

# **RESEARCH METHODOLOGY**

## **UNIT-I**

### **Research**

#### **Definition**

A careful consideration of study regarding a particular concern or problem using scientific methods. According to the American sociologist Earl Robert Babbie, “Research is a systematic inquiry to describe, explain, predict, and control the observed phenomenon. Research involves inductive and deductive methods.”

Inductive research methods are used to analyze an observed event. Deductive methods are used to verify the observed event. Inductive approaches are associated with qualitative research and deductive methods are more commonly associated with quantitative research.

#### **Research is conducted with a purpose to understand:**

- What do organizations or businesses really want to find out?
- What are the processes that need to be followed to chase the idea?
- What are the arguments that need to be built around a concept?
- What is the evidence that will be required for people to believe in the idea or concept?

#### **Characteristics of research**

1. A systematic approach must be followed for accurate data. Rules and procedures are an integral part of the process that set the objective. Researchers need to practice ethics and a code of conduct while making observations or drawing conclusions.
2. Research is based on logical reasoning and involves both inductive and deductive methods.
3. The data or knowledge that is derived is in real time from actual observations in natural settings.
4. There is an in-depth analysis of all data collected so that there are no anomalies associated with it.
5. Research creates a path for generating new questions. Existing data helps create more opportunities for research.

6. Research is analytical in nature. It makes use of all the available data so that there is no ambiguity in inference.
7. Accuracy is one of the most important aspects of research. The information that is obtained should be accurate and true to its nature. For example, laboratories provide a controlled environment to collect data. Accuracy is measured in the instruments used, the calibrations of instruments or tools, and the final result of the experiment.

### **Types of research**

Following are the types of research methods:

**Basic research:** A basic research definition is data collected to enhance knowledge. The main motivation is knowledge expansion. It is a non-commercial research that doesn't facilitate in creating or inventing anything. For example: an experiment to determine a simple fact.

**Applied research:** Applied research focuses on analyzing and solving real-life problems. This type refers to the study that helps solve practical problems using scientific methods. Studies play an important role in solving issues that impact the overall well-being of humans. For example: finding a specific cure for a disease.

**Problem oriented research:** As the name suggests, problem-oriented research is conducted to understand the exact nature of a problem to find out relevant solutions. The term "problem" refers to multiple choices or issues when analyzing a situation.

For example, revenue of a car company has decreased by 12% in the last year. The following could be the probable causes: there is no optimum production, poor quality of a product, no advertising, or economic conditions.

**Problem solving research:** This type of research is conducted by companies to understand and resolve their own problems. The problem-solving method uses applied research to find solutions to the existing problems.

**Qualitative research:** Qualitative research is a process that is about inquiry. It helps create in-depth understanding of problems or issues in their natural settings. This is a non-statistical method.

Qualitative research is heavily dependent on the experience of the researchers and the questions used to probe the sample. The sample size is usually restricted to 6-10 people. Open-ended questions are asked in a manner that encourages answers that lead to another question or group of questions. The purpose of asking open-ended questions is to gather as much information as possible from the sample.

**The following are the methods used for qualitative research:**

1. One-to-one interview
2. Focus groups
3. Ethnographic research
4. Content/Text Analysis
5. Case study research

Learn more: [Qualitative Research Methods](#)

Quantitative research: Quantitative research is a structured way of collecting data and analyzing it to draw conclusions. Unlike qualitative methods, this method uses a computational and statistical process to collect and analyze data. Quantitative data is all about numbers.

Quantitative research involves a larger population — more people means more data. With more data to analyze, you can obtain more accurate results. This method uses close-ended questions because the researchers are typically looking to gather statistical data.

Online surveys, questionnaires, and polls are preferable data collection tools used in quantitative research. There are various methods of deploying surveys or questionnaires.

Online surveys allow survey creators to reach large amounts of people or smaller focus groups for different types of research that meet different goals. Survey respondents can receive surveys on mobile phones, in emails, or can simply use the internet to access surveys.

**There are three purposes of research:**

1. Exploratory: As the name suggests, exploratory research is conducted to explore a group of questions. The answers and analytics may not offer a final conclusion to the perceived

problem. It is conducted to handle new problem areas which haven't been explored before. This exploratory process lays the foundation for more conclusive research and data collection.

