

Nurturing a Community of Praxis among Grant Leadership: Supporting STEM Faculty/Educators' Mindset Shifts through Student Centered Reflexivity

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Introduction and Motivation

Experiential learning programs (such as Undergraduate Research Experiences and Work-Based Experiences) play a vital role in equipping students with academic and professional skills that extend beyond the classroom (Corwin et al., 2015; Krim et al., 2019; Linn et al., 2015; NAS, 2017). However, how can these programs be further enhanced to help STEM students build the social capital and networks needed to succeed in their fields, cultivate a strong science, technology, engineering, and mathematics (STEM) identity, and develop the confidence to thrive in STEM spaces? This work-in-progress (WIP) paper explores a federally funded initiative designed to empower key agents—faculty, staff, and administrators—at Hispanic-Serving Institutions (HSIs) to strengthen experiential learning programs tailored to the needs of STEM students at their respective institutions.

In response to these challenges, the “*Seed to Flower*” (hereafter, S2F) framework was developed to guide STEM educators on how to centralize their students in STEM education and workforce initiatives. Rooted in six principles—consciousness, asset-based approaches, boundary brokering, student-centeredness, data-powered insights, and reflexivity—the framework fosters opportunities to introduce, reflect upon, and act on these principles within the implementation of experiential learning projects. By bridging academic theory and actionable practice, Seed to Flower framework provides educators, grant leaders, and industry professionals a pathway to collaborate and improve STEM initiatives by listening to student voices and ensuring student experiences are centered in the development of experiential learning projects. This paper explores the implementation of this framework and its application as a catalyst for creating promising STEM opportunities.

Background of the Work

The grant brings together educators from 21 member institutions from across the United States, strategically divided into four regional hubs: East, South Central, Southwest, and West. Each hub has its own regional coordinator. These coordinators advise on and support institutions and individuals to serve students in STEM and will model asset orientation across the network. This network consists of two - and four-year institutions, each designated as a Hispanic-Serving Institution (HSI) or an emerging HSI. The grant’s STEM Teams comprise approximately 200 higher education professionals within these institutions. Around 80% of the team members are STEM faculty, with the remaining 20% consisting of administrators, department chairs and deans, student services staff, and data liaisons. This multidisciplinary approach ensures a holistic understanding of the challenges faced by students in STEM, leveraging the strengths of diverse professional perspectives to achieve the grant’s goals.

A product of these efforts is what has been termed as, “SCEL” Student-centered Experiential Learning. The grant integrates two high-impact (Gomez et al., 2018) forms of student-centered experiential learning (SCELS) programs—Undergraduate Research Experiences (UREs) and

Work-Based Experiences (WBEs) (Corwin et al., 2015; Krim et al., 2019; Linn et al., 2015; NAS, 2017). A pivotal tool in implementing the student-centered component(s), into the various student opportunities is the Reflexivity worksheet. In operationalizing the “*Seed to Flower*” framework, this Reflexivity worksheet is a tool enabling coordinators to help move STEM team members from awareness to action. The grant’s innovative approach positions the network as a model for transforming the higher education landscape to support STEM student success.

About the “Seed to Flower” framework - The S2F framework was piloted in the professional development modules provided to HSI agents participating in the grant and facilitated by the subject matter experts in STEM initiatives. The S2F framework nurtured the following six principles with Hispanic Serving Institution (HSI) agents—consciousness, student-centeredness, data-powered insights, asset-based framing, boundary brokering, and reflexivity. Faculty, staff, and administrators committed to transforming the STEM pathway benefited from engaging with such principles. The conceptualization of the S2F framework can be further explored in the soon-to-be chapter (Rocha et al., in press). According to Rocha et al. (in press), agents' toolkits can be enhanced when they become more cognizant with their decision-making (consciousness), while centralizing STEM students’ assets and strengths in such decisions (asset-based). An agent should also “act as boundary broker...build[ing] relationships between communities (e.g., departments, academia-industry, student groups, etc.) (p. 23). However, the most effective agents are those who engage in ongoing “critical reflexivity” or explore their positionality (e.g., reflect and act upon) in their respective educational contexts towards improved student impact (see pp. 24-26).

Methods

A large body of literature supports non-traditional “ways of knowing” (e.g., lived experiences) as valid knowledge production (Burciaga & Navarro, 2015; Fierros & Delgado Bernal, 2016; Morales et al, 2023; Rocha, et al, 2023). In the current study, the authors reflected on their experiences in a grant that aims to improve STEM student outcomes. In other words, these authors’ lived experiences were recognized as valid data sources for understanding how to help others apply the S2F framework, specifically with faculty and experiential learning (EL) development through a student-centered (SC) approach.

