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Value Propositions Provide a Roadmap for Teaching Doctoral Students How to Develop Research Proposals: Results from the National Science Foundation Cultural Anthropology Methods Program (NSF CAMP)

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Abstract
Writing winning proposals for funding research is an essential skill for doctoral students in the social sciences. Still, most anthropology programs lack formal instruction on this, relying instead on informal mentorship. To advance this, we evaluated the Value Proposition framework in teaching anthropology Ph.D. students to write proposals. Our findings from the feedback from students and faculty in the NSF-funded Cultural Anthropology Methods Program (CAMP) offer insights for using this framework to bridge the proposal-writing gap in the training of cultural anthropologists.

Key Words
Proposal development, Value Propositions, graduate student, mentoring, research

Introduction

Today's academic landscape requires that scholars possess strong skills in proposal development to secure funding for their research programs (Archer, 2008; Saunders, 2010). In the United States, for example, major funding organizations (such as the National Science Foundation and the National Institute of Health) require applicants to propose research with clearly articulated scientific contributions. Funding is limited and proposals must convince the granting agency that the project and research design will produce generalizable results and advance scientific theory. Doctoral students who complete their training without proposal development skills will face significant disadvantages in both academic and non-academic job markets (Porter, 2004; Nolan & Briody, 2023a, 2023b; Nolan et al., 2021). However, many programs do not explicitly teach research proposal development. Instead, it exists within a 'hidden curriculum' that students navigate through informal mentorship (Ali & Kohun, 2006; Calarco, 2020; Ruth et al., 2022).

The literature on teaching and mentoring students in proposal development is therefore quite nascent, but recent studies show that structured training enhances students' confidence in the research process (Chien, 2024; Matos et al., 2023; Saeed et al., 2021). Providing doctoral students with this training will also help address the need by

universities for securing external funds (Porter, 2004). But an emerging and unsolved question remains: *How* can we best train doctoral students the art of proposal development?

The Value Proposition framework (hereafter VPF) originated in engineering and business management to teach students how to articulate the value of their projects (Carlson & Wilmont, 2006; Carlson et al., 2019; LeBlanc & Hassen, 2017; Jussila et al., 2020). VPF prompts students to articulate the "NABCs" of value for their project: (1) the **N**eed for the project/product; (2) the **A**pproach they are taking to develop it; (3) the **B**enefit that the project/product will produce for key audiences; and (4) how this project/product is superior to the current **C**ompetition. Following this framework helps engineering and business students to develop funding proposals (Carlson et al., 2019), assess participant community needs (Krüger & Rustad, 2019), and communicate expectations (Kleine & Yoder, 2011; Tryggvason et al., 2010).

Recently, Westerhoff and colleagues (2021) demonstrated how the VPF can be successfully adopted to help interdisciplinary research teams transcend their respective knowledge boundaries and converge around research to address a pressing societal need (Westerhoff et al., 2021). Convergence research is designed to create solutions to big challenges that require insights from many disciplines spanning the social sciences, engineering, and biophysical sciences. Value Propositions help convergence teams iteratively develop their understanding of problems and solutions in ways that, over time, become increasingly integrated and transdisciplinary. The work of Westerhoff et al. (2021) demonstrated how the VPF can integrate anthropology, data science, engineering, economics, law, and policy.

We evaluated this framework for teaching anthropology Ph.D. students to write effective grant proposals during a summer-intensive training program in the United States, the NSF Cultural Anthropology Methods Program (CAMP) (Bernard & Wutich, 2024). Here, we present our findings from both students and faculty, and we suggest ways that others can adapt the framework for teaching research proposal development.

Study Setting

The three-week NSF Cultural Anthropology Methods Program (CAMP) accepts 20 doctoral students from across U.S. universities each year (Bernard & Wutich, 2024). In addition to receiving training on multiple research methods, students develop their doctoral proposals. Each day of the program, students meet in small groups for their "research project progress" sessions, where they take turns orally presenting their evolving proposals and receiving feedback from faculty and peers. The goal is for students to leverage this iterative feedback to develop a high-quality research proposal that can be submitted for grant funding. This study sample is composed of students and faculty from one cohort of the NSF CAMP.

Adapting the Value Proposition Model for Teaching Research Proposal Development

Following LeBlanc & Hassan (2017) and Prieto (2019), we updated the NABC rule of the VPF. Anthropology students were prompted to articulate: the **N**eed for the research (i.e., its contribution to scholarly literature); the **C**ompeting ideas and frameworks (the context of the proposed research in relation to past theories and methodologies identified through a literature review); we added the research **Q**uestion (as suggested by Prieto, 2019, because articulating a clear research question is a fundamental element of basic science research proposals); the **A**pproach they will take to answer their research question (i.e., their research design and methods); and state the scholarly (i.e., theoretical contributions) and practical **B**enefits their proposed research will have.