2. Descriptive: Descriptive research focuses on expanding knowledge on current issues through a process of data collection. Descriptive studies are used to describe the behavior of a sample population. In a descriptive study, only one variable is required to conduct the study. The three main purposes of descriptive research are describing, explaining, and validating the findings. For example, a study conducted to know if top-level management leaders in the 21st century possess the moral right to receive a huge sum of money from the company profit.
3. Explanatory: Explanatory research or causal research is conducted to understand the impact of certain changes in existing standard procedures. Conducting experiments is the most popular form of casual research. For example, a study conducted to understand the effect of rebranding on customer loyalty.

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

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

Learn More: Primary Research – Examples, Methods and Purpose

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

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

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

Types of research methods and research example

Research methods are broadly classified as Qualitative and Quantitative.

Both methods have distinctive properties and data collection methods.

Qualitative research is a method that collects data using conversational methods. Participants are asked open-ended questions. The responses collected are essentially non-numerical. This method not only helps a researcher understand what participants think but also why they think in a particular way.

**Types of qualitative methods include:**

- **One-to-one Interview:** This interview is conducted with one participant at a given point in time. One-to-one interviews need a researcher to prepare questions in advance. The researcher asks only the most important questions to the participant. This type of interview lasts anywhere between 20 minutes to half an hour. During this time the researcher collects as many meaningful answers as possible from the participants to draw inferences.
- **Focus Groups:** Focus groups are small groups comprising of around 6-10 participants who are usually experts in the subject matter. A moderator is assigned to a focus group who facilitates the discussion amongst the group members. A moderator's experience in conducting the focus group plays an important role. An experienced moderator can probe the participants by asking the correct questions that will help them collect a sizable amount of information related to the research.
- **Ethnographic Research:** Ethnographic research is an in-depth form of research where people are observed in their natural environment without This method is demanding due to the necessity of a researcher entering a natural environment of other people. Geographic locations can be a constraint as well. Instead of conducting interviews, a researcher experiences the normal setting and daily life of a group of people.

- **Text Analysis:** Text analysis is a little different from other qualitative methods as it is used to analyze social constructs by decoding words through any available form of documentation. The researcher studies and understands the context in which the documents are written and then tries to draw meaningful inferences from it. Researchers today follow activities on a social media platform to try and understand patterns of thoughts.
- **Case Study:** Case study research is used to study an organization or an entity. This method is one of the most valuable options for modern. This type of research is used in fields like the education sector, philosophical studies, and psychological studies. This method involves a deep dive into ongoing research and collecting data.

### **Quantitative Research Methods**

Quantitative methods deal with numbers and measurable forms. It uses a systematic way of investigating events or data. It is used to answer questions in terms of justifying relationships with measurable variables to either explain, predict, or control a phenomenon.

#### **There are three methods that are often used by researchers:**

- **Survey Research** — The ultimate goal of survey research is to learn about a large population by deploying a survey. Today, online surveys are popular as they are convenient and can be sent in an email or made available on the internet. In this method, a researcher designs a survey with the most relevant survey questions and distributes the survey. Once the researcher receives responses, they summarize them to tabulate meaningful findings and data.
- **Descriptive Research** — Descriptive research is a method which identifies the characteristics of an observed phenomenon and collects more information. This method is designed to depict the participants in a very systematic and accurate manner. In simple words, descriptive research is all about describing the phenomenon, observing it, and drawing conclusions from it.
- **Correlational Research**— Correlational research examines the relationship between two or more variables. Consider a researcher is studying a correlation between cancer and married. Married women have a negative correlation with cancer. In this example, there are two variables: cancer and married women. When we say negative correlation, it means women

who are married are less likely to develop cancer. However, it doesn't mean that marriage directly avoids cancer.

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### **Identifying Research Methodology**

To choose the appropriate types of research, you need to clearly identify the objectives. Some objectives to take into consideration for your business include:

- Find out the needs of your clients.
- Know their preferences and understand what is important to them.
- Find an appropriate way to make your customers aware of your products and services.
- Find ways to improve your products or services to suit the needs of your customers.

After identifying what you need to know, you should ask what research methods will offer you that information.

Organize your questions within the framework of the 7 Ps of marketing that influence your company – product, price, promotion, place, people, processes, and physical tests.

