What's a post-doc to do? Guiding principles for team members temporarily managing a lab

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Abstract

Running a research lab is a complex and time-consuming endeavor, with responsibilities including managing multiple projects and the associated administrative tasks; advising and mentoring graduate students; and completing your own research. There is, however, little to no education or training for those who hope to become a Principal Investigator on how to effectively manage all of the tasks associated with running a research lab. In the event that a PI must be absent for an extended period of time, this lack of training can be especially challenging for postdoctoral scholars when tasked with managing their PI's research team, as there are few resources to leverage and support the successful management of this task. The purpose of this Lessons Learned paper is to share the guiding principles that a postdoctoral scholar and doctoral student discovered when leading a research lab while their PI was on leave. To generate these guiding principles, after the PI returned, the authors revisited and reflected on their time leading the lab and found that identifying your values as a leader; communicating and requesting expectations both with individuals and the larger research team; and acknowledging your primary goal while in charge is critical. Our hope in sharing these lessons learned is twofold: primarily, that postdoctoral scholars and graduate students who may be tasked with running a lab for a period of time have a starting point and some foundational knowledge about how to approach such a large endeavor; and secondarily, that the faculty who may need their postdoctoral scholars or graduate students to manage their research teams (re)consider training their graduate students and post-doctoral scholars on managing a research lab.

Introduction

This Lessons Learned paper focuses on the context of training regarding managing a research team. Running a research lab is a complex and time-consuming endeavor, with responsibilities including managing multiple projects and the associated administrative tasks; advising and mentoring graduate students; and completing your own research. There is, however, little to no education or training for those who hope to become a Principal Investigator, or PI, on how to effectively manage all of the tasks associated with running a research lab (e.g., mentoring graduate students, moving research projects forward, attending to related administrative tasks) [1] (for exceptions, see [2-3]). In the event that a PI must be absent for an extended period of time, this lack of training can be especially challenging for postdoctoral scholars when tasked with managing their PI's research team. The absence of research on or formal training for postdoctoral scholars on how to effectively oversee a research lab while completing their regular responsibilities means that there are few resources to leverage and support the successful management of this task (for an exception, see [4-5]).

Succession planning in organizations, and especially within higher education, is critical [6]; however, changes in leadership that are intended to be temporary can and should leverage a particularly intentional approach that recognizes the strengths and needs of team members, expectations of the permanent leader, and team and individual academic and professional goals. In the case of our lab, we were fortunate to have had time to plan for a transition in lab leadership. However, we recognize that not everyone asked to take on a leadership position temporarily will be afforded that same opportunity. And yet, those who intend to create and manage their own labs as a faculty member can also benefit from thoughtful and well-planned strategies for the development of their teams. The purpose of this Lessons Learned paper is to share the guiding principles that a postdoctoral scholar and doctoral student discovered when leading a research lab while their PI was on leave. Our intention is not to provide a step-

by-step blueprint of how to lead a lab, but rather to offer the guiding principles that we developed that ultimately helped shape both our experience and that of those on the team.

To identify the guiding principles that the postdoctoral scholar employed while leading the lab, the authors (the postdoc and most advanced doctoral student in the group) revisited and reflected on the ways the leadership approach evolved and how it impacted the culture of the team. We worked together to generate a list of strategies that we enacted while leading the lab and then spent time individually reflecting on the identified methods. After this period of reflection, we reconvened to discuss examples of each strategy in practice. This iterative reflection process occurred several months after the PI returned.

Emerging Findings

In reflecting on their experience shifting from team members into leaders of the lab, the authors recalled the initial lab meetings where the postdoc explicitly asked several questions that would help to guide their work, communicate and manage expectations, and set goals. Through these ongoing discussions with the larger group over the first few weeks that the PI was on leave, the authors leveraged several guiding principles that shaped their approach to leading the lab. While the purpose of the conversations was intentional in that the postdoc aimed to communicate and establish the direction of the lab's work and manage expectations, the authors did not explicitly set out to document or identify guiding principles. Instead, they focused on facilitating dialogue that would enhance collaboration, support team productivity, and ensure that each team member was supported in their work.

