Work in Progress: Developing a Leadership Community of Practice Toward a Healthy Educational Ecosystem

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Introduction

Student success in educational ecosystems is a primary goal of leadership efforts. Yet, power and privilege, especially the power held by those individuals in leadership, can have detrimental effects in the racial, classist, and gendered dynamics involved in the success of science, technology, engineering, and mathematics (STEM) students at their universities. Overall, K-12 STEM education has had a long history of tracking and creating inequities in supporting youth to prepare for post-secondary opportunities (Calabrese Barton & Yang, 2001). As STEM university educators, we often assume this failure of students means they are individually not college-ready (Warter-Perez et al., 2022). Interventions have been created and engaged with at various levels. Still, despite the hard work of implementation, these efforts have not resulted in dramatic improvements to STEM educational ecosystems or student engagement. Often, these implementations are done at the faculty/student level or institutional level and focus on helping students meet the system's demands. Instead, in this initiative, we attempt to engage departmental leadership in transforming STEM educational ecosystems. In this paper, we look at one specific example of how ecosystems can be impacted by engaging in communities of practice with faculty and leaders at universities with a high number of minoritized students to create systems that, instead, meet students where they are, making the educational process rewarding and fulfilling for all.

Framework

The goal of our NSF-supported project, known colloquially as Eco-STEM, is to establish a STEM educational ecosystem that allows all individuals within the ecosystem to thrive (Menezes et al., 2022). Project activities are guided by ecosystem paradigm measures that support culturally responsive learning/working environments, make teaching and learning rewarding and fulfilling, and leverage community assets to enhance motivation, excellence, and success (Menezes et al., 2022; Warter-Perez et al., 2022; Bowen et al., 2022b). The context of our work on STEM educational ecosystems is a Very High Hispanic Enrolling (VHHE) Hispanic-Serving Institution (HSI) at California State University, Los Angeles (Cal State LA), where the majority of our students are also low-income and first-generation (Office of Institutional Effectiveness, 2022). Students at Cal State LA both struggle and persevere under structural and cultural conditions that were not designed for them to thrive. Employing an ecosystem paradigm (Lord et al., 2019), our project aims to develop STEM educational spaces that are both ready for our students exactly as they are and that celebrate and support the particular assets of Communities of Color (Yosso, 2005).

Our Theory of Change in this grant is that, in order to make lasting and deep changes in the culture of education at Cal State LA and higher education as a whole, there must be a change in the mental models of those acting within these systems. It is our belief that this change can happen as we come to appreciate our own participation in the system through engagement in reflective dialogs within a supportive community (Warter-Perez et al., 2022). We believe that the Highlander Folk School model of reflection and practice (Brian & Elbert, 2005) can support radical change in systems. Much of the work done in the Eco-STEM project thus far has emphasized the role of faculty through Faculty Communities of Practice (F-CoP) (Warter-Perez et al., 2022), an inclusive Teaching Repository, a reflective Peer Observation Process and Tool (Bowen et al., 2022b), and a Student Experience Survey that is in the process of development (Eco-STEM). However, in this paper, we describe how leaders, in their leadership capacity as chairs of science and engineering departments, develop an understanding of their role as leaders through a lens of power and privilege--both as individuals in the broader context of society (e.g., mostly white leaders with significant structural and cultural privilege teaching and leading at a predominantly minority serving institution) and as science and engineering disciplinarians and epistemologists who have formed specific beliefs of what constitutes appropriate student participation and behaviors in their departments and colleges.

Methodology and Methods

In this work, we engaged with six department chairs from two different colleges in the university in a year-long Leadership Community of Practice (L-CoP). This work focuses on the Fall semester L-CoP. Through the L-CoP meetings, the Fellows worked on unpacking issues of power and privilege in their roles as STEM leaders and educators. The Fellows/Chairs were racially, ethnically, and gender diverse. They were also all full professors in the tenure-line. They had work and leadership experiences outside of university settings, such as being professional engineers and working in professional development settings. They averaged 2-3 years of leadership experience, with two Fellows starting this year as the chair of their departments.

In Fall 2022, the Fellows participated in four sessions involving critical reflection and dialogue on topics related to power and privilege. The topics of these discussions are described in Table 1. The scope of the discussions was broad, and included both Fellows' roles as individuals in society and how they, as STEM disciplinarians, viewed success in STEM education and that of their students.