A well-organized customer research process produces valid, accurate, reliable, timely, and complete results. Results that rigorously reflect the opinions and needs of your clients will help you grow your sales and improve your operations. To obtain the results, you need to establish and follow the processes that you have detailed out for your organization:

### **Plan your research**

Good planning allows the use of creative and logical approaches to select the methods that gather the most accurate information. Your plan will be influenced by the type and complexity of the information you need, the skills of your market research team, and how soon you need the information. Your budget also plays a large role in your ability to collect data.

### **Collect and collate your results**

Make a list of how you are going to carry out the research process, the data you need to collect, and collection methods. This will help you keep track of your processes and make

sense of your findings. It will also allow you to verify that your research accurately reflects the opinions of your clients and your market. Create a record table with:

- The consumer research activity
- The necessary data
- The methods for data collection
- The steps to follow for data analysis.

Remember, research is only valuable and useful when it is valid, accurate, and reliable. Relying on imperfect research is dangerous. Incorrect results can lead to customer churn and a decrease in sales.

It is important to obtain information about how the collection of customer information was carried out, and to ensure that your data is:

- Valid – founded, logical, rigorous, and impartial.
- Accurate – free of errors and including required details.
- Reliable – that can be reproduced by other people who investigate in the same way.
- Timely – current and collected within an appropriate time frame.
- Complete – includes all the data you need to support your business decisions.

Analyze and understand your research

Analysis of the data can vary from simple and direct steps to technical and complex processes. Adopt an approach, and choose the method of data analysis based on the methods you have carried out.

## **2. CHOOSING A TOPIC**

Choosing a dissertation topic sounds easy. You've been given the chance to write about something you like, or at least something you feel is worth studying. It's not like most of the essays you may have written before, which came with titles already attached.

However, before you can go rushing off to the library, you need a topic – otherwise you won't know where in the library to look!



Beware, though – not everything you think would be a good topic for a dissertation will actually be a good topic. You might want to look at “Victorian Literature” or “Russian History”, which sound like perfectly valid academic subjects. But they’re too vast, and will mean that your finished dissertation will either be vastly over the word-limit, or else will only skim the surface. So it’s clear you need to carefully consider a few things.

The first thing to do is to write a list of subjects and topics that you yourself feel are interesting. This could include subjects you’ve already looked at in your studies, or it could be something you’ve never studied but want to. Once you’ve got a list of interesting subjects and topics, it’s time to do a bit of research.

“Already? But I don’t have a topic!” you might cry, but stay calm! Let me explain. The next stage is to see if the topics you’re thinking of writing about are actually worth writing about, and a great way to do this is to see what’s already been done. You should be checking journals, articles, text-books, anything that might contain previous work on the subject. If people have written about it before, then clearly there’s some merit to writing more on it. However, there isn’t much point in rehashing the same things that everyone’s written about in exactly the same way – if there’s a lot of material already, think about how you can tackle it differently to your peers.

That doesn’t mean that if there’s little, or nothing, that’s been written about those topics before that you shouldn’t write about it. For everything that’s been studied, it has to have been studied by someone first at some point – all the writing about Shakespeare didn’t materialise out of thin air! You just have to think very carefully, and discuss with your tutor if there’s going to be any academic interest in what you intend to study – and even if there is, you want to be sure that someone will be able to supervise the work.

Finding a supervisor is a big concern, so when you’ve got your list of interesting subjects and topics, and you’ve picked something that you really want to study, start thinking laterally. A piece on “Villains of Video-games” might sound good, but not many academics will be willing to tutor you. Instead, you might choose to stay in the broad subject area, and write about “Shakespeare’s Villains”, which might create a bit more interest.

## **Primary and secondary sources**

Primary sources provide a first-hand account of an event or time period and are considered to be authoritative. They represent original thinking, reports on discoveries or events, or they can share new information. Often these sources are created at the time the events occurred but they can also include sources that are created later. They are usually the first formal appearance of original research.

Secondary sources involve analysis, synthesis, interpretation, or evaluation of primary sources. They often attempt to describe or explain primary sources.

Scholarly journals, although generally considered to be secondary sources, often contain articles on very specific subjects and may be the primary source of information on new developments.

