San José State University Writing Center
www.sjsu.edu/writingcenter
Written by Kristina Tran

Research Proposals

Writing a research proposal is the first step for a research project. Before you can work on your research, it must be approved, whether that is by a professor, thesis advisor, or supervisor. It is essential to make your proposal as strong as possible; if your proposal is denied, you may not get the funding you need or may not get to progress in graduate school.

Present your proposal clearly, effectively, and persuasively. The specific requirements for a proposal vary depending on the grant, program, or degree you are writing it for—make sure to always cross reference your proposal with its provided guidelines. However, most research proposals tend to include the same key parts.

Key Parts of a Research Proposal

A **research proposal** is a document that outlines a research project's goal, significance, and practical application, i.e., how it will actually be done. It should establish a need for the research within its field and must also convince readers about its credibility, achievability, practicality, and sometimes even reproducibility. Some may be shorter, and others may be longer, so be sure to check the specific requirements and examples from your program.

- Introduction / Research Question
- Rationale
- Literature Review
- Methodology
- Budget and Timeframe
- Conclusion
- References / Appendices / Bibliography

The parts of a project proposal will vary depending on your purpose, your field, and the kind of project you are proposing, but the sections listed to the left are commonly included in most research proposals. We have separate handouts on introductions, literature reviews, conclusions, and references, so they will not be covered here.

Research Question

Generating your **research question** is, technically, work that is done *before* you begin writing your research proposal. However, it is still crucial to continue to evaluate it as you write. Make sure your research question is not only clear but *fills a gap in its field.*

Consider existing research. Has someone already done what you're considering? What problems will your research help solve? What exactly do you plan to do to research your question, and is it feasible? Additionally, look at your question itself. Is it too vague or directionless? Does it need to be more specific to fill a certain niche? Or, is it so specific that it won't contribute much to its field as a whole? Also remember that "how" and "why" questions tend to be stronger because they open up more in-depth research and analysis.

Your research question is the basis of your research proposal and, by extension, your entire project. It is essential that it is not only understandable but also has potential.

Sample Research Questions

How does restricting electronic use at an early age affect children's social development?
Why are health education strategies effective in preventing teen pregnancy in California?
How do gentrification and city development initiatives influence local school funding?

Rationale

Rationale establishes your research's significance. You are tasked with demonstrating how and why your research is relevant to its field. Does it fill a gap in the existing body of research? Does it underscore or emphasize existing research? Will it add new, original knowledge to the existing understanding of your subject?

Rationale may also sometimes be called background, but they are not exactly the same. Rationale differs from background because you do not only need to be *descriptive*—you must also be *persuasive* in convincing the reader that your research is necessary. Note how the rationale excerpt below balances description with persuasion.

Sample Selection from a Research Proposal Rationale

"In 2019, the Centers for Disease Control and Prevention estimated that 329,000 Americans were injured in cycling related incidents [20]. If a system that simplifies the braking process and decreases stopping distances can prevent a small fraction of these injuries, then a large impact on bicycle safety can be made. Bicycle sales have been growing exponentially since 2006, with the quantity of e-bikes outpacing traditional bikes [21]. Due to the higher speed and mass of e-bikes, the required stopping distances can greatly increase, leading to more injuries. However, e-bikes are particularly suited for brake proportioning technologies because not only are they faster and heavier, they also have a lower center of mass, hydraulic disc brakes, regenerative braking and integrated electronic control systems" (*Design and simulation of a single-lever bicycle brake with hydraulic pressure proportioning to minimize stopping distance* 7).

Methodology

Your **methodology** *must* be clear and logically organized because it will convince readers of the actual practicality of your idea. Although it may be difficult, especially since you are not yet performing your research, you must build confidence in the fact that you would be *capable* of doing so.

Consider drawing examples from your literature review, emulating good approaches by other researchers, and being specific about the methods you will use. Methodology includes not just establishing your research process, but also outlining the methods you will use for interpreting your potential findings.

Additionally, try not to simply discuss what you plan to accomplish from using these methods. Your methodology section isn't just a collection of activities; explain *why* your methods are the most effective approach possible for your specific research. You can also acknowledge or predict any possible drawbacks in your planned methods and provide a plan of action to solve them.

Sample Selection from a Research Proposal Methodology

"The most significant risk to this experiment would be that if the specimens are too thin, they might tear. . . compromising the repeatability of the experiment. The contingency for this would be to try multiple thicknesses. . . Furthermore, extra electrolyte films could be produced so. . . they could be easily replaced during testing. It must be noted that this contingency would place a greater burden and responsibility on the fabrication and fabricator of the specimen. However, recent communications suggest that fabricating higher quantities of test specimens is not overly taxing or time consuming" (*Electrochemomechanical Effects of Cyclic Compression on a Composite Polymer Electrolyte for Lithium-Ion Batteries* 6).

