The eighth lecture

Basics of scientific research

The goal to be achieved:

- The student will be familiar with the basic stages of preparing scientific research

-Preface

- - Sub-questions and their formulation
- - Types of questions
- - Characteristics of questions
- - Objectives of questions in scientific research
- - How to formulate questions
- - The importance of the research questions
- - Questions in scientific research and objectives

Defining hypotheses in scientific research

- - Types of hypotheses
- - How to formulate hypotheses
- - What is the difference between questions and hypotheses in scientific research?

-Conclusion

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Introduction:

Questions in scientific research are a detailed translation of the objectives of the study. Any study has a main objective from which several sub-objectives emerge. In order for these objectives to be achieved, they must be translated into questions or hypotheses. In this lecture, we will present the most important characteristics and conditions for formulating questions and hypotheses in scientific research.

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Sub-questions and their formulation

The sub-questions are considered a division of the question of the problem at hand, and not multiple problems added to the main problem. The problem is divided into questions specific to each variable separately, such as the researcher asking two questions about the independent variable, then two questions about the dependent variable, then one or two questions about the institution under study. The two questions about the independent variable are often answered in the first chapter, the two questions about the dependent variable are answered in the second chapter, while the two questions about the institution under study are answered in the third chapter. In the end, by answering all the sub-questions, the researcher will necessarily reach the answer to the problem posed. Accordingly, the sub-questions are formulated in the form of blocks, where each block expresses the content of a chapter, whether it includes one question or several consecutive questions. It is required that the blocks equal the number of the main division that the student will adopt in his research (sections, chapters, topics).

Types of questions

There are a group of main forms of questions in scientific research, including the following:

Descriptive questions

These questions depend on describing the problem that the researcher is studying in the form of research questions, for example descriptive studies that address a social problem such as poverty or unemployment.

Relationships questions

These questions aim to describe the relationship between variables, for example to find out the relationship between watching television programs and children's academic achievement.

Difference questions

When the researcher tries to know the difference between the effect of a particular variable on males or females.

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Reasoning questions

These are questions that search for the reason for the occurrence of a problem that the researcher is studying.

Predictive questions

Researchers resort to it to predict what a study might do in the future, for example questions related to knowing the impact of a particular technology.

Interpretive questions

This type of question can be found in historical research that seeks to know more details about the phenomenon being studied.

Characteristics of questions

We can describe the characteristics that characterize questions in scientific research as follows: Scientific research questions are characterized by being specific, clear in meaning, precisely worded and highly focused, and express the research objectives.

- They are questions that directly follow the main question of the study, and each question relates to a specific field of research.

- Every question aims to accurately describe reality without going beyond this reality to establish relationships between the questions and each other.

- It is not linked to a specific number, and the researcher, while formulating it, must take into account the sound scientific method and approach. The researcher must also choose questions that can be answered, and avoid questions that are difficult to answer or that require a high cost or great effort to answer.

Objectives of questions in scientific research

Research questions define the main topics around which the study revolves. They also work to establish a relationship between the analysis process and the objectives of the study. Their goal must also be to answer specific questions that begin with an interrogative, such as: how, what, what...etc. For example, if the study revolves around the spread of illiteracy, the study's questions will revolve around main axes, such as: the causes of the spread of illiteracy, the impact of the spread of illiteracy on the family and society, ways to treat the problem of

illiteracy, the consequences of eradicating illiteracy, and so on..., then the analysis process begins. Based on these questions.

How to formulate questions

The research questions must be formulated in an accurate manner, because the accuracy of the rest of the research parts depends greatly on the method that the researcher must follow in formulating the research questions. The research questions must have a deep meaning and not superficial, and their answers indicate information at the heart of the research problem. A simple answer does not provide sufficient information for scientific research, and the researcher must avoid questions whose answer is "yes" or "no," or one sentence or one word. Example of questions that the researcher should avoid -Is literacy beneficial for the family and society?