Primary and secondary categories are often not fixed and depend on the study or research you are undertaking. For example, newspaper editorial/opinion pieces can be both primary and secondary. If exploring how an event affected people at a certain time, this type of source would be considered a primary source. If exploring the event, then the opinion piece would be responding to the event and therefore is considered to be a secondary source.

## **Primary sources**

Examples of primary resources include:

- diaries, correspondence, ships' logs
- original documents e.g. birth certificates, trial transcripts
- biographies, autobiographies, manuscripts
- interviews, speeches, oral histories
- case law, legislation, regulations, constitutions
- government documents, statistical data, research reports
- a journal article reporting NEW research or findings
- creative art works, literature
- newspaper advertisements and reportage and editorial/opinion pieces

## **Secondary sources**

Secondary sources offer an analysis, interpretation or a restatement of primary sources and are considered to be persuasive. They often involve generalisation, synthesis, interpretation, commentary or evaluation in an attempt to convince the reader of the creator's argument. They often attempt to describe or explain primary sources.

Examples of secondary sources include:

- journal articles that comment on or analyse research
  - textbooks
  - dictionaries and encyclopaedias
  - books that interpret, analyse
  - political commentary
  - biographies
  - dissertations
  - newspaper editorial/opinion pieces
  - criticism of literature, art works or music
  
  - Field research has a long history. Cultural anthropologists have long used field research to study other cultures. Although the cultures do not have to be different, this has often been the case in the past with the study of so-called primitive cultures, and even in sociology the cultural differences have been ones of class. The work is done... in "'Fields' that is, circumscribed areas of study which have been the subject of social research".<sup>[1]</sup> Fields could be education, industrial settings, or Amazonian rain forests. Field research may be conducted by zoologists such as Jane Goodall. Radcliff-Brown [1910] and Malinowski [1922] were early cultural anthropologists who set the models for future work.<sup>[2]</sup>
  
  - Business use of Field research is an applied form of anthropology and is as likely to be advised by sociologists or statisticians in the case of surveys.
  - Consumer marketing field research is the primary marketing technique used by businesses to research their target market.
  
  - Conducting field research[edit]
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- The quality of results obtained from field research depends on the data gathered in the field. The data in turn, depend upon the field worker, his or her level of involvement,

and ability to see and visualize things that other individuals visiting the area of study may fail to notice. The more open researchers are to new ideas, concepts, and things which they may not have seen in their own culture, the better will be the absorption of those ideas. Better grasping of such material means a better understanding of the forces of culture operating in the area and the ways they modify the lives of the people under study. Social scientists (i.e. anthropologists, social psychologists, etc.) have always been taught to be free from ethnocentrism (i.e. the belief in the superiority of one's own ethnic group), when conducting any type of field research.

- When humans themselves are the subject of study, protocols must be devised to reduce the risk of observer bias and the acquisition of too theoretical or idealized explanations of the workings of a culture. Participant observation, data collection, and survey research are examples of field research methods, in contrast to what is often called experimental or lab research.

### **Organization of materials**

Sometimes students never use more than their institution's online catalog (if that!). Trust me, that was me during my undergraduate years. One of the first orientations I had as a doctoral student, was with the library. Initially, I thought it would be a waste of an hour of my time, but, boy, was I wrong.

In that hour, I learned about so many resources our library offers that I continue to use to this day. For example, our library offers short introductions and even in-depth tutorials on various software including reference managers, mapping programs, and even Adobe Photoshop. If we need a source that isn't located in our library or in our consortium, we can still request them. I also learned that our library has a dedicated discipline-specific librarian. This means they have a good understanding of the types of materials we are working with and the sources we are looking for. I've reached out to our archaeology librarian numerous times and he has been more than helpful.

Now each library is different; however, it is worth investigating what resources are available to you. Many libraries do some form of outreach in order to engage students and make them aware of their resources. While these sorts of sessions usually occur at the beginning of the academic year or semester, you can still reach out at any time to learn what

resources would be useful for you. In terms of sources here are some useful things you might learn:

- Databases that your university has access to (e.g. JSTOR, Wiley, ScienceDirect, etc.)
- Both online and physical journals that your university subscribes to (Why pay if you're university already has a subscription?)
- Consortiums that your university participates in (this gives you access to more material)
- Average time needed to obtain books, articles, etc. from the consortium (this is important so you know when to start locating sources)
- Other libraries you can access with your University ID (sometimes it's quicker or only possible to locate a source if you go there yourself)
- And so much more...

