

Initiating and Sustaining Student Professionalization through Grant Writing

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ABSTRACT

This experience report examines how grant writing helps students to meaningfully engage in the project management and technical communication skills needed to sustain practical and ethical professional development. Our case study demonstrates this practice and its successes in an interinstitutional, interdisciplinary research team.

CCS CONCEPTS

• **Social and professional topics** → Professional topics; Management of computing and information systems; Project and people management; • **Applied computing** → Education; • **Software and its engineering** → Software creation and management; Collaboration in software development; Programming teams.

KEYWORDS

Grant writing, collaboration, education, internships, mentoring

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1 INTRODUCTION: CROW IS A TEACHING AND RESEARCH SITE

The Corpus & Repository of Writing (Crow) is both a digital platform for corpus research linked with a repository of pedagogical materials and the inter-institutional and interdisciplinary team that builds and maintains that platform. Over five years of development, from concept to working software, we have come to understand our research team and its practices as important facets of our research, both for our own sustainability, and as a model for other complex distributed research teams. From the start, we have shaped our team by drawing from lab research team models used in the natural sciences, but have recognized their limitations and sought to correct some of their ethical shortcomings, especially their positioning of students as a source of labor without a voice in project governance.

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For example, when students are not included in processes like grant writing and project administration, and when their roles are limited to data coding or background research, they miss valuable training for meeting the demands of diverse academic and non-academic workplaces. On the other hand, asking students to participate in this work while unrecognized or uncompensated perpetuates deeply embedded problems of invisible work and exploitation. This tension magnifies with the increasingly distributed nature of work, across departments and domains both inside and outside the university, which has led to feelings of fractured identity [1, 2] and greater concerns about working conditions, such as the labor demands placed on both graduate students and faculty in professional and technical communication [3, 4]. Grant writing is an example of how our team actively engages technical communication as advocacy [5] by directly working to address the complications of student labor and effective professional development through networked mentoring [6].

Grant writing, as a key activity for both faculty and students involved in our project, answers demands for grant writing experience in both academic and industry circles, and offers experience and training not often found in classrooms. Grant writing supports the learning and professional development goals of students, and successful grant funding helps us ensure that students' work is visible, credited and whenever possible, compensated. This cyclical process of planning, writing and mentoring has led to successful internal and external funding that has helped us launch the Crow platform and begin to attract and support a community of teacher-scholars who use it for research and professional development. Indeed, forming partnerships with community colleges and Hispanic-serving institutions is part of our ACLS-funded commitment to share our work with under-resourced institutions. At the same time, training team members to meaningfully participate in grant writing has offered us a model for networked mentoring, a non-hierarchical approach that encourages both peer-to-peer and student-to-faculty mentoring [7, 8] that engages team members in the rhetorical work of writing, project development, and grant administration.

In this experience report, we document how Crow researchers have leveraged grant writing to support undergraduate and graduate student professional development. We present two personas that summarize how typical student researchers approach grant writing, and reflect on their successes, difficulties, and uptake of mentoring practices. We conclude with action-oriented recommendations for our own research team, for the members and leaders of other teams, and for teacher-scholars in technical communication.

2 BACKGROUND: GRANT WRITING AT THE CENTER OF THE COMPASS

Grant writing is central to our approach in project management, team building, and professional development. Adapting Flower's [9] rhetorical frame for community engagement, we facilitate discovery, accept conflict, seek resolution rather than consensus, develop rhetorical confidence, and build identities that shape our practices. Grant writing helps our team balance project and individual growth, maintain ethical practices for professionalization, and build skills that benefit the project and facilitate transfer of expertise to broader contexts. To achieve these goals, we build visible infrastructure that allows us to distribute work, assign roles, document project-based learning, and promote access to all team members. We define "visible infrastructure" as the systems and documentation that support collaborative work, such as our best practices, our engagement with a team communication platform (Basecamp), and shared access to all aspects of Crow work through cloud storage (Google Drive).