Authors nurtured a Community of Praxis or Student-centered Reflexivity Coaching, facilitated by author A, who offered an opportunity for the coordinators to engage in reflection and action (i.e., praxis). This counter-space brought them together to critically reflect, analyze, and implement the S2F framework into action with their STEM Teams. The objective was for grant leaders to put the S2F framework into practice, since they are the individuals working directly with faculty and educators within their HSIs to effectuate their grant efforts, including the implementation of a student-centered experiential learning (SCEL) program(s) for STEM students. To do this, the S2F framework was embedded into a tool titled "Student-Centered Reflexivity worksheet" designed to help educators identify and prioritize the “student-centeredness” of an EL program through guiding questions. At the ASEE conference, attendees will engage with the Reflexivity worksheet (López and Rocha, 2024).

Practical Insights to Enhance Faculty/Educators' Engagement of the S2F Framework

This section centralizes the experiences of two coordinators and provides practical insights to enhance educators' engagement with the "Seed to Flower" framework.

Justin

1. Speak the Same Language

As educators and program leads, effective communication is foundational. However, it is essential to recognize that we may not always be speaking the same "language" as our students—both literally and figuratively. Students may interpret common terms differently based on regional, cultural, or linguistic context. Rather than assume shared meaning, we must engage with intentional clarity and curiosity.

In my experience, this often begins with pausing to ask: "*What does this word mean to you?*" or "*How do you typically approach this kind of challenge?*" This small shift in questioning opens space for students to define their terms and their experience—something especially valuable for those who may feel their perspectives are not typically centered in academic spaces.

Additionally, it is important to remain aware of how communication styles can inadvertently silence voices. When students have internalized that their contributions are undervalued, they may speak less—not from lack of insight, but from prior learned restraint. Attuning to this dynamic is key to creating environments where every student can participate meaningfully.

2. Think in Terms of Possibility

In collaborative planning sessions with new institutional partners, I often hear limitations surface quickly: "*We can't because...*" or "*We don't have the resources to...*" These statements, though well-intentioned, often reflect conditioned patterns of deficit thinking. One way to interrupt this is by reframing the conversation.

In one meeting with a STEM team, I paused the discussion and asked, "If these constraints didn't exist—if resources were not a barrier—what would your ideal experiential learning program look like?" This prompted a powerful shift. By giving ourselves permission to imagine without immediate limits, we clarify our vision. From there, we can work backward, identifying concrete, attainable steps toward implementation. This "reverse-engineering" approach invites teams to move from reaction to innovation. Perceived barriers often dissolve when approached from a mindset grounded in possibility.

3. Invest in Reflective Growth

Professional development in this space requires sustained commitment and personal reflection. The same passion that drives us to support students can also be channeled into our own growth. One principle I often refer to is the idea of *the invisible hold*—the impact of what we carry internally, often unknowingly, into our work with others.

Genesis

1. Reaffirming Good Work

STEM has long been treated like a proving ground—intentionally tough and competitive, with the idea that only the “cream of the crop” will make it through. But when we design systems like that, it’s no surprise that so many students, especially those from historically underrepresented backgrounds, are left behind. Sending the message that the issue lies within the student, rather than the system itself. What I appreciate about the S2F framework is that it doesn’t just challenge us to change—it helps us recognize and affirm the asset-based work many educators are already doing. Sometimes we forget that small, everyday practices—like validating a student’s identity, using examples that reflect their lived experiences, or inviting speakers who look like them—can have a huge impact. The S2F reminds us that we don’t have to be experts in all our students’ lived experiences; but instead, we can choose to be facilitators who create space for students to make connections to the work and begin to see themselves as scientists, engineers, and innovators.

2. Encourage Reflexivity & Professional Development

One thing I really appreciate about the S2F framework is how it encourages us as educators to stay curious and keep learning. It encourages us to be open to reflection and growth, especially when it comes to making sure our teaching really centers students. As users fill out the document, they are encouraged to check in with themselves. It calls us to attend workshops, engage in training, and seek out readings that help us better understand our students and the communities they come from. It reminds us that attending the workshop sessions aren’t enough - it begs us to learn, unlearn and then implement what we’re learning to create more inclusive and supportive learning environments.

3. Boundary Brokering & Bringing Others In

One of the most powerful takeaways from the Seed to Flower (S2F) framework is the reminder that this work can’t—and shouldn’t—be done alone. The strategy of boundary brokering calls on us to build bridges—not just with community-based organizations and industry partners, but also with like-minded colleagues within our own campuses. These relationships are essential to expanding access to real-world STEM networks. But just as importantly, they remind us that we’re not alone in this work.

Significance

Recent events have underscored the power of passion, commitment, and dedication of educators across the country. Supporting faculty/educators in their STEM efforts is vital (more than ever). The “Seed to Flower” framework and the worksheet aims to achieve this by helping educators identify and prioritize the “student-centeredness” in their educational activities to ensure promising student outcomes.