## Google Scholar

Google Scholar is an incredibly useful, powerful, and FREE search engine that displays search results only from scholarly sources. These sources can include articles, books, dissertations, patents, etc. For a given source, you will often be able to read an abstract (or excerpt) and click on a direct link that will lead you to the source.

There are further tutorials that show you how to effectively search and manage results within the tool. While Google Scholar is quite powerful and helpful, I have found that it does not always locate obscure, yet important, texts for some archaeological topics. Nonetheless, it is an excellent place to start when looking for sources.

## Literature Reviews

Locating an excellent review article on your topic or an aspect of your topic is like striking gold. *Why?* Well, someone has already done the work of locating many of the important primary and secondary sources for you. While I would not rely solely on one review article for your sources, (because people can forget things and the article might not include the most recent discussions on a given topic) they are a great place to start.

Try The Annual Review of Anthropology. This series is part of a larger initiative that invites scholars to review the current state of knowledge (and the process leading up to it) for a specific topic in their field. The Annual Review of Anthropology reviews topics in each of the sub-disciplines of anthropology, including archaeology. Recent topics in the archaeology sections included Pleistocene Overkill and North American Mammalian Extinctions, The Archaeology of Ritual, and Recent Developments in High-Density Survey and Measurement for Archaeology.

Another potential resource for review articles is **scholarly databases**. Some databases allow you to specify the type of article you are looking for and you might be able to check a box that says 'Review' or 'Review Article'. ScienceDirect and EBSCOhost are two search engines that have this feature under the 'Advanced' options. Be aware that there are articles out there that aren't intended to be review articles, but still have an excellent bibliography containing valuable sources. Such sources might not turn up in these searches.

**Master's theses** or **doctoral dissertations** can also be a great resource for locating sources. Graduate students have to provide a literature review in the final document they produce for their degree. Some go into exhaustive detail in these review chapters. This might not be fun for their committee, but it's great for you! There are a number of online databases that provide access to dissertations. Check with your library to see which ones you have access to. Also, since there is no magical formula for finding a review article (if you know of one, please let me know!), it's worth asking your instructor if they know of any sources. Now please remember the tips I offered in a previous post, specifically, doing your own research first.

### **Academia & ResearchGate**

If you mix social networking and sharing research you end with platforms like Academia and ResearchGate. These platforms allow scholars to set up their own profile and share their research with the public. This is done by either by providing a citation or a PDF copy of their work. You do have to create an account to gain access, but it's free. These social platforms are quite useful when trying to locate sources, especially some harder to access material (e.g. chapters in edited volumes, technical reports, conference proceedings, etc.).

## *Managing Sources*

As you start to collect sources, **a reference manager is vital**. A reference manager is a tool that allows you to record, track, and compile citations and bibliographic sources. Many archaeologists I know use EndNote, Mendeley, or Zotero; however, there are many other reference managers out there (check out this list on Wikipedia) and the costs can range from free to freemium to paid.

- A Microsoft Word plug-in that automatically formats both in-text citations and the resulting bibliography
- The ability to automatically rename file names of sources and store them in a specific location
- Syncs my citations (and notes) to a cloud that I can access from any computer (this was especially useful when my computer died during finals some years ago)

There are numerous articles out there that compare reference managers. The key is to get one that works for you and use it! Trust me, it will save you a lot of time and you will be far more organized.

## *Engaging With Sources*

As I was approaching my comprehensive exams, I was quickly getting overwhelmed by the sheer amount of reading I had to do and the subsequent synthesis. My fellow cohort-mate, Joelle Nivens, gave me sage advice that she received from a professor, **“Write as you read.”**

Most of us might do this already; however, how we do it varies. Sometimes this process might be quite haphazard and not be super well thought out. Raul Pacheco-Vega has an excellent blog post (and all-around great academic productivity blog) that lists *how* students can go about engaging their reading. I highly encourage you to read his post as there is no one-fits-all approach to ‘writing as you read’. Try out different methods and see what works for you.

