

STEM TRANSFER PARTNERSHIP SERIES

Complex networks of community: Transformative partnership praxis for equitable STEM transfer



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Within the complex organizational structures of postsecondary institutions, transformative change requires a strategically networked community of dedicated practitioners. This report describes the networks of transformative partnership praxis between two-year and four-year institutions working on improved STEM transfer pathways. Data from the first year of the STEM Transfer Partnership (STP) program indicate that communities of practice committed to transformation draw upon expanded and multi-layered communities, with productive networks that include connections across academic, administrative, and student support offices at the institution and also learning from outside the boundaries of the institutional partners. Key challenges that prompt flexible and expanded connections include low-income student recruitment and strategies for program sustainability.

From primary through postsecondary education, there is a gap of opportunity between low-income and more economically privileged students. Low-income students are significantly less likely to attend more selective and highly resourced institutions (Bowen & McPherson, 2016; Astin & Oseguera, 2004). Students from low-income backgrounds have lower rates of college completion and are less likely to have access to economically rewarding college and career pathways (Mulhern et al., 2015). The inequitable landscape of opportunity confronts educational institutions with the need for transformative action, to understand the challenges facing low-income students and critically examine the institutional processes that maintain a steep and persistent socioeconomic hierarchy. Building more inclusive STEM pathways is an important part of efforts to expand educational equity. This report shares data from an innovative effort to create systemic change in STEM degree pathways by addressing the STEM transfer process between two-year and four-

year institutions. The purpose of the STEM Transfer Partnership (STP) initiative is to create and sustain a community of practice that expands access to STEM degrees for low-income students through improved transfer practices and student engagement (Cate et al., 2022). Over the course of seventeen months, researchers have gathered data from sixteen colleges and universities working to establish and advance nine partnerships focused on increasing low-income student STEM participation, transfer, and degree completion. One of the important lessons of this data is the role of flexibly structured, multi-layered communities of transformative praxis.

The STP teams, composed of faculty, staff, and administrators, have worked together, within institutional pairs as well as across teams, to dismantle obstacles to STEM degrees for low-income students at their institutions. In their work, they have encountered a number of organizational barriers to change. The data presented here show that teams are responding

to barriers and challenges to systemic change through flexible, responsive, and multilayered networks of praxis. Participant teams are able to broaden the impact of their change efforts, engage, support low-income students, and work toward long-term sustainability of their interventions by working through these networks at multiple levels.

PROGRAM BACKGROUND AND DATA SOURCES

The STP program is a three year initiative that has established a state-wide consortium of STEM transfer partnerships. The consortium supports nine teams through biannual gatherings, monthly coaching sessions, and funding to support their change efforts in STEM degree pathways. In the first seventeen months of the program, CCRI coaches have helped each team set goals, establish timelines, gather student input, and define assessment plans. The program is framed by research on transfer partnerships (Yeh & Wetzstein, 2020 & 2022) and communities of practice (Wenger et al., 2002). Communities of practice are groups of invested individuals who interact regularly and work in the same arena. This report will discuss data about how this community of practice is evolving in the specific context of community college and university partnerships. In particular, we present the way members of the community of practice work toward transformation through adaptable formulations of community and multi-layered networks of praxis. These networks are central to the progress, impact, and sustainability of the work these partnerships are doing to expand STEM equity.

NETWORKS WITHIN AND BEYOND PARTNERSHIPS

Participants create networks of community to face systemic challenges to program implementation and organizational change. These challenges include identifying and recruiting low-income students, overcoming bureaucratic barriers, and creating long-term plans for sustaining their initiatives. Teams are engaging allies within their institutions as well as those outside their institutions, seeking the collaboration of

other practitioners and offices that are invested in the work of expanding educational equity.

Expanding Networks at the Institutional Level

Many teams began the STP program without previous collaboration experiences with practitioners from their partner institution. By establishing partnerships, team members began the process of building a transformative network. As teams moved forward with programs and interventions, they expanded this initial network by reaching out to include other institutional agents and resources. In order to structure and advance their efforts, CCRI helped each team draft an action plan, a road map that details how the team will work toward their goals and how they will assess program efficacy. Of the nine teams, eight have expanded or revised this plan to include collaboration with institutional programs outside the STP team. These collaborations are often inclusive of programs, such as TRiO and MESA (educational support programs), that are well established within the institution as sources of support for low-income students. One university faculty member noted during a coaching session,

I think our main problem is there are so few students coming to us from [Community College]. And how many of those are low-income students? How do we reach out to those students in particular?

