Science Societies

Grad students—create a grant proposal that stands out

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November 19, 2020



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The wide range of opportunities acquired during graduate school is essential to building students' employability and soft skills. Whether you are considering a future job in academia, industry, government, or other sectors, experience with writing grant proposals is critical for developing skills such as problem layout and solving, resource

and time management, written communication, organization, and marketing, among others. Unlike a thesis or dissertation proposal, competitive grant proposals should provide concrete evidence to convince the sponsor that you have a worthwhile research idea or project to be funded. You not only need to "sell" your idea but also show that your research is the right one for the task with the skills, expertise, and necessary work plan to accomplish what you have proposed. Successful grant proposals can also help secure additional funding for research projects to allow further exploration of additional research questions, expanding on collaborations/partnerships, and advancing knowledge of what remains unknown.

This article highlights three main areas: (1) Steps for writing a successful grant proposal; (2) Resources/tools for writing a compelling grant proposal; and (3) Unexpected results? Try, try again.

Steps for Writing a Successful Grant Proposal

Apply to the Right Grant Organization

Start by reviewing the guidelines, program goals, criteria, and what can and cannot be funded by the specific sponsor you are applying for. This documentation is often termed the "call for proposals." Remember, your proposal should be carefully crafted for the sponsor you are applying for. Well-designed proposals that do not clearly meet the sponsor program's criteria and research priorities are typically not funded. This means that you cannot use the exact same proposal for several agencies or foundations. After consulting the call for proposals, ask yourself whether your research topic is suitable for the funding agency's consideration. This will help you to tailor your proposal to suit the sponsor's perspectives.

Keep the Writing Clear and Simple

You are communicating your research plan and the reasons why your project should be financially supported. Assuming that funds are available, proposals with clear-cut objectives and methods are generally more likely to be accepted. Grant proposals typically have the following structure: (1) statement of the problem and justification, (2) objectives and methodology, (3) outcomes and outreach, (4) evaluation plan, and (5) budget.

It is imperative to avoid jargon. As with any scientific writing, it is easy to lose track and write things that do not add value to the script. A common mistake could be not spelling out the full names of acronyms.

Justify the Importance, Goals of Your Project



The research grant application process.

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The statement of the problem you want to solve should catch the sponsor's attention. One cannot assume that reviewers are intimately familiar with the issues that each proposal addresses. Generally, program technical reviewer panels are composed of experts from a variety of disciplines. Along those lines, simplicity and conciseness will help. Through the document, make sure to justify the following questions: Why does the project need to be funded? Why is it a good potential solution? What are the novel concepts? Why is it a priority? Why is the problem being addressed a relevant concern? State the problem in terms of how it impacts the general community and not how it impacts your research interests.

Use Appropriate Methods to Accomplish Your Goals

The methodology should achieve the project's desired goals, and thus, it delineates how a project idea will be researched and executed. If doing field agronomy research, you should likely provide details such as plot sizes, replications, controls, surveys, and the response variables. The methodology description needs to be adequate to provide meaningful information for the particular research question(s), such as how the data will be collected. It may be helpful to consult with a statistician to discuss your experimental design and data collection.

Remember, the methodology you are proposing represents some (if not most) of the expenses you are requesting from the funding agency. Methodology of well-designed proposals lists things that are deliverable and achievable (given the time and funding restrictions established by the sponsor). Take into consideration the logistics and feasibility of the project components. Do you have the equipment and space needed? Do you have the number of people and expertise required? Do you have the time availability? Last but not least, make sure you include a timeline of the activities as part of the plan. This will facilitate the understanding of the project length from inception to completion, including the sub-components taking place in between.

State Your Project's Outcomes and Outreach

An outcome is something that you can measure; it shows the progress being made towards the goal(s). See the outcomes as your results and how it will impact your audience. Examples could be "farmers will increase profitability with the proposed crop rotation," or "three tomato varieties will be developed with adaptability to areas of low soil quality concerns," or "fewer fertilizer inputs will be necessary to increase land sustainability." Outreach refers to how you plan to disseminate the information/outcomes obtained from your project to a broader audience. In this section, you must provide information on how valuable the information generated is

and how you plan to communicate to your audience about your findings (i.e., papers, seminars, scientific meetings, extension meetings, reports, etc.).

Have an Evaluation Plan Ready

Explain how you will measure the success of your project. This can be done through target audience surveys (e.g., farmers, consumers, students, etc.), interviews, audience input, social media use, and engagement (e.g., attendance at field days and extension events), to name a few. Provide a brief narrative of the project's learning process, such as knowledge gain, skills, and attitude change. Evaluation plans can also be framed in terms of how successfully (i.e., outcomes/results) you will achieve the project's goals/objectives. Well-designed evaluation plans are very relevant for both researcher and funding agency perspectives.