- Bibliography: I copy and paste the citation from Mendeley. I do this so I know exactly what I am summarizing and so I have a backup copy of the citation.

- The thesis of this text is...: Here I write a couple sentences on the main idea of the text. It makes for a useful quick reference if I'm reading multiple summaries at once and it also ensures I know what the text is about.
- Basic Summary: This section can be highly variable. For those texts that I feel are quite integral to my writing project, this section will be quite detailed. For those texts that I feel aren't as important or just tangential to my writing goal, this aspect gets less time. Also, as I'm summarizing, I put the page numbers in parenthesis (e.g. A literature review of copper finds for Bronze Age Oman is given (114-117)), which makes referring back to and citing specific aspects of the text easier during the writing process.
- The most interesting ideas in this text are...and why do I find these ideas interesting?: This question allows me to tease out parts of the text that I found interesting and reflect on why. Writing this out has served as a helpful reference when drafting discussion or conclusion sections of papers.
- What aspects of the topic do this text overlook or distort?: It's also important to be critical of texts and this question gives me space to reflect on that. This question is especially useful when analyzing secondary sources and trying to understand the various components of a larger topical debate.
- How is this text of potential use to my writing project?: Usually, I'm reading academic texts for a specific writing goal and I like to explicitly write out how a certain text contributes to that. Sometimes the text can support an argument I'm making, happens to be a foundational work for a topic, is an interesting case study, etc. Nonetheless, I clearly write out how this text helps (or doesn't) help me reach my writing goal.
- Further texts to look into: Often when we read texts, we find other potentially useful and interesting references cited within it. I like to create a space where I can paste (or write out) references that I want to follow up on. I usually write a note on why a potential source could help and if I found numerous sources, I usually rank them, in terms of priority.



## FORMAT OF THE THESIS

- The thesis may focus on an analysis of one of the elements of fiction, drama, poetry or nonfiction as expressed in the work: character, plot, structure, idea, theme, symbol, style, imagery, tone, etc.
- **Example**
- In “A Worn Path,” Eudora Welty creates a fictional character in Phoenix Jackson whose determination, faith, and cunning illustrate the indomitable human spirit.
- Note that the work, author, and character to be analyzed are identified in this thesis statement. The thesis relies on a strong verb (creates). It also identifies the element of fiction that the writer will explore (character) and the characteristics the writer will analyze and discuss (determination, faith, cunning).

n form, the thesis is a lengthy experimental, design, or theoretical report, with a problem-method-results-discussion structure. This recurrent hypothetico-deductive pattern of developing a thesis to solve a problem and then constructing a methodology and testing for results is common in research writing. When you begin to write the first draft of your thesis, try to salvage useful material for problem statements, methodologies, and bibliographies from your thesis proposal. Make use of your laboratory notebook for detailed accounts of your procedures.

### ***Front***

The front matter frames the thesis work. It includes these elements:

- *Title page.* Your department will have a standard title page form you are required to follow. The title should be informative, contain keywords, and reveal the topic of the thesis. Include the title, author, thesis supervisor, place, and date.
- *Abstract.* Briefly state the (1) research problem, (2) methodology, (3) key results, and (4) conclusion. Generally, abstracts are between 100 and 150 words--roughly 5-10 sentences.
- *Table of contents.* List the key subject headings and subheadings of your thesis with their page numbers. Number the front-matter section in lowercase roman numerals. Be sure to list acknowledgments, appendixes, and bibliography.
- *List of figures.* Include the figure numbers, figure titles, and page numbers.

- *List of tables.* Include the table numbers, table titles, and page numbers.
- *Nomenclature (optional).* List unfamiliar terms, symbols, acronyms and their meanings.