Before the program began, faculty attended an orientation and received training on how to prompt students through each element of the framework (see Ruth et al., 2024). They received a handout that described the approach as outlined above, which they could refer to when implementing in real time to ensure that students were adhering to the framework. Then faculty who had been using the framework explained each step and answered questions. During the student orientation, we explained the VPF, gave students the same handout, and provided an example by having faculty members prompt one another to articulate each of the categorical elements of their current project. We clarified that students were not expected to articulate each element perfectly at the outset (like the faculty member had just done). Instead, they were encouraged to present their best attempt, receive feedback, and iteratively refine their responses throughout the program.

Each day of the program, students broke into groups of five, led by one faculty facilitator. The facilitator reminded the students of the framework and then gave each student 15 minutes to present the categorical elements of their project. After their presentation was complete, the faculty member and peers provided

feedback on the strengths and weaknesses of their presentation. Students incorporated this feedback and re-presented in subsequent sessions.

As students revised and developed each element of the VPF for their own research, it was sometimes helpful to change the order of the elements during the feedback sessions. For example, sometimes faculty asked students first to state the Need, then talk about the Competition because the need for a scholarly intervention is closely tied with articulating how one's proposal extends knowledge beyond what other scholars already know (a suggestion also made by Prieto, 2019). After the first few times presenting, we sometimes asked students to present just one element of the framework (e.g., "Let's just focus on your Need today" and "Let's just focus on your Question today") because we found that helping students pin down one element of the framework made it easier for them to re-frame other elements of the framework. At the end of the program, students each presented their full proposal to all faculty, peers, and invited guests during a culminating symposium.

Data Collection and Analysis

When the program ended, we invited students to provide their feedback, via an online survey with open-ended questions, on the strengths and weaknesses of the VPF based on their experience with it. The emergent themes from that survey guided the questions in two subsequent focus groups with students (totalling 10 students) and one focus group with four of the faculty. In those focus groups, we probed them about impressions of the effectiveness of the VPF for developing research proposals. We recorded the focus groups and transcribed the recordings. Using the constant comparison method (Boejie, 2002; Leech & Onwuegbuzie, 2011), the lead author identified themes in the transcripts (Bernard, Wutich, & Ryan, 2016).

Results

Table 1 displays the key themes and exemplar quotes from both students and faculty. Students and faculty saw the VPF as valuable for writing grant proposals, easy to follow, and helpful for refining research questions and keeping a proposal concise. The main agreement among students and faculty, indicated by the theme ***good structure***, was that the categorical elements of the VPF model gave clarity and specific direction to what was expected in the research proposal and presentation. Students said that those elements helped guide the development of their proposal by narrowing their focus, while faculty said that those same elements lowered student anxiety and thus led to stronger research presentations. Summing up: Giving clear guidance on grant writing reduces anxiety and clarifies expectations (Carlson et al., 2019; Kleine & Yoder, 2011; Tryggvason et al. 2010).

Not all students liked the structure. Some said that the framework constrained their proposal, indicated by the theme ***too structured***. These students did not like that the categories (e.g., identifying the benefits) limited what they could include, such as additional context. Some also mentioned that they were unsure how to match the prompts with specific information related to their research proposal. This was especially important for students who were designing applied (as opposed to basic science or more theoretical) research projects. However, since we adapted the framework for teaching students how to structure research proposals, we are confident that the framework can be further adapted to align with other funding requirements (LeBlanc & Hassan, 2017).

Lastly, students found the term "competition" (the C in the original NABC) anxiety-producing—indicated by the theme ***bad competition***. Both students and faculty said that students were uncomfortable being in competition for grants and "pitching" their work as better than that of other researchers. Students said that their discomfort was because the VPF was developed for business and entrepreneurship, and is therefore aligned with Westernized, capitalistic concepts of competition that pit students against each other.

We probed further, asking whether the idea of having to compete and/or the word "competition" was problematic. One student commented, "I'm not a big fan of the word itself, you know it's always like we're competing to see who is better or not" (*Student, Focus Group*). Another student followed up with, "I feel like my program encourages us to view ourselves as in competition with every other person in the world. It's not overt but it's there and I don't like it" (*Student, Focus Group*). The faculty tried to reframe the competition concept in several ways, including calling it the "conversation" and asking students "what do other scholars have to say about this topic and how does your approach build on this or contribute to this conversation?" Still, the students in this cohort pushed back on the term competition itself and on the idea of working as "academic entrepreneurs" who needed to pitch their work (Giroux, 2014).

