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Editor's Note

Commentary from a presentation I made to retired faculty on the importance of Diversity, Equity and Inclusion in Higher Education.

I want to begin with a student I'll call Shonda. Shonda is brilliant, first-generation, and fearless. She juggled work, family obligations, and a full course load. What she needed most from us was not a shortcut—but a fair shot: transparent pathways, a campus where she belonged, and opportunities to prove her talent. Shonda's journey—like so many students we serve—reminds us why higher education exists: to expand human potential and strengthen the common good.

Today, I will offer a clear-eyed look at the state of American higher education and then address how federal actions are accelerating the dismantling of Diversity, Equity, and Inclusion—DEI—work across the sector. I will end with a roadmap for lawful, mission-true leadership in this new environment.

I. The State of Higher Education: Promise and Pressure

A paradox defines our moment. On the one hand, colleges and universities remain the most reliable engine of upward mobility we have. A bachelor's degree still correlates with higher lifetime earnings, better health, and greater civic participation. Our laboratories push scientific frontiers; our campuses anchor regional economies; and our graduates start companies, teach children, and heal patients.

On the other hand, the sector faces **five converging headwinds**:

1 **Demographic and enrollment shifts.** Fewer traditional-age students in many regions, more adult and part-time learners, and a public increasingly skeptical about the value of college. Community colleges—often the most powerful mobility escalators—saw the sharpest enrollment declines over the last decade, even as they educate the students who most benefit from postsecondary opportunity.

2 **Affordability and aid complexity.** Tuition growth outpacing family income, unpredictable state appropriations, and a student-aid system that is too complicated for the families who need it most. Delays and breakdowns in federal aid processes in recent cycles exposed how fragile the system is when families depend on timely awards.

3 **Completion and learning gaps.** We have not solved differential outcomes by income, race, and neighborhood. Too many students leave with credits—and debt—but no degree. Employers tell us they want both durable skills and real-world experience; students tell us they want relevance and flexibility.

4 **Campus climate and mental health.** Students are asking for belonging, not just access. They seek campuses where ideas compete vigorously and people are treated with dignity. The

mental-health crisis magnifies the stakes for timely advising, inclusive pedagogy, and community.

5 **Technological disruption and workforce alignment.** AI, automation, and new credential ecosystems are reshaping work. Institutions must connect academic programs to experiential learning, career pathways, and regional talent needs without reducing education to training alone.

In short, the promise of higher education is intact; the conditions for delivering that promise are under stress.

II. What DEI Is—and Why It Mattered

Before discussing the federal role in dismantling DEI, let's be precise about terms.

Diversity is a fact of the American experiment. **Equity** is the commitment to fair opportunity and just outcomes—ensuring students receive what they need to succeed. **Inclusion** is the everyday practice of belonging: students can learn, speak, question, and contribute without having to minimize who they are.

At their best, DEI offices and strategies did three things:

- **Removed barriers** (financial, academic, and cultural) that had nothing to do with talent.
- **Improved teaching and learning** by applying evidence—high-impact practices, experiential learning, proactive advising.
- **Built lawful pipelines** into programs and professions that historically excluded talented students.

DEI, properly understood, is not a partisan project; it is a student-success strategy grounded in civil-rights compliance, institutional mission, and the educational benefits of diverse learning communities.

III. The Federal Role in Dismantling DEI

Over the last several years, a set of federal actions—legislative, executive, judicial, and administrative—has narrowed or chilled DEI activity across higher education.

1 **Judicial constraints on race-conscious practices.** The Supreme Court's decision in *Students for Fair Admissions v. Harvard/UNC* (2023) sharply limited the use of race in admissions. While students may discuss how race shaped their experiences, institutions cannot **treat race as a plus factor**. The decision has had a **spillover effect**, prompting legal scrutiny of scholarships, fellowships, outreach programs, and support services perceived as race-exclusive—even when their purpose is educational, not preferential.

The Court did not abolish the pursuit of diversity, but it narrowed the tools institutions can lawfully use.

2 **Civil-rights enforcement aimed at DEI programs.** Under **Title VI of the Civil Rights Act**, institutions receiving federal funds may not discriminate based on race, color, or national origin. Federal civil-rights investigations have increasingly targeted scholarships, internships, or programs framed for a specific demographic group. Even when institutions prevail, the **compliance burden and reputational risk** create a chilling effect, leading many campuses to shut down or rename programs rather than redesign them to be race-neutral but mission-aligned.

3 **Executive actions influencing training and contracts.** At various times in recent years, federal executive orders have restricted the content of diversity training for federal employees and contractors, with **spillover** into universities that depend on federal research and service grants. Even when such orders are later modified or rescinded, the signal to institutions and accreditors is unmistakable: DEI training and climate initiatives are **politically vulnerable**.