## ***Body***

In the thesis body, you provide the introduction, narrative, and analysis of your work. The body includes these elements:

- **Introduction.** State (1) the purpose of the investigation, (2) the problem being investigated, (3) the background (context and importance) of the problem (citing previous work by others), (4) your thesis and general approach, and (5) the criteria for your study's success.
- **Theory.** Develop the theoretical basis for your design or experimental work, including any governing equations. Detailed calculations go to an appendix.
- **Materials, apparatus, and procedures.** List and describe key materials and apparatus. Then describe the procedure in enough detail that others can duplicate it. For design studies, this section includes component design, fabrication, assembly, and testing procedures. Use illustrations.
- **Results.** Present the results, usually with accompanying tables and graphs. Characterize the patterns and quality of the results and estimate their accuracy and precision. Detailed data go to an appendix. Use analytical graphics.
- **Discussion.** Discuss the meaning of the results, stating clearly what their significance is. Compare the results with theoretical expectations and account for anything unexpected.
- **Conclusions.** Review the results in relation to the original problem statement. Assess the success of the study in light of the criteria of success you gave in the introduction.
- **Recommendations.** If applicable, recommend directions for future work.

The end matter is mainly referential material too detailed to fit well in the main narrative of work done. It includes these elements:

- **Acknowledgments.** Acknowledge assistance from advisors, sponsors, funding agencies, colleagues, technicians, and so on.

- Appendixes. Provide detailed calculations, procedures, data in separate appendixes. Give each appendix a title, a letter (Appendix A, B, C), and an introductory paragraph.
  - Bibliography. List alphabetically any works referred to in your study. Follow the bibliographical and footnote formats of your department or of a prominent periodical published by a professional society in your field.
- **THE FIRST DRAFT:-**
  - A first draft is a rough sketch of your future piece of writing. Sometimes your first draft may become the final one due to it being rather satisfactory, but in most cases, it requires further work. A first draft is a way to elaborate on the main points of your essay stated in your outline, giving them a sample form. It may seem paradoxical, but while being one of the most important stages of the writing process, most first drafts don't require a tremendous attention to detail.

### Steps for Writing a First Draft of an Essay

1. Take a closer look at your assignment and the topic if it was given to you by your instructor. Revise your outline as well. This is needed for your clearer understanding of the tasks you must accomplish within the draft, and to make sure you meet the requirements of the assignment.
2. Sketch out the introduction of your essay. At this point, don't get stalled on form; introductory part should inform readers about what the topic is, and state your point of view according to this topic. The introduction should also be interesting to read to capture readers' attention, but this task has more to do with thoughtful and scrupulous writing, and thus should be left for later.
3. Based on your outline, start transferring your ideas to paper. The main task here is to give them the initial form and set a general direction for their further development, and not to write a full paper.
4. Chalk out the summarizing paragraph of your essay. It should not contain any new ideas, but briefly reintroduce those from the main body, and restate your thesis statement.

5. Read through the draft to see if you have included the information you wanted to, but without making any further corrections, since this is a task for the second and final drafts.

### Key Points to Consider

1. While an outline is needed to decide on what to write, the first draft is more about answering a question: “How to write?” In the first draft, you shape your ideas out, and not simply name and list them, as you did in an outline.
2. When you start writing your thoughts down, it may happen that one idea or concept sparks new connections, memories, or associations. Be attentive to such sidetracks; choose those of them that might be useful for your writing, and don’t delve in those that are undesirable in terms of the purpose of your paper (academic, showing opinion). A successful piece of writing is focused on its topic, and doesn’t include everything you have to say on a subject.
3. Making notes for yourself in the margins or even in the middle of the text is a useful practice. This can save you time and keep you focused on the essence of your essay without being distracted by secondary details. For example, such notes could look like this: *“As documented, the Vietnam War cost the United States about ... (search for the exact sum of money and interpret it in terms of modern exchange rates) U. S. dollars.”*
4. When you finish crafting your first draft, it is useful to put it aside and completely quit thinking about writing for a certain period of time. Time away will allow you to have a fresh look at your draft when you decide to revise it.

### Common Mistakes When Writing a First Draft of an Essay

– Editing and revising a draft in process of writing. If you stop after each sentence to think it over, you will most likely lose your flow; besides, many people have an internal *editor* or *critic* who can't stand it if the material is written imperfectly. Therefore, first you should deal with the whole draft, and only after that proofread and edit it.

– Paying too much attention to secondary arguments, factual material, and other minor peculiarities. The main goal of the first draft is to sketch out your main ideas; you can fill it with details later. If you think you will forget about an important fact or remark, make brief notes in margins.

– Ignoring the role of a first draft in the essay writing process. Though it may seem you are wasting time working on a draft, you are working on the essay itself. You need to understand how your outline works in full written form.

