Board 282: Examining the Community of Practice in the NSF RED Program

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Examining the Community of Practice in the National Science Foundation Revolutionizing Engineering Departments (RED) Program

Abstract

Since its inception in 2015, the National Science Foundation Revolutionizing Engineering Departments (RED) program has supported engineering and computer science educators as they work to transform the preparation of undergraduate students. As part of the program, members of RED teams connect with one another as a community of practice (CoP). More than just a collection of individuals who possess a shared interest, a CoP is defined by several distinct features: members of the CoP are practitioners; they develop a shared repertoire of resources that represent their shared practice; and they develop their community over time as a result of shared interaction. In our work with RED teams, we have identified aspects of their interactions that suggest that they operate as a CoP and gain benefits from their engagements. We see the RED CoP as instrumental to their success as change makers and an example of how CoPs can contribute to implementing change in other academic contexts.

Introduction

The work of academic change makers is often framed as an effort that creates impact on stakeholders, such as students, faculty, and others, in the form of new curricula, revised departmental practices, etc. Additionally, as a result of their work on NSF RED projects, RED project team members also experience a positive impact through their participation in a community of practice. A community of practice (CoP), is defined by Wenger as follows:

> Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly. (Wenger 2011)

More than just a collection of individuals who possess a shared interest, a community of practice is characterized by several distinct features: they are practitioners; they develop a shared repertoire of resources (such as experiences, stories, tools, ways of addressing recurring problems) that represent their shared practice; and they develop their community over time and as a result of sustained interaction (Wenger 2011).

As members of the RED Consortium, RED team members interact through regular online discussions and an annual consortium meeting. Through these interactions, RED teams, located across the country and spanning multiple disciplines, learn about the work of other teams and adopt new practices into their own projects. The RED CoP has also resulted in collaborations and partnership between teams, thus providing opportunities for teams to leverage their work and expand their influence. For example, one such collaboration resulted in a diversity, equity, and inclusion (DEI)-focused project. Finally, members of the RED CoP conduct their interactions as colleagues with a goal of producing mutual benefit for all members. Overall, our analysis of the

RED CoP suggests a way to understand the impact of the RED program on the team members who participate in its CoP. This paper uses research findings resulting from focus group discussions, conference calls, and a survey with the National Science Foundation RED grantees.

Adoption and learning through the Community of Practice

The research data collected with RED teams suggests that team members learn through their interactions as a CoP, and their learning can lead to the adoption of innovative practices developed by other teams. In addition, the RED team members can brainstorm ideas in a safe environment where others share similar concerns and interests. As a result, team members can benefit from developing ideas and obtaining feedback prior to implementation of their ideas. The CoP also provides a space that encourages sharing of ideas so other team members can adapt them to their own contexts, thus accelerating idea transfer and reducing workload. Based on our data, we see that academic change teams establish a CoP early in the life of their academic change project and can then highlight the benefits of a CoP to both prospective team members and potential partners. The CoP provides access to diverse thinkers and individuals with a wide range of experiences from different disciplines. A RED team member interviewed about their CoP provided the following insight:

> "I really appreciate any opportunity to share the ideas we have. A lot of us have come up with innovative new practices and technology and don't have enough time to transfer that technology. It's great that we can then exchange this info and others can adapt it." RED team member

Collaborations and partnerships

By their very nature, RED projects bring together team members representing a wide range of disciplines. The CoP facilitates collaboration and understanding between individual team members and across RED teams, through opportunities to share resources and advice, potentially leading to improved cross-disciplinary understanding. RED teams also see the importance of strategic partnerships, and they can leverage the CoP in order to connect and build relationships with their partners. Based on collected data, we understand that academic change projects often require collaborators and partnerships in order to be successful. The CoP can function as the foundation for these relationships through sharing challenges and highlighting commonalities in each other's work. A RED team member interviewed about their CoP provided the following insight:

> "On last day [of the RED Consortium Meeting], we talked about a special issue in a journal to have different cohorts publish papers on a variety of topics. and this could be one topic—how are many of us approaching the same problem from different angles and different perspectives,-how are each of us approaching the same general problem? And doing different assessments. We could also present it at a conference.

A different RED team member reflected on the CoP as follows:

> "I just wanted to add that I saw this [RED Consortium monthly] call very helpful as well . What we're trying to do here is really hard, and we had the same issues. It was really helpful to know it wasn't just us and reinforce that it is difficult."

Support and collegiality

Finally, we see important support and collegiality emerging in the context of the RED CoP. The CoP provides benefits that were not specifically expected when we began our work with RED teams, and not all RED teams experience these benefits to the same degree. For the RED teams on the whole, however, the CoP offers important support that can make the work of academic change more manageable and productive. A RED team member interviewed about their CoP provided the following insight:

> "There's a lot of brain wealth (for lack of a better phrase) in these groups, and I would absolutely suggest reaching out, you know, there's a lot of expertise to be had. Whether it's through that group or through the social scientists or education individuals that are associated with this group. So I would absolutely say to reach out to your colleagues. I know that I am always very excited when anyone from RED reaches out to me. So I am extending this to, if you're interested, definitely reach out."

Conclusion

The information contained in this paper is part of the series of REDPAR Tip Sheets produced through our project, the RED Participatory Action Research project, funded by the NSF. Other Tip Sheet topics include: Communicating Change, Creating Shared Vision, Creating Strategic Partnerships, Forming Teams, and Starting a Change Project. All are available at academicchange.org

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