4 **Congressional oversight and appropriations pressure.** Congressional hearings, letters, and proposed riders to appropriations bills have sought to **defund or condition federal dollars** in ways that constrain DEI staffing, training, or programming. The rhetoric of "eliminating DEI bureaucracies" sends a message to agencies and grantees alike and has, in some cases, influenced how guidance is written and interpreted.

5 **Accreditation and recognition dynamics.** Because the federal government recognizes accreditors and ties eligibility for federal aid to accredited status, **federal posture** toward DEI shapes how accreditors answer questions about student learning, climate, and outcomes. Subtle shifts in recognition criteria or public statements can make campuses timid about even **lawful** equity initiatives.

The net effect is **not only legal constraint** but **cultural and operational chill**. Many institutions—especially those with thin margins—pull back from equity strategies they could still lawfully pursue, for fear of enforcement, funding loss, or political backlash.

IV. Leading Lawfully and Boldly: A Campus Playbook

The question is not whether we comply with the law—we must. The question is whether we **surrender** the student-success agenda or **reimagine** it within the law. Here is a practical, defensible playbook:

1 **Re-anchor in mission and civil rights.** Frame all efforts in the language of educational mission, equal opportunity, and compliance. Title VI forbids discrimination; it does **not** forbid institutions from pursuing the educational benefits of diversity through race-neutral means.

2 **Shift from identity-exclusive to criteria-based programs.** Replace demographic labels with **clear, mission-aligned criteria** that are open to all but **targeted in practice**: first-generation status, Pell-eligibility, rural or under-resourced schools, zip-code–based adversity, veterans, foster-care alumni, adult learners, and community-college transfers. Keep programs lawful; intensify **outreach** to students historically excluded.

3 **Design admissions and aid for context.** Use **holistic review** that evaluates individual experiences of adversity, service, leadership, and potential—without using race as a plus factor. Offer essay prompts that invite students to show resilience and contribution. For aid, grow **need-based** and **last-dollar** scholarships; convert legacy race-restricted funds to **race-neutral intent** consistent with donor purpose and the law.

4 **Scale high-impact practices at scale.** The evidence is strong: **learning communities, service learning, project-based courses, internships/co-ops, undergraduate research, and capstones** improve retention and close gaps when **well-advised**. Build **experiential learning ladders** that begin in year one and culminate in senior synthesis, ensuring working students can participate through micro-internships, paid placements, and flexible schedules.

5 **Invest in advising and belonging.** Proactive, data-informed advising; early alerts; mentoring; and **e-portfolio reflection** raise completion. Campus climate matters: free speech and inclusion are not opposites; they are **conditions** for learning. Train faculty in inclusive pedagogy, universal design for learning, and rigorous feedback—not ideological litmus tests.

6 **Redesign scholarships, fellowships, and centers.** Audit every program. Where you find exclusivity, **convert** to criteria-based eligibility. Where mission calls for representation in specific fields (e.g., teachers, nurses, engineers), create **place-based pipelines** with school districts, hospitals, and employers. Build **multi-partner centers** that serve all students while addressing equity gaps through research, coaching, and community partnership.

7 **Document the educational benefits of diversity.** Even after the admissions ruling, institutions can and should **articulate—and measure—**how diverse learning environments improve critical thinking, teamwork, innovation, and leadership. Tie these benefits to program learning outcomes and employer feedback.

8 **Strengthen legal and policy literacy.** Train deans, coaches, faculty, fundraisers, and HR on what the law **permits** and **prohibits**. Build fast-turn review processes for grants and philanthropy so opportunities are not lost to uncertainty.

9 **Communicate with courage and care.** Tell the public what we are for: talent, opportunity, and excellence. Share disaggregated outcomes, improvement plans, and results. When you make changes for compliance, **explain the why** and describe the lawful alternatives you are building.

V. The Federal Government's Positive Levers—Still Available

Even as some federal actions constrain DEI, other federal tools—many long-standing—**advance equity when used well**:

- **Pell Grants, Work-Study, and Supplemental Educational Opportunity Grants** remain the backbone of affordability for low-income students; campuses should maximize take-up, package aid clearly, and create on-campus jobs tied to career development.
- **TRIO and GEAR UP** build pre-college pipelines and provide advising that moves the needle on completion.
- **Title III and V** funds support capacity at institutions serving large numbers of low-income students and Minority-Serving Institutions.
- **Apprenticeships and experiential learning** supported by federal workforce programs can finance paid pathways into high-demand fields.
- **Veterans' benefits and the GI Bill** continue to open doors for service members and families.

