

## Research Foundation: Problem, Purpose and Research Questions

It is essential that each research project be well defined in its focus. This is done in three general parts: the problem, the purpose and the research question(s).

### DEFINITIONS

**Problem:** This refers to the general social or world issue that situates your research.

**Purpose:** This is NOT the same as the problem and it is NOT a lack of research in an area. The purpose needs to be specific around understanding something.

**Research Questions:** once you have a clear problem and purpose, the research question(s) should come more easily. They should be set up in such a way that they make it clear what data need to be collected. The research question(s) are the bridge between the problem and purpose and the methodology.

### EXAMPLES AND EXPLANATIONS

**Example Problem:** Current data show that students experience high levels of anxiety around doing research projects and that this a barrier to them successfully completing such projects. This is a problem because learning research is an important skill needed into today's competitive STEM driven economy. A lack of well prepared researchers could create a significant gap in STEM professionals and the work that society depends upon them to provide.

There are a few key things to notice in the problem statement. The opening orients the reader to a specific problem for students: they have anxiety when they are doing their research projects. However, we know from the definition above that the problem statement should situate the work within a general social or world issue. In this example, the author does this by highlighting how this can be a problem beyond just the student. They state (and will need to back this up with citations, of course) that the anxiety could lead to a lack of learning skills that are needed for STEM professions, and this would lead to gaps in the workforce and needed outcomes.

Go to the next page to see how the purpose statement can be written to align with this problem statement and begin to frame out the research.

**Remember our problem statement:** Current data show that **students** experience high levels of **anxiety** around doing **research projects** and that this a barrier to them successfully completing such projects. This is a problem because learning research is an important skill needed into today's competitive STEM driven economy. A lack of well prepared researchers could create a significant gap in STEM professionals and the work that society depends upon them to provide.

**Example Purpose:** The purpose of this study is to examine the impact of a student centered advising model for doctoral students on their anxiety levels towards research.

No one should be surprised by this purpose statement. The opening in the problem statement clearly talks about **students** and **anxiety**—specifically during the **research process**. Therefore, the purpose is centered around students' experiences with anxiety while doing research. If the purpose was more specific about STEM majors or a STEM project, that would make sense, too.

By the way, the fact that students have anxiety when doing their research projects is already established by the literature, as indicated in the opening statement, so you would not need to do a study to demonstrate that students have this anxiety; instead, you want to build upon that to discover something new.

This is an example of quantitative study because it is looking at impact; it will need to have experimental components to measure “impact”. Let's take a look at a qualitative example.

**Example Purpose:** The purpose of this study is to document the experiences of doctoral students in a student centered dissertation advising model. Specifically, the study will seek to understand experiences as they pertain to their ability to overcome anxiety during the process.

Once again, no one should be surprised by this. The purpose statement is aligned with the problem statement by focusing on students' anxiety while doing research. It could be tempting to have written this as all one sentence. You are allowed to break the purpose up into multiple sentences. Remember, your reader does not know what you know. You might need to give them the information in multiple sentences to help them digest the information in order to really understand what you are thinking.

This example is set up to work for a qualitative study or quantitative study. For example, you could look at lived experiences, which would require analysis of qualitative data like interviews or social media posts, or you could look at frequencies of responses to a series of statements on a quantitative survey.

## Research Questions

*I'm going to do two examples here, one is for the first purpose statement, which will be quantitative. The second will be for the second purpose statement and be qualitative. I will list the purpose statement first and put the research question underneath so that it will be easier to see how they align.*

**1- Purpose (quantitative):** The purpose of this study is to examine the impact of a student centered advising model for doctoral students while completing their dissertation on their anxiety levels towards research.

**Research Question:** Does completing the dissertation with a student centered advising model significantly decrease anxiety towards completing research overtime compared to when completing the dissertation without a student centered advising model?

Take notice here that the research question is really just restating what has been said in the purpose statement BUT we do it in a very particular way. First, we transition it to be a question rather than a statement (imagine that!) Second, and here is the important part for the “impact” part, we include what *conditions* we are going to compare. In this case, they are:

completing the dissertation with a student centered advising  
v.  
completing the dissertation without a student centered advising model.

But, there could be time in a study where you are comparing time points (before compared to after) or demographics (first year students v. graduating students; gender groups; ethnicity groups; rural vs. urban)

Finally, we include in the research question what we will measure. This is the thing that we will compare between the groups. In this case, it is anxiety towards doing research.

**2- Purpose (qualitative):** The purpose of this study is to document the experiences of doctoral students in a student centered dissertation advising model. Specifically, the study will seek to understand experiences as they pertain to their ability to overcome anxiety during the process.

**Research Question:** In what ways do doctoral students receiving student centered dissertation advising experience anxiety about the dissertation process?

Just like in the quantitative example, we reword the purpose statement into a question. But keep in mind that in qualitative studies not talk about things like impact and causation. Instead, we use words like “in what ways do people experience” or “how are things experienced” or “how are things described”. Sometimes, I find qualitative questions take a bit more time to develop. You might need to come back to it a few times and make adjustments, and that’s okay.