



ABDELHAFID BOUSSOUF UNIVERSITY - MILA
People's Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
Institute of Science and Technology
Department of Science and Technology



Documentary Research and Thesis Design

COURSE: Master 02 / Civil Engineering

Presented by: C. BELGHIAT
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OBJECTIVES OF THE COURSE

- Provide the student with the necessary tools to search for useful information to better exploit their final graduation project.
- Help students understand and follow the different steps involved in preparing and writing a scientific document.
- Emphasize the importance of scientific communication and teach students how to present their work in a rigorous, clear, and pedagogical manner.

PART 01: DOCUMENTARY RESEARCH

Introduction

What is documentary research? Documentary research is a systematic approach that consists of identifying, collecting, and processing information on a given topic using reliable and relevant sources.

What is its purpose? It is an excellent way to deepen knowledge. It responds to a specific need: presentation, thesis, study, or simple curiosity.

How to conduct documentary research? The abundance of information and the diversity of available media make documentary research a complex task. It therefore requires a rigorous, organized, and critical approach.

Consequently, conducting documentary research and validating the information collected require the application of an effective documentary methodology. Such a methodology facilitates academic work by ensuring access to comprehensive and relevant documentation while maintaining scientific rigor.

What is a documentary methodology? A documentary methodology is a set of steps and procedures used to search for, identify, locate, evaluate, and select documents related to a specific topic through the development of an appropriate search strategy.

Steps of Documentary Research

- Step 1: Define the topic (Analyze the topic by identifying its main concepts, keywords, and relevant ideas through brainstorming).
- Step 2: Search for resources (Identify and consult relevant information sources using appropriate search tools and strategies).
- Step 3: Select relevant and reliable documents (Evaluate and select reliable and relevant sources to establish the bibliography).
- Step 4: Extract and organize information (Collect, record, and organize the information obtained from the selected documents using an appropriate collection document).

Preliminary Questions for Defining the Research Objective:

- **What is the nature of the work to be produced?** Presentation, thesis, article, study report, etc.
- **What is the expected level of information?** Basic information (1-2 books and an encyclopedia) vs. Advanced/Detailed information (journal articles, conferences, reports, theses, standards...).
- **What is the nature of the information expected?** Developments on a topic, statistical data, technical diagrams, etc.
- **What is the degree of timeliness/recency required?** Archival documents or the latest known research results...

CHAPTER 01: DEFINITION OF THE TOPIC

Topic selection should be based on prior knowledge and personal interest in the subject, as well as its relevance to the curriculum. These are fundamental factors that should guide the choice of a research topic.

1.1. Defining the Topic

Defining a topic involves a systematic process of questioning and analysis that transforms a general study theme into a clearly defined research problem. Before beginning the information search, it is necessary to examine the topic in order to:

- Gain a clear understanding of the topic by analyzing its vocabulary, concepts, and objectives.

- Define the scope of the research by establishing clear boundaries and avoiding irrelevant areas.
- Ensure that all relevant aspects of the topic are considered and that no important element is overlooked.

The 5Ws and 2Hs Questioning Method (Who, What, When, Where, Why, How, How Much)

The empirical questioning method is a practical approach based on a series of simple questions designed to define, clarify, and explore a topic systematically.

Questions	Application Example (Molecular Gastronomy)
WHAT? (What is the topic of my research? What is it about?)	Molecular Gastronomy
WHO? (Who created/invented it? Who are the people/brands/companies involved?)	Hervé This Nicholas Kurti
WHEN? (What time period are we talking about? Key dates/discoveries/launches?)	1900s In 1997
WHY? (What are the reasons for this topic's existence? What purpose does it serve?)	Need to renew the perspective on cooking
WHERE? (What is the geographic scope? Which location/region is concerned?)	Paris, France International
HOW? (How was it discovered? How does it operate?)	Through scientific experimentation
HOW MUCH? (Quantities, dimensions, scope or limits?)	Specific parameters/metrics of the study

1.2. Title / Formulation of the Topic

- The topic should be expressed in a concise and clear statement that can serve as the research title.
- Formulating a topic requires examining it from different perspectives, expressing it in a concise form, identifying its key concepts, and determining relevant synonyms.
- The topic may also be formulated as a question using precise and meaningful terms. The research question should be as clear and specific as possible.
- This step helps formulate the core research problem (research problem statement), determine the documentary requirements, and identify the keywords needed to search databases and other information sources.

1.3. Identifying Keywords Related to the Topic

Spoken language is not always suitable for documentary search engines. Therefore, it is necessary to translate the research topic into concepts/keywords. Every term in the title is important and corresponds to key concepts used to build search equations.

- Search for synonyms, related/opposite terms for each concept, as well as their English translations.
- Consult a dictionary of synonyms (e.g., Marketing = Commercialization).
- Consider broader (generic) and narrower (specific) terms (e.g., Soda > Carbonated Drink > Non-Alcoholic Beverage).
- Avoid stop-words (articles, pronouns, conjunctions like: the, a, of, and, etc.).

1.4. Gathering Basic Information

To clarify the topic and develop a general understanding of it, it is useful to consult reference works that provide a concise overview of the current state of knowledge in the field being studied.

At this stage, the documentation mainly consists of reference sources and reference tools, such as:

- Encyclopedias: Provide a comprehensive overview of the topic.
- Dictionaries: Provide linguistic definitions and specific term meanings.
- Event Yearbooks / Almanacs & Atlases.
- Selective or Critical Bibliographies.
- Specialized Dictionaries, Chronologies & Biographical Dictionaries.
- Handbooks, Textbooks & Comprehensive Treatises.