Budget and Timeframe

Regardless of how watertight the rest of your research proposal may be, an unrealistic budget can greatly affect your proposal's persuasiveness. You can be somewhat generous with your budget estimates to allow yourself flexibility, but if you propose something too costly, nobody will want to fund your research. It is important to balance the two concepts and keep project approval at the forefront of your mind. Your budget projections also need to be specific (e.g., $500 for copying costs, $25 gift cards for 35 participants, etc.).

It is equally important to evaluate the feasibility of your research's timeline. Is the scope too big, or is your research too narrow? Consider your overall time constraints and if your predicted methods are realistic and efficient. Acknowledging and addressing these concerns in your proposal can help establish your credibility and make your proposal more persuasive.

Activity 1: Weak Research Questions

The following research questions are all weak for a variety of reasons, including vague wording, too-wide scope, or already-researched subjects. Pretend you are the researcher, who has just been told their research question is not feasible but still wants to do research on the same subject. Target each question's main weaknesses when you rewrite. Stay close to the original question's subject, but feel free to add new info and take it in whatever direction you feel is strongest.

1. How are LGBT youth affected by social media?
2. Does adding more lanes to a highway increase congestion?
3. How is AI changing data collection?
4. Do low-commuter schools have better student outcomes?

Sample Answer Key for Activity 1

1. How is youth education about LGBT history being affected by the rise of social media?
2. How do well-designed highways continue to contribute to congestion in the Bay Area?
3. How can AI-based data collection be used to predict trends in the fashion industry?
4. How does the commuting rate of a university impact its students' academic performance?

Activity 2: Research Proposal Scenario

You are a graduate student looking to receive more funding for your next research project and have discovered that your department provides graduate research and development grants. When you take a look at your department's research grant FAQ, the only information is as follows.

> Your research proposal should include the following sections:
>
> **Introduction, Background, Literature Review, Methodology, Budget and Timeline,** and **Conclusion.**

Writing roughly 1-2 sentences for each heading, create a mini-research proposal for this grant opportunity. Assume the department you are writing for is your own.

Sample Answer Key for Activity 2

1. **Introduction**
   The ways in which non-traditional learning environments like Montessori and Waldorf education promote positive development in preschoolers will be investigated.
2. **Background**
   Parents commonly enroll their children in non-traditional learning environments with the goal of enriching their education. However, what tangible positive developments do non-traditional learning environments create?
3. **Literature Review**
   Current literature suggests that the quality of preschool center classrooms is modestly related to overall acquisition of language and mathematics skills (Keys et al. 1186). Additionally, preschool quality is also connected to the development of "language skills for children of highly educated mothers. . . and social skills for children who entered preschool-age care with lower cognitive skills or had mothers with some college" (Keys et al. 1186).
4. **Methodology**
   Assessments of children's cognitive, academic, and social skills will be conducted throughout non-traditional schools, including pre-K and elementary school education. The outcomes of preschoolers will be compared against the outcomes of older elementary school children in the same school.
5. **Budget and Timeline**
   The data collection will take place concurrently at several schools over the course of one term. After data collection, researchers will record and analyze the data. Overall, research should take no longer than one academic year (between August 15, 2022 and June 15, 2023). Participatory schools will be compensated for their time ($500 per school, with the goal of 10 schools participating).
6. **Conclusion**
   The competitive, positive development which many non-traditional schools base themselves on must be concretely analyzed and evaluated to substantiate their claims and help parents make informed decisions for their children's preschool education.

References

Bouchrika, Imed. "How to write a research proposal: Structure, examples & common mistakes." *Research.com,* 6 May 2021, research.com/research/how-to-write-a-research-proposal

"Design and simulation of a single-lever bicycle brake with hydraulic pressure proportioning to minimize stopping distance." 23 May 2021, drive.google.com/file/d/1NeGniLmqiny1qCwVGFowq-4Bl4wpVylB/view?usp=sharing

"Electrochemomechanical Effects of Cyclic Compression on a Composite Polymer Electrolyte for Lithium-Ion Batteries." 20 Aug. 2021, drive.google.com/file/d/1fu97vZ1amZuoPMqvYQFBfpxWZhNHsJ7_/view?usp=sharing

Keys, Tran D. et al. "Preschool Center Quality and School Readiness: Quality Effects and Variation by Demographic and Child Characteristics." *Child Development,* vol. 84, no. 4, Blackwell Publishing Ltd, 2013, pp. 1171–90, https://doi.org/10.1111/cdev.12048.

"Organizing academic research papers: Writing a research proposal." *Sacred Heart University Library.* library.sacredheart.edu/c.php?g=29803&p=185956

Sudheesh, K. et al. "How to write a research proposal?" *Indian journal of Anaesthesia*, vol. 60, no. 9, 2016, pp. 631–34, https://doi.org/10.4103/0019-5049.190617

"Writing a project proposal." *Undergraduate Research and Independent Projects.* undergradresearch.stanford.edu/apply/writing-project-proposal