Course : Research statistics   Lecturer : Pr. Saliha CHELLI

 Level : Master 1

Part one : Basics of research

Lecture : 2

Research questions & Hypotheses

1.Research questions

   After the completion and digestion of the literature review, the next step is to ask research questions. Their role is to translate the research purpose into specific research questions that the planned study aims to answer (DÖrneiy, 2007, p.73)). That will not only help you ensure that you know what you are going to research, but also enable you to communicate your ideas to others and guide you in the research process.

   A research question is a way of expressing your interest in a problem or phenomenon. You may have one or more than one question, depending on the complexity and breadth of the proposed work.Good research questions provide orientation to the research methodology that can achieve the research purpose (DÖrneiy, 2007, p.73).

2. Identifying research questions

   The first and perhaps the most difficult aspect of any research undertaking is the identification of research questions (Mack & Gass, 2005, p. 16).Most research texts suggest that the proper way to do research involves first generating one or more questions and then choosing the design, the method and the instrument that allow the researcher to find answers to these questions (op.cit.). The research questions are of great importance because they drive the design.

* We need to keep in mind that the **feasibility of a study** may depend on a number of factors:

- **Breadth** of the study in relation to its research questions' scope and answerability.
- Whether it will be possible to obtain the data necessary to **answer the questions.**

Therefore, one of the most difficult aspects of any research understanding is the identification of appropriate research questions.

- Research questions need to be **interesting** in the sense that they address current issues,
- They need to be **sufficiently narrow** (specific) and constrained so that they can be answered.
- Broad questions can be difficult if not impossible to be addressed without breaking them down into smaller answerable questions.

Good research questions are specific and clear; they refer to the problem or phenomenon; they reflect the intervention in experimental research and note the target group of participants

For example: What is the effect of the native language on the learning of a second or a foreign language?

This cannot be answered because it is a research area, but not a specific question.

How can you narrow or make it specific?

The researcher might investigate the effect of the native language on specific aspects of a target language (e.g., phonology, syntax…).

Remember that

- The research ideas need to be **current**, we should check whether the research questions have not been answered in the literature, or have only partially been answered and require further additional research.
- Most questions come **from a reading of the literature** and an understanding of the history of current issues. Extensive reading and analysis of existing research can lead to the identification of gaps that may strike a reader as important.
- We can develop research questions through **suggestions made by other researchers**
- But the researcher must make sure that others have not conducted such studies. A first step in the process is to consult the university library. Another way of locating relevant information is through web-based search.
- On other occasions, ideas for research might stem from observing learners either in or out of a classroom context or through some **general feeling or curiosity**.

3. Hypotheses

Research problems are generally expressed in terms of research questions and/or hypotheses. Research questions are questions for which answers are sought, whereas hypotheses can be used to express what the researcher expects the results of investigation to be.

- They are based on observation or on what the literature suggests the answers might be.
- There are times when, because of lack of literature, hypotheses cannot be generated because the research is dealing with something new and/or unexplored (Mackey & Gass, 2005, p.19).
- A hypothesis is a specific testable prediction about what would happen in a study. It provides a tentative explanation for a phenomenon under investigation (Leedy & Ormrond, 2001).

It is a formal statement that presents the expected relationship between an independent and dependent variable (Creswell, 2001)

3.1 Forms of hypotheses

They can take different forms depending on the questions being asked and the type of study being conducted. Some may simply describe how two things are related. Others may hypothesize that one variable causes change in another one/ or effect on another one

A research hypothesis is essentially a declarative statement of how you expect the research to turn out. In a way, it is a possible answer to your research question. It is a statement that can be an alternative or a null hypothesis.

3.2. Types of hypotheses

An alternative hypothesis, H1, is a statement of what a statistical test is set up to establish.

A null hypothesis, H0 is a type of hypothesis in statistics that proposes that no statistical significance exists in a set of given observations.

Example

Alternative hypothesis: Students make errors in the use of prepositions because of the native language interference.

Null hypothesis: Students do not make errors in the use of prepositions because of the native language interference.

Once the test has been carried out, we either reject Ho in favour of H1 or accept it.

The alternative hypothesis can be **directional or non-directional. The directional**, also called **one tailed**, predicts that there will be a difference between groups and specifies how the groups will differ.

Example: Boys will perform better than boys in speaking if they are exposed to authentic listening texts. (shows the direction

The non- directional hypothesis, also called **two tailed**, predicts that there will be a difference between groups without specifying the direction of this difference.

Example: There will be a difference in the performance of girls and boys in speaking if they are exposed to authentic listening texts. (not defining what kind of difference

4. Paradigmatic differences in formulating hypotheses

 According to DÖrneiy(2007, p.74),

> Qualitative and quantitative studies differ considerably in terms of how the purpose of the investigation is specified and how it is broken into specific research questions. In quantitative studies, it is generally true that the more specific the research purpose/ question, the better. Thus, good quantitative purpose statements often identify the target variables and causal or descriptive relationship between them to be examined. The research questions, then, specify concrete methodological procedures, and research hypotheses are also drawn up containing the researcher's predictions.

He adds that:

> QUAL research purposes and questions are often vaguer than their QUAN counterparts… They tend to be broader than quantitative ones, often focusing on the big picture or the main processes that are shaped to shape the target phenomenon- usually it is not possible to be more specific at this stage without limiting the inquiry and, therefore, investigators emphasize the exploratory nature of the study instead.

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