

Major steps in scientific research:

Mahdi Al-Anawy

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- **Steps in conducting research:**
- Research is often conducted using the hourglass model structure of research. The hourglass model starts with a broad spectrum for research, focusing in on the required information through the method of the project (like the neck of the hourglass), then expands the research in the form of discussion and results.

The purpose of research is to discover solutions to problems and generate principles and theory by applying scientific procedure. There is a general flow of activities can be organized into **five** major phases:

1. The conceptual phase: the phase in which the researcher develops the question to be studied. It includes
 - Identification of research problem
 - Literature review
 - Developing a theoretical framework

2. The design and planning phase: the phase of making methodology to use in collect the data and analyze them. It includes

- Selecting a research design
- Defining the population and sampling
- Specifying the methods to measure the variables
- Collecting the data
- Obtaining informed consent
- Conducting a pilot study

3. The empirical phase (practical phase): it is the phase of

- Analyzing and interpreting the data

4- Analytical phase: the phase in which the researcher

- Organizes and makes sense of the data
- Tests the research hypothesis

5. The dissemination phase: the phase in which the findings from the study are

- Communicating the research findings and, possibly, recommendations

Step 1: Identify the Problem

The first step in the process is to identify a problem or develop a research question.

The research problem may be something the agency identifies as a problem, some knowledge or information that is needed by the agency, or the desire to identify a recreation trend nationally.

which is a local problem and concern within the community. This serves as the focus of the study.

Step 2: Review the Literature

Now that the problem has been identified, the researcher must learn more about the topic under investigation. To do this, the researcher must review the literature related to the research problem.

This step provides foundational knowledge about the problem area. The review of literature also educates the researcher about what studies have been conducted in the past, how these studies were conducted, and the conclusions in the problem area.

In the obesity study, the review of literature enables the programmer to discover horrifying statistics related to the long-term effects of childhood obesity in terms of health issues, death rates, and projected medical costs.

The information discovered during this step helps the programmer fully understand the magnitude of the problem.

Step 3: Clarify the Problem

Many times the initial problem identified in the first step of the process is too large or broad in scope. In step 3 of the process, the researcher clarifies the problem and narrows the scope of the study. This can only be done after the literature has been reviewed.

The knowledge gained through the review of literature guides the researcher in clarifying and narrowing the research project.. This purpose is more narrowly focused and researchable than the original problem.

Step 4: Clearly Define Terms and Concepts

Terms and concepts are words or phrases used in the purpose statement of the study or the description of the study. These items need to be specifically defined as they apply to the study.

Terms or concepts often have different definitions depending on who is reading the study.

To minimize confusion about what the terms and phrases mean, the researcher must specifically define them for the study.

- By defining the terms or concepts more narrowly.
- This also makes the concepts more understandable to the reader.

Step 5: Define the Population

Research projects can focus on a specific group of people, facilities, park development, employee evaluations, programs, financial status, marketing efforts, or the integration of technology into the operations..

For example, if a researcher wants to examine a specific group of people in the community, the study could examine a specific age group, males or females, people living in a specific geographic area.

The research problem and the purpose of the study assist the researcher in identifying the group to involve in the study.

In research terms, the group to involve in the study is always called the population. Defining the population assists the researcher in several ways.

For example programmer may identify the population of the study as children ages 10 to 12 years.

Step 6: Develop the Instrumentation Plan

The plan for the study is referred to as the instrumentation plan.

The instrumentation plan serves as the road map for the entire study, specifying who will participate in the study; how, when, and where data will be collected; and the content of the program.

Step 7: Collect Data

Once the instrumentation plan is completed, the actual study begins with the collection of data. The collection of data is a critical step in providing the information needed to answer the research question.

Every study includes the collection of some type of data—whether it is from the literature or from subjects—to answer the research question.

Data can be collected in the form of words on a survey, with a **questionnaire**, through **observations**, or from the **literature**.

Step 8: Analyze the Data

The researcher finally has data to analyze so that the research question can be answered. In the instrumentation plan, the researcher specified how the data will be analyzed.

The researcher now analyzes the data according to the plan. The results of this analysis are then reviewed and summarized in a manner directly related to the research questions.

- Then, the data will be analyzed to determine if the differences are statistically significant. If the differences are statistically significant, the study validates the theory that was the focus of the study.

Step 9: Interpret findings

Interpretation of findings involves drawing conclusions from the findings and making recommendations.

Those findings can be significant and predictive, non significant, significant and not predictive.