Grant strategy offers a lens to reflect on our broadest project goals, including our commitment to building a sustainable, ethical research team. Our constructive distributed work (CDW) practices draw on technical communication research that situates infrastructure as material, discursive, reflexive, and accountable [4, 10]. CDW is our three dimensional approach that integrates attention to our core principles, best practices, and orientations to work with the goal of a more ethical, sustainable distributed team [11]. As a site of interdisciplinary research and professional development, Crow is engaged in building tools, researching writing, and building resources that impact writing teachers and researchers. Our distributed network of research sites, and our commitment to ethical student engagement requires multiple types of infrastructure, including human, digital, and artifactual. Making these multiple layers of infrastructure visible through CDW invites students to reflect upon our practices, generating opportunities to observe, critique, and adjust them, thus shaping our framework for "scaffolding active work" [10, p. 190].

The strategy below has supported successful external grant funding from Humanities Without Walls and the American Council of Learned Societies, in addition to multiple internal grants. We invite all team members to write grants—faculty, junior and senior scholars, graduate and undergraduate students—thus developing their grant funding and collaborative thinking and writing expertise. Our grant strategy is public and participatory, meaning that we actively engage all members of the team in both writing and in understanding the underlying principles of long-term planning and capacity building necessary for sustainable development. By sharing this strategy at conferences [12] and with colleagues interested in developing their own research teams, we have come to understand the pedagogical value of a widely shared, clearly articulated, and continually updated grant strategy. In sum, the strategy we share here is the compass that guides our team.

- Research internal and external grants and plan schedules for applications.
- Read and annotate grant RFPs and examples of winning grants.
- Develop questions for funders and university partners.

- Assign students to grants based on expertise and learning goals.
- Assign drafters, first reviewers, and second reviewers for each task.
- Write synchronously and asynchronously in Google Docs.
- Discuss writing through Docs, Basecamp, and meetings.
- Review and revise drafts with all team members and outside readers.
- Complete final review and submission.
- Archive grant materials in Basecamp and Google Drive.
- Develop infrastructure to support administration of successful grants.
- Follow up with funders to get feedback on rejected grants and to build relationships.
- Ensure reporting obligations are met for winning grants.
- Update best practices and strategic planning to improve mentoring.

This grant strategy encourages us to reflect on the sustainability of our engagement with students. Careful division of labor, calendar planning, team formation, and communication with administration are not exclusively grant writing practices. Such practices require interpersonal, intrapersonal, and cognitive skills that balance team member expertise, the nature of the project and grant, in addition to designing budgets and structuring grant deliverables. Grant writing is most successful when it is done collaboratively, rhetorically, and mindfully.

3 METHODS: USING INTERNALLY CREATED PERSONAS FOR EVALUATION

As the Crow team has launched its corpus and repository platform [13] and grown the number of partner institutions engaged with Crow research, we have also committed significant time and resources to building a model for ethical research. Reflective opportunities, like the one we detail in this experience report, afford us the opportunity to use participatory methods [14, 15] to check our work and stay accountable to our core principles, especially focused attention to networked, reciprocal mentoring. For this report, we borrow from software development and usability research practices that help designers understand the needs, motivations, and experiences of their users [16–18], and extend those methods to develop reflective student personas that allow us to evaluate our current practices. The researchers on this project have all been deeply involved in the grant writing process for Crow, as both writers and mentors for other researchers working on multiple grants.

We developed a set of interview questions (see Appendix A.1) to help us understand how Crow researchers experience grant writing. We conducted informal conversational interviews with two graduate students and two undergraduate students who had worked with Crow for at least one year. We supplemented these interviews with reflections written by two of the authors, Banat and McMullin, and synthesized these six data sources to form personas describing how grant writing has impacted the professional identities and practices of Crow researchers, considering both Crow-related work and other contexts outside our research team. Both Banat and McMullin were primary authors on successful grants for Crow research as graduate students, and their ongoing research and engagement contribute to

how we understand and adapt our writing and mentoring practices for Crow [12].

Personas, a common user experience tool, are realistic but fictional people that typify users likely for given contexts of use — in our case, student professional development. Like typical personas, ours are derived from research, in this case real people that represent important demographics reflecting the diversity of our Crow team. As in user experience contexts, personas offer Crow a way to easily share insights with researchers and developers alike. Building personas also protected the identities of students we interviewed for this report by aggregating individual goals, motivations, and needs to showcase the complexity of interaction and collaboration in our team projects. The persona development we have done for this project also forms a baseline for reflecting on our grant writing activity, especially our mentoring strategy, then revising our practices and developing future research questions. That is, our purpose is different (qualitative assessment, not user experience guidance), but the methods are very similar.