On the other hand, a handful of students, and all the faculty, commented about the benefits of thinking through competition—indicated by the theme ***helpful competition***. These students, and the faculty, said that identifying the competition and how one's approach brings a different perspective is especially important when applying for funding. Some students appreciated being pushed to think through the competition piece because it made them place their research within the broader academic literature and articulate the importance of their contribution to a field of knowledge. Faculty commented that just because this piece of the framework makes students uncomfortable does not mean that it is bad for them to learn how to "pitch" their research. They noted that grant writing *is* a competition. Faculty discussed the fact that sometimes the learning process is uncomfortable and that structuring teaching in a way that keeps students within their comfort zones can do them a disservice. Mentors have an obligation, they said, to prepare students to think about designing research proposals that will stand out to reviewers for their unique and important scholarly contributions and that grant writing is markedly different than writing up research manuscripts.

Overall, there were few negative comments about the VPF. Students and faculty alike agreed that the structure was valuable for developing research proposals and said that they would use the framework in their own teaching and collaborative work. Our findings indicate that the VPF provides a valuable roadmap for teaching students how to develop research proposals.

Table 1: Themes and exemplar quotes on the strengths and weaknesses of the Value Proposition framework (from student surveys and focus groups)

Theme	Exemplar Quotes
Good Structure	- *It's very structured so it guided the presentation in an ABC/123 way. (Student, Survey)* - *It was really useful for thinking through how to present my research and what people expect to see. (Student, Focus Group)* - *[Their presentations are] more polished than I had heard previously from graduate students who had not been familiar with this framework. (Teacher 1, Focus Group)*
Too Structured	- *The different components do not map neatly onto research proposals. There are things that overlap and some things which are missed. (Student, Survey)* - *Sometimes questions about a section applied to others, and it could be confusing on how to tackle a given issue and in which section. (Student, Survey)*
Bad Competition	- *It [the word competition + doctoral programs] seems like we're so encouraged to compete with everyone instead of uplifting each other. (Student, Focus Group)* - *I just don't know how I feel about the terminology of competition, and I think that could be changed to suit more towards something that we can grow with, and from, instead of like competing you know. (Student, Focus Group)* - *In the beginning, there was a little bit of a challenge of getting used to the idea that you have to pitch and that you have to sell your ideas. (Teacher 1, Focus Group)*
Helpful Competition	- *I think the competition is good, [it's good] to think about how we situate our research in a scholarly debate. (Student, Focus Group)* - *The competition makes you think about the justification of why your research itself is important. It makes you think about how [to] make your proposal stand out how it is different than the other things that have been done before, so the competition was really helpful. (Student, Focus Group)*

Reflections and Recommendations

The Value Proposition framework helped students focus on the elements of their proposal necessary for a basic science grant application. Students responded well to using the adapted VPF to identify and articulate these proposal elements. However, further adaptations may be needed depending on the mentor's preferences for explaining proposal development and the students' needs (Carlson et al., 2019; Westerhoff et al., 2021).

For instance, some students whose research was more community and solution-driven felt that their research Need (the N in the NABC) was for work supporting some intervention and that requiring them to articulate that need in terms demanded by academic journals was inappropriate for them. Thus, for those teaching in more applied programs, it may be better to have the Need focus on a societal need that matches the societal Benefit(s)

as in the original NABC structure (Carlson et al., 2019; Westerhoff et al., 2021), rather than the scholarly need and the scholarly benefit.

The word "competition" and the idea of "pitching" a research project as better than others was a major sticking point for many of our students—despite our instructions that articulating the competition involves situating the study within the broader scholarly literature. To enhance clarity in basic science research proposals, some programs may find it beneficial to reframe the "C" of 'Competition' to 'Conversation', and to prompt students to discuss how their project extends the scholarly conversation on their research topic. With this more neutral framing, the VPF can be used to create a space where students identify what distinguishes their research through the collaborative support of their peers' iterative feedback.

Finally, we note that the VPF may be valuable in the later stages of proposal design, as a way for students and faculty to simulate panel reviews by a funding agency. We did not evaluate the framework for this purpose, but, based on our experience, we believe this application may be quite fruitful.

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Ethics Approval

This study was approved by Arizona State University's IRB (STUDY00012825).

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