In asking many of the questions included in Table 1 during the initial lab meetings post-leadership transition, the authors ultimately identified the following guiding principles: identifying values as a leader; communicating and requesting expectations both with individuals and the larger research team; and setting and managing project goals. We also decided that our main goal as temporary leaders of the team was to maintain the level of work completed so that progress on large projects would continue. Underscoring these guiding principles was an expectation that we would give ourselves and each other grace as we worked to lead a research team and lab while maintaining progress on our own research. The remainder of this findings section details the purpose of each of the guiding principles, the postdoc's strategy for enacting the guiding principles, and the impact these strategies had on the lab group culture and individual team members.

Table 1. Guiding Principles and Considerations for Temporary Lab Leaders

Guiding Principle	Example from Authors' Experiences	Questions for the Temporary Lab Leaders to Consider
Identifying values	Expressing an ethic of care for team members	• As leader of the lab, what is most important to me in this experience? • What do I need to enact or maintain to feel satisfied at the end of my time leading the lab?
Communicating & requesting expectations	Meeting on a weekly basis with to discuss tasks and responsibilities	• What expectations do individual team members have for me as the temporary leader of the lab?
Setting and Managing project goals	Creating a strategy for accomplishing project goals	• What are the main goals for the lab to meet? • What are the main goals for each individual team member to meet?

		• How will we track progress on goals?

Identifying Values

Purpose: Identifying one's professional values can ensure alignment with projects, tasks, and relationships with colleagues. However, it was particularly valuable for the authors in the case of leading their lab temporarily. In this instance, we valued taking care of all members of the research team, with the assumption that if individuals felt cared for, they would be more likely to complete the work requested of them.

Strategies: This value of care was explicitly shared with the group broadly, as well as in individual meetings, throughout the time that the postdoc was leading the lab. It was also reinforced regularly, which was especially important when team members were unable to meet goals or timelines based on personal issues like illness or mid-terms or class projects. Asking team members what they valued and needed from the postdoc served as an additional and critical touchpoint for the group, as acknowledging and supporting each team members' values helped to ensure that support was provided to individuals in ways that aligned with what was most important to them.

The second author, a PhD candidate who had been with the research group for three years, found that the postdoc not only explicitly communicated this ethic of care, but also reinforced it through her actions. The postdoc tended to approach collaboration from more of a collegial posture rather than a supervisory one. She was open about gaps in her knowledge and the differences in her experience. This approach helped individual lab members feel more comfortable, both lending their expertise and admitting confusion and uncertainty. During lab meetings, the postdoc consistently sought out each team member's perspective which empowered them to share their expertise (e.g. literature, theory, methods) and insights from the data. These actions were vital to the project's success because the postdoc had only joined the group a few months prior; whereas the graduate and undergraduate students in the lab had been working on the projects for 2-3 years. In addition to empowering each team member to contribute, the postdoc also affirmed their contributions and provided kind and constructive feedback on their work. One line of feedback which was especially meaningful to the second author was the postdoc commenting on a conference paper draft, "Reading this makes me so excited to write with you". These actions not only helped significantly build her confidence as a researcher but also made her excited to contribute to the project.

Impact*:* Explicitly communicating this ethic of care and reinforcing it through action helped (1) facilitate supportive and collaborative working relationships among lab members; (2) encouraged individuals to share knowledge and expertise which was vital to the project's success; and (3) build individual lab member's confidence in their abilities and intellectual contributions to the research. Our recommendation is that temporary lab leaders adopt this open and encouraging posture.

Communicating and Requesting Expectations

Purpose*:* Conversations around expectations for both individuals and the group proved to be essential in determining the needs and appropriate support for all members of the lab.

Strategies: Expectations were discussed and agreed upon with individual team members in one-on-one meetings, while group expectations were reviewed in large group meetings to ensure all members received the same information. It is important to note that the ethic of care expressed as the main value of the postdoc at no point superseded expectations around completed work. This is not to say that team members were not held accountable to team expectations, but rather team members were often reminded

that they were cared for as individuals – outside of their position within the lab – especially when they were unable to meet expectations. This ethic of care reinforced to team members that they were a person first, with many competing responsibilities and priorities and lives outside of the lab and team member second. Again, as with identifying values, the team was encouraged to share their own expectations for the postdoc as she led the lab; this open communication was both foundational and critical for ensuring alignment with team goals, enhancing relationships between individual team members, and fostering a positive group culture.