Develop a Realistic Budget

From the list of tips presented here, developing a budget might be the item that graduate students have the least experience with, and hence it can be a challenge. However, as the old saying goes, "there is always a first time." The budget-planning process should not be left as the last item of your application package. Every item in the budget should be tied directly to an activity or deliverable, which is associated with an objective. Your proposal budget will reflect how carefully you have considered the costs associated with the proposed research project. Even the best proposal narratives might not be funded if applicants are not clear about what the requested funding is for or if applicants ask for funding of things that are not allowable.

Some important requirements to avoid budgeting problems are agency specific. However, in most cases, many federal programs do not allow equipment purchases that will be usable beyond the award period or supplementing a student's

salary/stipend. Common questions the review panel can ask when evaluating a grant proposal are: “Can the researchers accomplish what they have proposed within the time frame and with the funding requested?” and “Does the budget fit the available funding rather than the actual cost of the proposed activities?"

Before submitting your proposal, make sure you leave enough time for all of the authors on the grant to proofread it. Your department colleagues and friends can also be potential reviewers of your proposal. They can help to identify sections that are unclear and find errors that one might not catch otherwise. Also, some funding agencies require you to route the complete and final form of the proposal through the department’s internal review process before submission. This process ensures compliance with federal, state, and institutional (department, college, and university levels) regulations as well as accuracy in terms of budget and institutional information. Check with your department to make sure the routing process will be completed on time and before the funding agency submission deadline.

Resources, Tools for Writing a Compelling Grant Proposal

Attend Grant-Writing Workshops/Seminars

The office of research of most of the land grant universities offers grant-writing seminars for faculties, postdoctoral research fellows, and graduate students. In general, those are short seminars (from a couple of hours to one day long) that address both practical and conceptual aspects important to the grant proposal writing process.

Attend a Grant Proposal Writing Class

Grant proposal writing classes are targeted for graduate students preparing for research careers. Usually, as part of the course learning outcomes, students must write an experimental grant using a specific funding agency format. Attending these classes

is recommended towards the end of your graduate program.

Seek Online Resources and Books

Grant-writing courses and useful resources are available in open online courses, known as MOOCs (e.g., Coursera and Learn@Forbes). Grant-writing books such as *The Only Grant-Writing Book You Will Ever Need: An Insider's Guide* by Arlen Sue and Ellen Karsh and *The Complete Book of Grant Writing* by Nancy Smith and E. Gabriel Works can also be helpful resources.

Contact the Grant Program Officer for Questions

Questions might arise while writing your grant proposal, and the answers may not be clear on the agency's proposal guidelines. If you are unsure, consider contacting the program officer of each specific funding entity and seek help.

Search for Previously Funded Grants

Getting familiar with proposal examples and templates can help you write your proposal. Recent (and successful) grants written by advisers/professors might be a good resource. Another option is to search for grants recently approved that are available online. For example, the SARE Graduate Student Grant Program has awarded more than $2.3 million throughout the United States, and SARE's website contains an open-accessed database of funded grants that can be sorted by state, funding year, project type, commodities, and practices.

Unexpected Results? Try, Try Again

Despite the time and effort required when crafting grant proposals, realistically speaking, funding is not always guaranteed. Calls for proposals are very competitive, and review panels weigh the merits and weaknesses of proposals differently. Proposal

funding rejection occurs for various reasons, and in most cases, the reviewer's feedback is provided to each applicant. Make sure to use and integrate this feedback as you move forward. If your proposal is not funded, consider trying again, either the next funding cycle with the same funding agency or with different potential funding source(s). During this intervening period, you can rethink and reorganize your project ideas and rework your proposal to make it compelling and better suited to the goals and guidelines of the sponsor.

Throughout the grant proposal writing process, make sure you have constant communication with your adviser, committee members, and cohort involved in the proposed project. Their expertise in the subject and advice can guide you to a successful submission and funding approval. Like any other type of writing, it can feel overwhelming and challenging, but there must always be a starting point. With discipline, dedication, and persistence, the ultimate goal of getting approval/funding can be achieved. Make sure you allocate enough time in each grant-writing process step, save time for revisions/feedback, and discuss with others before final submission.

Finally, yet importantly, remember, "If you don't try, you forfeit the opportunity" (Frank Sonnenberg, *Soul Food: Change Your Thinking, Change Your Life*). Best of luck and success on your grant-writing experience(s) during your grad school journey and beyond!

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