Quesenbery's persona development model [19], as we have adapted it for this project, requires researchers to develop personas by choosing details that:

- **Reflect the contexts and environments in which researchers work.** Personas are not effective unless they engage real-word contexts.
- **Suggest how researchers make decisions.** We want our personas to guide decision-making for both researchers and mentors.
- **Explain researchers' past choices or history/relationships to similar activities.** Understanding how Crow researchers reacted to given situations can help when facing similar challenges, and provides baselines for evaluation, too.
- **Uncover affordances and constraints of current practices to assess usability and accessibility.** No UX researcher would argue against a more usable, accessible product. But it's sometimes hard to identify ways to achieve those lofty goals — and to understand what both mean for a given context. Personas provide concrete pathways for both.
- **Focus on the stories researchers tell about their experiences.** Personas need to be plausible and detailed; presenting stories derived from real life provides both qualities.

Using participants' responses to interview questions, and historical information about researchers' projects and assigned tasks as recorded by Basecamp, our team communication platform, we created six categories for descriptive coding [20] to help us convert researchers' experiences into aggregate personas modeled after those Quesenbery described:

1. **Personal characteristics** of researchers including some demographic information.
2. **Goals and tasks**, both those described or recalled in interviews, and those identified through Basecamp activity.
3. **Motivations**, including dispositions, ways of thinking, and external constraints.
4. **Attitudes and needs** informed by researchers' ways of working in teams, in digital and physical spaces, and the kinds of instruction researchers require.

5. **Stories** that inform specific aspects of other persona categories.
6. **Quotes** that highlight significant experience related to researcher engagement and professional development.

We came to consensus about these categories, their descriptive tags and our selection, inclusion and coding of interview information using a collaborative coding strategy that allowed our own experiences and expertise to inform our decision making and data analysis [21, p. 402]. As we synthesized the content of interviews into personas, we generalized, grouped themes, and as Quesenbery suggests, looked for the differences and details that help us understand the complex needs and attitudes of Crow researchers. When necessary, we resolved ambiguities or questions about researcher data through analysis of team members' assignments on Basecamp. We decided that developing one undergraduate and one graduate student persona would best describe their different needs, motivations, and use cases. The stories and quotes included with our personas were generalized and aggregated to include significant insights gleaned from interviews without identifying researchers by sharing their specific words and experiences.

4 PERSONAS OF CROW STUDENT GRANT WRITERS

4.1 Casey Sinclair (undergraduate)

English major at the University of Arizona

Summary: Undergraduate who took a class with a Crow PI, enjoyed writing the genres engaged in class, and was invited to become a Crow researcher. Willing to learn new tools, especially with support. Broad interest in studying English, but less interest in literary studies than communication and professional writing.

4.1.1 Goals & tasks completed.

- Tasks included writing grants, writing stories about research activity for our web site, and developing content strategy.
- Looking to professionalize for transferring Crow expertise to other contexts upon graduation.
- Used work with Crow to explore career options first-hand.
- Helped improve our mentoring by writing a detailed reflection on her experiences.

4.1.2 Motivations, attitudes & needs.

- Mostly self-directed. Sometimes expressed the need for direct instruction and feedback.
- Repeatedly confirmed the value of feedback from multiple writers and team members, both directly and by reading comments that explained writers' choices.
- Focused on the nature of collaborative mentoring in teams and developing rhetorical confidence in the process.

Quote: "At first I was intimidated by teamwork, because it seemed like everyone was more experienced than I was, but I got a lot of feedback and support from a lot of different people. I also liked that Crow people never just said to read the documentation or the RFP or whatever. They asked for feedback on team documents and were interested in learning from me, too."

4.2 Noor Fares (graduate)

English major at Purdue University

Summary: Purdue University Graduate student in English who heard about Crow from a peer in their first year and was interested in the unique nature and interdisciplinary approach of the Crow team. Values both research and teaching. Studying rhetoric & composition, but uses corpus-influenced textual analysis in research.

4.2.1 Goals & tasks completed.

- Primarily interested in Crow for research.
- Helped write an internal grant, in a supporting role, then had a larger role in writing an external grant, including participation in decision-making about the scope of work.
- Discussed learning about grants and budgets in contexts outside Crow.