- Does eradicating illiteracy help raise the level of the individual and society?

The answer to these questions is "yes" or "no", but when the question is about the benefit of literacy on the family and society, then the answer is more detailed and more interesting. An example of a good question

-What are the reasons for the spread of the problem of illiteracy in society?

-What factors attract people to enroll in literacy classes?

-What do the individual, family and society benefit from implementing the literacy project?

-What are the characteristics that must be present in a teacher assigned to eradicate illiteracy?

-What are the advantages of the literacy project?

-What are the obstacles facing the literacy project? How can it be overcome?

The importance of research questions

- Obtaining accurate and focused research by formulating questions correctly.

-The researcher's familiarity with all phenomena and aspects related to the study.

- It contributes to arriving at accurate results that lead to developing scientific proposals and solutions suitable for the research objectives.

Questions in scientific research and objectives

Questions in scientific research are considered interrogative questions that express the research objectives, or it can be said that they are an organized way to formulate the research objectives, as every scientific research has a main objective from which a number of sub-objectives branch, and in order for these objectives to be achieved, they must be formulated in the form of questions. . They are also questions through which the researcher expresses the results that can be reached through the research. Sometimes the research questions may replace the mention of the research objectives, and sometimes the questions and objectives are mentioned together in the same research.

Definition of hypotheses in scientific research

Many researchers may think that hypotheses are one of the most difficult steps they can take, but when you get to know the concept of hypotheses, which are the judgments that the researcher makes to describe the function of the relationship between variables and verifies their validity while conducting his research.

Types of hypotheses Which are as follows:

Alternative hypothesis

The alternative hypothesis is based on research between variables, because one variable has an effect on the other, and helps the researcher reach results that support the theory used.

Null hypothesis

The researcher assumes that there is no relationship between the two variables and that these variables do not affect each other and do not help the researcher support the theory used in the research.

Orientation hypothesis

This hypothesis attempts to predict and prove the effect of the independent variable on the dependent variable.

Undirected hypothesis

It assumes the effect of the independent variable on the dependent variable, but it does not specify the direction of the effect.

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How to formulate hypotheses

When formulating research hypotheses, we find it necessary to ensure that the hypotheses that have been formulated include the independent variable and the dependent variable of the study, and of course fit the research topic. We can transform research questions into hypotheses to ensure that the hypotheses are formulated correctly.

What is the difference between questions and hypotheses in scientific research?

The difference between them can be determined in the following points:

- Research questions are questions that the researcher formulates to reach the main and secondary research objectives. Questions begin with a question mark, such as what, what, and how, and are often used in descriptive research, such as educational research, social work research, or legal research. Most of the upcoming research parts depend on answering these questions. As for hypotheses, they represent declarative sentences that express the relationship between the independent and dependent variables of the study. Hypotheses are assumptions that may be true or false, and the researcher must search for the relationship between the two variables in every hypothesis that is developed.

The researcher relies on a number of research tools, such as interviews, questionnaires, or observations. Then the researcher works on classifying and tabulating the data, and then the research data becomes ready for statistical analysis through the programs designated for that on the computer. Hypotheses consist of sentences and phrases, and are frequently used in experimental research. As for questions, descriptive research relies heavily on them. The most important thing that distinguishes questions and hypotheses together is the presence of variables in each of them, as the researcher must choose a number of independent and dependent variables, which express a description of the nature of the problem that the researcher is studying, as well as the goals that the research seeks to achieve through its study, and the researcher must choose variables Multiple includes different parts of the search.

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Conclusion

After the researcher in the field of social and human sciences defines his research problem, going through the starting question and the problem, as well as defining the concepts as a mental conceptual stage, he moves to an important subsequent step, which is the process of developing scientific hypotheses through a specific theoretical mechanism, in order to reach an accurate study of the phenomenon under study and research. The hypothesis is considered a main tool in the analytical model, given that it is based on the testing process through the process of exploring the reasons leading to the occurrence of this phenomenon.

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