Leaders can—and should—press federal partners to **simplify aid**, **fund completion**, and **support paid experiential learning**. The message is not "do DEI or do nothing"; the message is "use every lawful lever to expand talent."

VI. A Policy Agenda for a New Era

To policymakers and federal agencies, I offer four pragmatic requests:

1 **Deliver a reliable, on-time student-aid system** that families can navigate, year after year. No student should lose momentum because of bureaucratic dysfunction.

2 **Expand need-based aid and completion grants.** Increase Pell; fund emergency micro-grants; support evidence-based advising and work-based learning that accelerate degree completion.

3 **Clarify Title VI guidance** so institutions know how to conduct targeted **outreach** lawfully while keeping eligibility open. Encourage data use that diagnoses gaps without creating prohibited classifications.

4 **Support free, robust discourse and civil campus climates.** Uphold First Amendment protections and encourage training that strengthens dialogue across difference rather than policing it.

This is not a partisan wish list; it is an agenda to keep America competitive, communities vibrant, and students on a path to prosperity.

VII. What Leadership Requires Now

Leading in this moment is not for the timid. It requires three habits:

- **Moral clarity.** We exist to educate all of the talent our communities send us. Equal dignity is non-negotiable; excellence is non-optional.
- **Legal mastery.** Know the rules, document your rationale, and design programs that withstand scrutiny.
- **Operational discipline.** Move from posture to practice: scale what works, measure relentlessly, improve continuously, and communicate results.

When we do this, we honor both the law and the lives of students like Shonda. We show that a university can be both a place of intellectual freedom and a place of human welcome; that a campus can be deeply competitive and profoundly compassionate; that compliance need not mean complacency.

VIII. Closing

The winds are stiff, but the mission is sturdy. The federal environment has made the work of DEI harder—and in some quarters, has chilled it outright. But the goals that animated this work—widening opportunity, improving learning, and graduating more students into meaningful lives—are not illegal and they are not optional. They are the work.

Let us link arms across institutions, sectors, and political divides. Let us pursue equity within the law, speak plainly about costs and outcomes, and design education that is rigorous, relevant, and reachable. Let us hold ourselves accountable for real results—more graduates, less debt, clearer pathways, stronger communities.

Shonda—and millions like her—are not abstractions in a policy debate. They are the reason we build programs, the reason we raise funds, the reason we show up early and stay late. If we do our job with courage and care, the next chapter of American higher education can be not a retreat, but a renewal—lawful, excellent, and open to all who are ready to learn.

Thank you.

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This issue is dedicated to the memory of our friend and colleague, Dr. Chuck Baker, who was a founding member of our editorial board.

Foreword

Orkideh Mohajeri, Ph.D.
Professor, West Chester University

At a time of multifaceted challenges facing higher education, many parents, students, faculty, and staff worry about instability and new barriers to research, instruction, admission, affordability, and more. The old order of postsecondary education is being shaken up. In addition, increased reliance on AI and social media is literally dumbing us down (Gerlich, 2025; Lee et al., 2025) at all levels, including the postsecondary. The immediate horizon seems dim.

But the manuscripts in this issue of the *Journal of Access, Retention, and Inclusion in Higher Education* (JARIHE) constitute a glimmer of hope. Although these articles were not submitted in response to a special issue call focused on a particular theme, nonetheless all six manuscripts center on care for student success! Each submission explores themes, models, and learnings about how to bolster postsecondary student success across a range of regions, institutional types, and academic programs. The care for student success from all authors and projects in this issue is palpable, reminding us of the enduring and transformative power of care for one another.

"Bridging the Gap: Exploring the Impact of Graduate Preparation Programs on Undergraduate STEM Students" presents a mixed methods evaluation of a graduate preparation program at Virginia Tech, and identifies essential program components such as mentorship, workshops, and networking.

"Mentoring through a Cultural Lens: Faculty Mentorship Experiences in the Bungee Fellows Undergraduate Research Program" offers the results of a qualitative case study. The researchers explore how cultural matching between faculty mentor and undergraduate mentee enhances a mentorship program at UCLA.

"Caring More for our First Year, First Generation and Low-Income Students: Perceptions of Barriers and Transitional Success" is a phenomenological study of four non-participants in university programming. The authors argue that studying those who are not participating in a given support program can also render valuable insights for the design of such endeavors.

"Building Resilience One Connection at a Time: A Guide to Developing Retention Programming on College Campuses" constitutes a meaningful sharing from one campus' counseling center. In this report, the authors describe the success of a social connection program created to provide opportunities for undergraduate students to build connections across campus.

"The Power of Intentional Programming: Amplifying Student Voices as a Catalyst for Student Engagement at HBCUs" presents three cases of intentional student support programming designed and implemented at an HBCU in the southern United States. The authors provide a

robust set of guidelines that other practitioners can take up in the design and detailing of their own support programs.

