast-tracked for immediate publication because they are considered urgent.

- **Research notes** are short descriptions of current research findings that are considered less urgent or important than *Letters*.

- **Articles** are usually between five and twenty pages and are complete descriptions of current original research findings, but there are considerable variations between scientific fields and journals – 80-page articles are not rare in mathematics or theoretical computer science.

- **Supplemental articles** contain a large volume of tabular data that is the result of current research and may be dozens or hundreds of pages with mostly numerical data. Some journals now only publish this data electronically on the internet.

- **Review articles** do not cover original research but rather accumulate the results of many different *articles* on a particular topic into a coherent narrative about the state of the art in that field.
  - provide information about the topic
  - provide journal references to the original research.
  - may be entirely narrative,
  - may provide quantitative summary estimates resulting from the application of meta-analytical methods.
Survey Article

- is a paper that is a work of synthesis, published through the usual channels (a learned journal or collective volume, such as conference proceedings or collection of essays).
- It stands outside the usual run of research papers, for two reasons:
  - it is not presented as the author's original research, but as a survey or summary of a field; and it is not necessarily subject to the same degree of peer review.
  - Sometimes short survey articles appear in the guise of book reviews, where the context of the book is summarized first, often at greater length than is devoted to the book.
- In a survey article, the treatment of the subject is often less detailed or in-depth than would be acceptable in a textbook, and the topic may be one in which recent work requires summary.
- A survey article may lie somewhere between a personal essay, and an encyclopedia article. The intention is to give rapid access to material scattered over many papers.
Review articles, also called "reviews of progress," are checks on the research published in journals. Some journals are devoted entirely to review articles, others contain a few in each issue, but most do not publish review articles. Such reviews often cover the research from the preceding year, some for longer or shorter terms; some are devoted to specific topics, some to general surveys. Unlike original research articles, review articles tend to be solicited submissions, sometimes planned years in advance. They are typically relied upon by students beginning a study in a given field, or for current awareness of those already in the field.
A dissertation or thesis is a document submitted in support of candidature for an academic degree or professional qualification presenting the author's research and findings.

In some countries/universities, the word "thesis" or a cognate is used as part of a bachelor's or master's course, while "dissertation" is normally applied to a doctorate, while in others, the reverse is true.

The term dissertation can at times be used to describe a treatise without relation to obtaining an academic degree. The term thesis is also used to refer to the central claim of an essay or similar work.
Constructing An Informed Argument

Consider what you know—different writing assignments require different degrees of knowledge

Consider what you think
  - come up with a fresh observation.
  - add sth of your own
  - recognize that your writing should be analytical rather than personal.
Subject to critical thinking process:

- **Summarize**
  - the first step
  - is useful in helping you clarify what you know about a topic
  - is useful laying the foundation for the more complex process to come.

- **Evaluate**
  - an ongoing process
  - Encourages to compare the topics

- **Analyze**
  - To consider the parts of topics that most interests
  - Examine how these parts relate to each other or to the whole

- **Synthesize**
  - To look for connections between ideas.