This comment echoed the sentiments of many participants. A major barrier for most teams was engaging low-income students and making support structures that were specific to the needs of this student population. One common strategy to address this challenge was to link their efforts to TRiO or MESA programs. This expansion of the community of practice was practical in that it provided expertise not necessarily available in the original team construction but it was also transformative, infusing new perspectives into the intervention and shifting the boundaries of knowledge about what forms of expertise matter in STEM programming and curriculum.

At the convening, as teams were invited to identify and dismantle barriers to the progress of their action plans, one team discussed their recent collaboration with the TRiO program director at the four-year institution, who had attended their last team meeting. “It was very helpful to hear from her. She already knows the people involved, the factors involved. She is going to help us get the word out about the opportunity.” Team members were responding to the common experience of professional and organizational silos that made holistic student support challenging. Networks of transformation in these contexts must be flexible and multi-layered, incorporating new connections in response to student input and emerging challenges to implementation. Just as participants were learning more about their partner institution, some were also gaining new knowledge about their own institution. One two-year faculty member commented on a recent meeting with student affairs staff from their institution, “I’m really learning about the resources we already have. There are real experts on the low income student experience at [Community College] and working with them is giving me new perspectives.” In a roundtable discussion at the second convening, a practitioner from a different team talked about a similar process of joining forces with other programs and institutional agents to broaden impact and create networks working for change:

I was in the meeting with someone from [Community College] and I’m like, you have a mentoring program, I have students that can mentor. Let’s set this up. And we set up this whole thing, which became a bigger thing and got funding and it’s been super successful and really one of the easier things that we did for a lot of gain.

This participant, like many in the STP program, is reframing the partnership in order to effectively support students and work toward institutional transformation.

One primary theme evident throughout the data is the need to adapt the definition and composition of communities of practice in order to move forward with institutional change efforts. For three teams, the

key takeaway from the convening was the realization that by linking their STP work with other campus and cross-campus initiatives, they could promote current progress and future sustainability. One survey response described the key lessons of the recent convening, “Alignment with broader institutional priorities will help to make our STP project more sustainable.” While data from the earliest stage of the STP program highlighted the importance of within-partnership connections, (Cate et al., 2022), teams at this intermediary stage of the program are expanding those connections to include the whole college and university community, particularly student support programs and campus leadership. In a problem-solving session, where one team was brainstorming ways to address the needs of low-income students, they spoke of the connections between the two campus administrative leaders as primary resources in making progress in low-income student recruitment. “One thing that makes me optimistic is having [President] and [Chancellor] at the same table, kind of speaking with one voice. I know their values are aligned and they support this work.” Research supports the idea that administrative buy-in is key in fostering organizational change (Kezar, 2012) and most STP teams work with explicit recognition of the need to extend their networks to include administrative leadership.

In one semi-structured activity, teams were asked to draft an ‘elevator pitch’ and produce a poster in which they summarized and motivated the work they were doing. Among the resulting posters, most described current or planned engagement with institutional leaders and/or the campus community as a whole, expanding the vision of their work beyond their teams and, indeed, beyond STEM disciplines. Both in survey and researcher observation data, participants connect questions of sustainability with the need to engage institutional leadership.

LEARNING FROM EACH OTHER: COMMUNITIES ACROSS THE CONSORTIUM

The expanded networks that participants develop are multi-layered. In addition to the whole-campus

networks described above, participants are increasingly engaging stakeholders from outside their institutions, in particular learning from other two-year and four-year pairs in the STP community. Like the institutional level networks, these broader connections are often made in response to specific challenges such as low-income student engagement, data sharing, and program sustainability. The STP program is intentionally structured to foster the expansion of networks across teams, through on-site convenings, collaborative data sharing online, and participant leadership in which teams share their expertise with others through presentations, roundtables, and other forms of community engagement. The twice yearly convenings are key sites of cross-community networking, with teams reaching out to each other for support and inspiration.