Through this work, the Fellows engaged in readings, videos, active-learning activities, and critically reflective dialogues (Schlemer & de Greef, 2017) to facilitate discussions and reflection on identity, agency, the culture of power in STEM (Calabrese Barton & Yang, 2001), and interventions and change in higher education. The L-CoP started with Fellows reflecting on their social and professional identities and how they influenced their teaching and leadership

philosophies. Then Fellows were introduced to the framework of the culture of power in science (Calabrese Barton & Yang, 2001), through which they explored the social, cultural, and political impacts of preparing for a STEM college education. Finally, they explored theories and models of change for STEM higher education spaces.

Table 1. Session and Topics Discussed

Session	Sample Topics Discussed
One	Introductions. Concepts of identity, agency, power, and privilege. This included the difficulty of and common reluctance to have conversations about identity.
Two	Culture of STEM disciplines and educational trajectories.
Three	Culture of power in STEM disciplines and educational trajectories. Discussion of Miguel's story from Calabrese Barton & Yang (2001) and culture of power from Delpit (1988).
Four	Culture of power and challenges to power and supremacy in educational spaces: our roles as leaders. Examination of models of change. Investigation of the role of "secret menus" that reinforce current systems of power.

Through this curriculum, we aimed to examine mental models in higher education and unpack notions that frequently uphold the culture of power in science. We discussed how mental framings may serve to exclude students, especially the students that they teach at [university name redacted for blind review]. One example of a mental model that is predominant is the prioritization of efficiency over well-being, which often leads to the objectification of students as products that are provided to industry. Alternatively, other models of education, such as bell hooks's model of education for emancipation (hooks, 1994), aim to employ education as a tool for the dismantling of oppressive social systems and structures. Also, embedded in the educational systems is the assumption of educators as experts and students as receivers of knowledge (Freire, 1996). We hope to challenge this framing by modeling the process of the co-creation of knowledge together in the L-CoP.

We provided material for review prior to the sessions, but spent most of the sessions in deep reflective dialog. During the L-CoP sessions, we worked on creating together counternarratives about what teaching and learning means to the ecosystem in their departments as a whole. Throughout the time they engaged in the work, Fellows also responded to short, qualitative surveys, in which they provided insights into potential improvements to tools and program. They also offered end of session reflections, in which there is evidence demonstrating shifts towards ecosystem mindsets in the team. Since there are only six participants in the L-CoP, we felt that quantitative surveys would not be useful. However, as part of the larger grant work we are

administering surveys measuring the health of the ecosystem (Bowen et al., 2022a; Bowen et al., 2023).

Results

Through reflective dialogues within the L-CoP, chairs discussed classroom/program climate, structure, and vibrancy to support the development and growth of healthy educational ecosystems (Menezes et al., 2022; Warter-Perez et al., 2022; Bowen et al., 2022b), as well as their own participation in these systems. For example, one Fellow shared that, in the first session, they were still trying to figure out the "multiple identities defining me" as we talked about intersectionalities of various identities related to race, class, gender, disability status, etc. Another Fellow stated, *"As a chair, I am concerned about student, faculty and staff voices. How will I as chair act on the information they share? Is there space in the job description for this important work?"* A third Fellow shared,

> *At some point, I got a bit confused about hidden identities, mostly because of how people responded to that. I was thinking of hidden identities as something that I see having a strong influence in what I do, but others don't perceive it … identities that might be influencing what they do, but are not completely visible to them.*

Finally, one of the Fellows, who is also the chair with the longest experience, asked, "*To what extent are university rules on curriculum, registration, withdrawals, etc. oppression?"* These statements demonstrate strong participation in the complex and challenging topics at hand, even from the onset of the first session of the L-CoP.