4.2.2 Motivations, attitudes & needs.

- Strong sense of ethics and wants academic work to be motivated by it.
- Comfortable with learning by doing. Wants to get feedback on work and offer feedback to others.
- Enjoys working collaboratively, but prefers roles for working with others to be defined. Wants to learn more about administering teams.
- Described sharing writing with others, but also being overwhelmed by comments and revision marks on Google Docs.

Quote: “Working with Crow let me explore the intellectual communities I wanted to join. Writing grants helped me see how obscure genres like budget justifications were connected to real practices. I felt like I was learning how to collaborate and learning how to make an argument for teamwork, too. I was learning how grants could fit into my vision for being a scholar.”

5 PERSONAS REVEAL THE IMPACT OF NETWORKED MENTORING

Our personas highlight a networked mentoring model which supports sustainable professional development for both undergraduate and graduate students. Both Casey and Noor successfully engage other Crow team members through our user friendly and accessible infrastructure, promoting organized activity with clear task and goal setting. The balance between individual and team goals demonstrates our ability to help students develop transferable skills through collaboration and mentoring. Building rhetorical confidence in this manner builds expertise and rewards advancement by allowing team members to grow into leadership roles during their involvement in the project.

Developing team personas highlights trends not apparent through our usual reflective practice. Casey represents the self-directed researcher with needs that vary between preferences for autonomous learning and guided instruction, depending on the context and difficulty of tasks assigned. Their experiences require us to consider how we build expertise while balancing needs. When team members embrace collaborative mentoring, come to value horizontal and vertical mentoring, and appreciate the strengths different team members bring to the table, success is more likely.

Synchronous group work with mentoring guidance supports further learning as team members work asynchronously. Both the undergraduate and graduate personas reveal that our team members navigate the project’s archives to explore unfamiliar genres such as grant and IRB narratives. As students explore archival examples, they read others’ writing and track peer commentary. Experiential learning activities like this help develop both the language and knowledge to imitate “good” practices in subsequent grant writing cycles. The intensity of grant writing as a collaborative activity invites continuous communication with peers, and generous sharing of resources and ways of doing. To facilitate such robust activity, mentors help students define roles based on self-assessment of strengths — which is by itself a skillset both undergraduate and graduate students can benefit from when coordinating teamwork.

Engagement in grant writing helps graduate students employ the learning developed from graduate seminars in practice. Persona analysis of Noor Fares suggests that grant writing provides common ground for conversations between disciplines which helps graduate students develop interdisciplinary approaches and transfer expertise between disciplines. Writing grants collaboratively promotes connections between theory and practice. This collaborative experience helps students to forge these relationships and eventually puts graduate students in the role of administering teamwork, a skill they can utilize for their mentoring responsibilities when they become faculty.

Ethical practices support diverse team members’ professionalization. Because we credit students’ intellectual labor, and we make their contributions visible through authorship on grants, research projects, publications, tools under development, and web writing, team members are more engaged in these activities. Their participation in these activities encourages justice-focused mentoring and enables students to develop skills needed beyond Crow. We believe our mentoring strategy on grant writing is effective because it provides participants with authentic practice with real stakes.

Cyclical attention to grant writing meaningfully engages students in mentoring. As mentors, we facilitate activity in the various roles that contribute to skill development. Team leaders support novice writers’ engagement. As students develop expertise through practice, they become team leads and mentors during subsequent grant writing cycles. Mentoring to write grants drives the feedback loop which facilitates the iterative design of best practices. Iteration makes this work sustainable and improves both our grant funding and mentoring strategies as a team.

6 RECOMMENDATIONS FOR OUR TEAM AND FOR TPC TEACHERS

Our persona analysis confirms, for the Crow team in particular and academics in general, that ethical professionalization of undergraduate and graduate students is rewarding for all parties involved. Conducting interviews with real team members and building representative personas allows for assessment and evaluation of our mentoring practices and strategies. We separate the following take-aways into two sections: first, internal action items for improving mentoring and professional development for Crow researchers and second, a set of recommendations for TPC teacher scholars.