An important component of holding team members accountable to agreed upon expectations was the explicit acknowledgment that we would give each other grace as we navigated a time period where we would drive the work of the lab and shape the culture of the team. This grace was once again enhanced by the stated value of an ethic of care for each other and was valuable when embarking on conversations around unmet expectations. In short, if and when team members could not meet expectations, the postdoc extended kindness and understanding, assuming that life circumstances were the cause.

Impact: Communicating expectations using an ethic of care (1) promoted clarity and understanding about everyone's responsibilities; (2) provided accountability without undue stress; and (3) helped us learn more about one another, as asking for grace or understanding often came with explanations about life circumstances that would ordinarily not be shared. Our recommendation is that temporary lab leaders develop a strategy for balancing accountability and understanding. This strategy should be clearly communicated with the lab group members.

Setting and Managing Project Goals

Purpose: Setting and managing project goals was a vital part of accomplishing our main goal as temporary leaders: maintaining the level of work completed so that progress on large projects would continue.

Strategies: In terms of logistically managing the lab, one of the first things that the authors did together to prepare for the PI's absence was to create a strategic plan for accomplishing project goals. In this plan, we created sections for each of the team's projects that outlined the goals for data collection, analysis, and writing and publication. We also gave each of these items rough deadlines and assigned responsibility to individual members of the team who would serve as the lead point person for each item. While the deadlines did shift considerably as did the prioritization of these goals, we found that this goal setting helped us stay on track and manage our individual and group responsibilities each week. It was also a valuable accountability tool for the postdoc leading the lab, as her workload increased significantly during this time and these plans supported her as she managed a large number of individuals, projects, and tasks; in short, this tool helped the team stay on task, provided beneficial benchmarks that all members of the team were aware of, and supported the postdocs supervision of individuals and management of large projects. During this time, we elected to continue the weekly project and group meetings – a structure set by the PI. This approach allowed us to effectively manage the project (e.g. assigning and reviewing research tasks) as well as providing opportunities to stay connected socially and check in on each other personally and professionally.

Impact: Developing this strategy for setting and managing project goals early on and later adjusting them to account for progress made and life circumstances, allowed the temporary leaders to gauge progress on goals, make adjustments when necessary, and determine next steps for the project and individual team members. Our recommendation for temporary lab leaders is to develop a strategy for project management that provides flexibility for life circumstances. In addition, we encourage temporary

leaders to revisit this regularly to celebrate accomplishments and modify goals, responsibilities, and deadlines when needed.

Challenges

In reflecting on our time leading the lab, we recognize several areas that could be improved. The postdoc had to navigate administrative obstacles and assumptions made by colleagues about their role. Despite efforts to proactively address some administrative tasks that the postdoc would be responsible for while the PI was out, these tasks were not successfully completed, often due to bureaucratic issues that were out of their control. For example, we found that managing logistics like securing access to approve time sheets and making arrangements to pay for one-time purchases such as data analysis software or conference fees were more challenging to work through than anticipated. Addressing these challenges was time consuming, adding to the postdoc's already full plate of increased responsibilities. Additionally, some departmental and institutional colleagues either were unaware or unconcerned about the postdoc's shifting role temporarily, which, at times, made it difficult to secure needed support or assistance. As such, explicit messaging to departmental colleagues regarding the temporary leaders of the lab could have been communicated to avoid any issues with the postdoctoral scholar or most advanced doctoral student in the group overstepping the bounds of their original positions.

Implications and Future Research

In sum, the guiding principles that we identified – identifying values, communicating and requesting expectations, and setting and managing project goals – proved to be valuable in helping the postdoc manage their lab temporarily. Our hope in sharing these lessons learned is twofold: primarily, that postdoctoral scholars and graduate students who may be tasked with running a lab for a period of time have a starting point and some foundational knowledge about how to approach such a large endeavor; and secondarily, that the faculty who may need their postdoctoral scholars or graduate students to manage their research teams (re)consider training their graduate students and postdoctoral scholars on managing a research lab. Specifically, PIs should outline all of the broader responsibilities that come with leading a lab (e.g., advising graduate advisees and supervising undergraduate researchers, completing research-related tasks, managing administrative activities) and indicate how much time they typically devote to each task on a weekly basis. This information would allow postdocs to have a better idea of what shifting to leading a lab may look like once they take it on and help to manage their own expectations about the responsibilities. Finally, this education and mentorship should not only occur if and when a PI must take a leave but instead should be a topic that is integrated into training curriculums.

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