In the second session, Fellows discussed the culture and structure of university STEM programs, particularly at our VHHE HSI. Through this work, Fellows realized that "chairs need support just as much as faculty and students to develop because people with very different ways of seeing things can work together and learn from each other," as one Fellow shared. The concept of hidden menus also became a key component of the session. Another Fellow stated,

> *I like using the term 'hidden menus' to refer to the secret rules of engagement that we operate in everyday. Since most students are familiar with In-N-Out Burger, I feel like this is a nice term to help convey this idea and make things more transparent for students.*

Another fellow stated in the same discussion:

> *I had not reflected much on the hidden rules and rewards in the system, and these create huge equity gaps. It is a good way to use the little power we have as chairs*

> *to make these rules clearly visible to students, faculty and staff… I think it was interesting to see that faculty felt OK being more flexible with faculty problems during RTP processes, and more focused on growth, but were very firm on standards when it came to students.*

These pieces of reflective dialogue showed that Fellows were increasingly becoming more aware of their responsibilities to ensure students, faculty, and staff engaged well in the processes within their departments, even questioning their own practices as leaders and their reasons for enacting particular practices.

Discussion

In this section, we will discuss three important take-aways from work with the Fellows during the Fall 2022 L-CoP. These include (1) increased awareness of hidden rules or menus; (2) becoming critically aware of identities shifting while in leadership positions; (3) shifting views of oppressive practices that were once thought to be fundamental university processes.

Hidden Menus. Fellows, in their discussions, became increasingly more aware of the hidden rules of STEM and STEM identity and agency--or hidden menus--as described within the Fellows' reflective dialogues. These hidden menus are involved in how STEM education may shift the work/home/school positioning of students and their life-long trajectories. Most importantly, Fellows were asked to critically analyze how their positioning as chairs helped to sustain this culture of power that may be evident to some students and not to others. As Delpit (1988) explains, "those with power are frequently least aware of--or least willing to acknowledge--its existence. Those with less power are often most aware of its existence" (p. 282). By analyzing the hidden menus in STEM and then shifting to discussions of the culture of power in STEM, the Fellows saw that they had power that, if students were not aware of, could cause disruptions in their trajectories towards an equitable STEM education. This could be from lack of access to introductory courses, or the inability to register for classes because they missed a few units, or lack of access to final practice-based courses due to registration limitations. Students who were dependent on financial aid were the most vulnerable to these circumstances. As one Fellow discussed, "*It is a good way to use the little power we have as chairs to make these rules clearly visible to students, faculty, and staff."*

Leadership Identities. Fellows were initially unaware that being in a leadership position made them vulnerable to shifting identities. They were unfamiliar with the idea that identities could be both very outwardly visible and also often hidden. Fellows discussed not knowing or being aware of their identities and how their own lack of knowledge impacted those with less or more power or privilege than they had. They also did not understand that the power of majoritarian identities (or those whose power could act upon those with less power or agency) existed.

Fellows discussed learning about how multiple identities were at play simultaneously, and that given their leadership positions (including those newly appointed to these positions) they needed to be more aware of how their identities could socially or culturally impact students. This was even the case for chairs who were racially minoritized themselves.

Oppressive Practices. In their reflective dialogues, Fellows analyzed their positioning as leaders in the work they do. Some discussed the role of university processes, such as curriculum design work, registration of students into courses, and withdrawals, and the impacts these processes had on students' trajectories and timelines. They believed that these deadlines were strict and not changeable. Still, they also recognized the power they had to help faculty shift teaching practices to support students who, early on in courses, did not participate well, had difficulty succeeding in several of the same courses, or could be at risk of failing. Challenging the abovementioned notions and centering the time restrictions and impacts on the lives of students could deem these practices as oppressive--practices that the chairs of departments are primarily responsible for. Fellows discussed that they would look at these rules and try to inform and educate students, faculty, and staff who worked with students in an advising capacity to help them be more aware of the issues that could cause detrimental effects in students' curricular lives, however, we did not notice them mentioning how they would dismantle systems of oppression.

Conclusion

In this paper, we discussed some lessons learned from the reflective dialogue experiences of a group of Fellows who participated in the Fall 2022 Leadership Community of Practice at California State University, Los Angeles, a VHHE HSI. Fellows shared learning about hidden menus, leadership identities, and oppressive practices that could shift and change between their previous and new roles as faculty and chairs. Our future work in this area will continue to advance research in the development of mental models towards supportive educational ecosystems. We also plan to share our results with others through workshops and conversation with colleagues across the country. We hope to create a culturally responsive learning and working environment for both students and faculty that focuses on making teaching and learning rewarding and fulfilling experiences. We want to emphasize the assets of our community to enhance motivation, excellence and success--especially of our students. By engaging in critically reflective dialogues, we can help to achieve this goal in our Eco-STEM project.

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