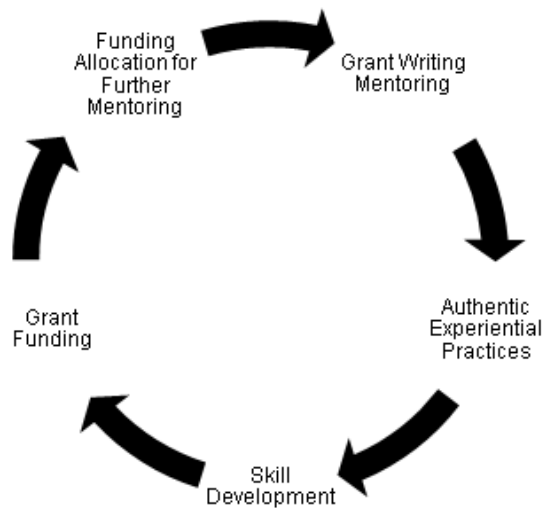


Figure 1: Feedback loop created by student professional development and grant funding.

6.1 Internal Action Items

- **Make reflective practice the center of assessing grant writing practices:** Engaging team members in deliberate reflective practice enables us to assess gaps in our mentoring strategy. The data we elicit from team members' reflections help us amend our mentoring strategies and practices for more successful engagement. For example, Casey's desire for more feedback and guidance encourages us to use collaborative writing and communication platforms more purposefully to balance individual and group learning.
- **Engage in explicit role defining and task assigning:** The highly complicated and structured nature of grant writing offers excellent opportunities to assign roles and define tasks. This practice is essential for team members who are new to collaborative writing and invention. Noor's complaint about feeling overwhelmed with extensive comments and revision marks in Google Docs suggests we should provide more explicit instruction and guidance especially in busy collaborative environments and across platforms where contributors coordinate teamwork.

6.2 Recommendations for TPC teacher-scholars

- **Teach grant writing in research teams:** Grant funding is more successful when collaboration is an immersive experience for different team members with various skills. Mentoring team members on grant funding provides students with specialized writing skills while also developing interpersonal, intrapersonal, and cognitive skills that are transferable to other tasks and future projects. For example, Casey's interest in professional communication and in developing 21st century workplace skills encourages us to build opportunities in our programs that help students explore career options beyond the conventional track.

- **Explore individual strengths in research teams:** Teamwork is maximized when mentors are able to critically assess various individual strengths present in a team. For example, Noor's keenness on learning how to administer teamwork due to the nature of service and mentoring responsibilities in academia teaches us how we might better mentor students to seek various strengths in their peers. Finding such strengths is the first step for learning how to form and manage teams while utilizing individual strengths to the fullest and in the appropriate context.
- **Build visible infrastructure in research teams:** Promoting access and participation through collaborative work requires PIs to build visible infrastructure and optimize digital tools for multiple uses. Casey's need for direct instruction and feedback highlights the material affordances embedded in visible infrastructure and how access to documentation, clear practices, and methods for collaboration increases team members' agency for autonomous exploration and learning, which further encourages engagement in meaningful ways.
- **Commit to team members' ethical treatment:** Maintaining respect and building rapport is the basis for forming successful teams and creating a sense of community. Noor's emphasis on a strong sense of ethics in terms of how to treat and interact with others magnifies how showing genuine care should not only be limited to maintaining social rapport in academia; it extends towards ethical treatment of all students by crediting their labor through both financial and intellectual rewards.

The persona development, analysis and takeaways we share here are situated in a larger framework of Crow research designed to interrogate our synthesis of Crow core principles, our best practices, and our day-to-day work activities. This research helps us to evaluate practices and iterate such that our team can better integrate these different dimensions of Crow work. For example, partly drawing on the takeaways we find here, we are developing a professional development menu that will help students and mentors better define roles, questions, and learning needs for team members. At the same time, we believe this ongoing research furthers a commitment to data-supported and participatory curricular and program development in technical and professional communication.

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A APPENDICES

A.1 INTERVIEW QUESTIONS

1. What was your first grant writing experience in Crow? (for example: CLA ERHA, HWW, CLA equipment grant, Kinley, Data Science, ACLS)
 - What was your role?
 - Who did you work with?
 - How did you work as a team: strategies, tools, communication channels, etc.?
 - How did you receive mentoring on grant writing in Crow?
 - Who was mentoring?
 - Where was mentoring taking place?
 - Were you mentored by anyone from other institutions?
 - What channels did your mentors use?
 - Did you get personalized guidance about your grant writing? How?
 - What materials did mentors use to onboard you and engage you in the process?
 - Can you spell out a grant writing strategy you adopted which contributed to successful grant funding?
 - What was most challenging in your experience and what was rewarding?
 - How has your grant writing experience informed your work in other contexts?