One of the benefits of bringing the teams together for convenings is cross-team learning and network building. Survey responses indicate that learning from other teams was one of the most valuable aspects of the convenings. One response summarized:

The convening was a powerful way for the teams to share what they were doing. I wish I had more time to learn about others' work, try to find the common ground in the work as well as share our unique challenges.

The power of bringing the full community of practice together lies in the opportunity to problem solve creatively, to bring new insight to familiar barriers. In survey responses to the question, "What did you learn from the larger community that will help you with this work?" respondents named lessons such as strategies for student support and models of data sharing. When asked what part of the convening was most useful, many answers indicated expanded networks of praxis across teams, including one response that stated, "It was really nice just to meet people who are interested in similar things across the state and feel like we have allies." In combination with practical knowledge sharing, expanded networks provide intangible benefits that encourage participants to sustain their change efforts in the face of significant challenges.

Cross-team interactions or learning from a broader network of others was most likely to occur when participants were working to develop strategies to engage and support low-income students. In an activity during the convening, two teams were discussing the need to understand the low-income student experience in order to make sure that their interventions were designed to meet their needs. A member from one team commented:

I think one of the things we talked about the most was how to make this available to students who are working full time who already have so many demands on their time. It's a great program but it's not going to pay your rent.

Members of both teams nodded in agreement, discussing the importance of communicating the career options and brainstorming innovative ways to alleviate financial burden for low-income students. One participant shared their knowledge of an industry-college partnership at a third institution outside either of the teams present, a program that combined STEM education with active employment. In subsequent coaching sessions, the first team shared that they had connected with the third college referenced in the conversation and engaged in industry outreach based on the program at that institution. This example, in which a cross-team interaction expanded the network of praxis to bring together the combined experience and knowledge of three teams demonstrates how powerful extra-institutional collaborations can be.

CONCLUSION AND IMPLICATIONS

The data described in this analysis offer rare insights into the dynamics of institutional transformation as it unfolds. While most programmatic change efforts culminate in an end-point assessment of impact, this intermediary analysis opens an opportunity to learn about the evolution of interventions as practitioners encounter barriers and reformulate their strategies in an iterative process. By examining this evolution through multiple forms of data collected over a eight month period, we can see that the construction

of flexible and multi-layered networks of praxis is central to generating creative, sustainable solutions to persistent barriers. This analysis offers important lessons for practitioners and institutional leaders working to create meaningful change within their colleges and universities. In this analysis, we observe how each team encountered challenges in their work toward STEM pathway transformation within and between their two institutions. Though challenges were context-specific to some extent, broadly the data demonstrate trends across the entire community of practice. In coming together as teams in the earliest stages of the STP program, participants learned the value of moving outside traditional silos of institution and discipline. As their efforts to expand STEM opportunity progress, STP participants extend that lesson to larger networks, drawing upon other colleges and universities, industry partners, and state policymakers. In observation data, participants often comment on the desire not to ‘reinvent the wheel’ when implementing solutions. In other words, they work to ensure that their efforts are not duplicating the work of other programs and offices within their institutions. In order to prevent this, they have learned to redefine team boundaries, consulting with or, in some cases, incorporating into the STP partnership stakeholders outside the original team roster. Faculty, staff, and administration interested in institutional transformation might benefit from this finding by learning to construct working groups with flexible boundaries and seek innovative solutions through responsive networks of praxis.

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About the University of Washington's Community College Research Initiatives

The CCRI team conducts [research and development](#) to generate actionable knowledge to advance equity in the field of higher education. CCRI — a program of Undergraduate Academic Affairs — focuses on studying the experiences of underserved student groups that use community colleges as their entry point to higher education and the role that institutions play in equitable student educational and employment outcomes. Their goal is to leverage this research to effect change in postsecondary education at all levels. To learn more about CCRI, visit <https://www.washington.edu/ccri/>, follow on Twitter [@CCRI_UW](#) and LinkedIn, <https://www.linkedin.com/company/ccri-uw/>.

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