Finally, “The Success Equation: Scaling the PIVOT Framework for STEM and Healthcare Student Success” introduces the PIVOT framework, a model that offers insights that other 2- and 4-year institutions can use to create long-term, integrated ecosystems for student success.

The manuscripts in this issue of JARIHE clearly demonstrate that care is at the heart of learning and systematic inquiry. We can continue to rely on care, to foster it, amplify it, and trust that it will lead our communities to justice, joy, and learning.

References

Gerlich, M. (2025). AI tools in society: Impacts on cognitive offloading and the future of critical thinking. *Societies, 15*(1), 6. https://doi.org/10.3390/soc15010006

Lee, H., Sarkar, A., Tankelevitch, L., Drosos, I., Rintel, S., Banks, R., & Wilson, N. (2025). The impact of generative AI on critical thinking: Self-reported reductions in cognitive effort and confidence effects from a survey of knowledge workers. *CHI ’25: Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems,* no. 1121, pp. 1-22. https://doi.org/10.1145/3706598.3713778

Rethinking Academic Integrity: Deconstructing Academic Norms in a Technologically and Culturally Shifting Landscape

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Abstract

The rise of generative AI use in higher education calls for a critical reexamination of academic integrity, revealing its culturally-constructed and context-dependent nature. While institutions scramble to create generative AI policies, many rely on Western-centric definitions of integrity that overlook the diverse cultural and linguistic students' backgrounds. Traditional frameworks often misunderstand behaviors like patchwork writing or collaborative learning, viewing them as misconduct rather than culturally influenced practices. This paper argues that academic integrity standards differ across cultures and institutions rather than follow universal principles. As generative AI further complicates ideas of authorship and originality, institutions must move beyond punitive responses toward inclusive, pedagogically grounded policies that is both discipline and assignment specific. By explicitly teaching academic integrity practices and ethical generative AI use, every course can contribute to an environment grounded in rigor and equity. Academic integrity, therefore, must be reframed as a developmental and inclusive practice that evolves with context and technology, rather than maintaining a static moral code.

Keywords: Academic Integrity, Generative AI, Plagiarism, Culturally Responsive Pedagogy, Assessment Design, AI Literacy, Writing Pedagogy, Classroom Strategies

Rethinking Academic Integrity

In higher education, the rise of generative AI tools, like ChatGPT, is stirring up much uncertainty, and even a bit of panic, as these technologies challenge long-standing ideas about academic integrity. In response, universities are scrambling to put together policies and guidelines to shape how both teaching and learning should adapt to this new educational landscape. Interestingly, this rush to regulate generative AI usage has also shed light on a deeper issue: the limitations of how academic integrity is defined. This limitation is particularly evident in Western educational systems that don't reflect culturally diverse experiences (Alghazo et al., 2025; Bannister et al., 2024). In fact, many of today's policies are rooted in Western ways of knowing that do not consider cultural, linguistic, and educational differences of diverse student populations (Hayes & Introna, 2005; Ehrich et al., 2016). For this reason, this discussion situates academic integrity not as a universal standard, but as a cultural construct. As generative AI continues to evolve, it is clear that institutions of higher education must move away from standard, punitive approaches toward flexible and pedagogically-informed frameworks of academic integrity. This paper offers a conceptual analysis through an integrated literature review with practical classroom strategies.

Prevalence of Academic Integrity

Issues of academic integrity in higher education is not a new phenomenon. Research dating prior to OpenAI's release of ChatGPT in November 2022 consistently shows the consistent prevalence of cheating and plagiarism. Fifty-eight percent of high school students admitted to plagiarism while ninety-five percent, compared to more than sixty percent of college students, also disclosed they had participated in some form of cheating (International Center for Academic Integrity, 2020). In a more recent survey of students eighteen or older, forty-eight percent of students admitted using it to complete an at-home test or quiz while fifty-three percent used it to compose an essay (Westfall, 2023).

While cases of academic integrity still continue to confound stakeholders in higher education, this problem is not a new one. More accurately, students now have easy access to tools that are more competent and advanced than previous cheating methods.

Academic Integrity as a Culturally Constructed Concept

Academic misconduct is often misunderstood when examined strictly through a Western lens that emphasizes rigid notions of authorship and originality (Cutri et al., 2021; Jian & Wang, 2019). More specifically, students learn the concept of academic integrity during their primary and secondary educational career through acculturation and education (Gregory, 2021). Thus, what is discerned as plagiarism, through a Western lens, could be the result of a student, from another culture, navigating unfamiliar, culturally bound academic expectations. In many cases, these situations may not be intentional, but rather a result of coming from an educational and cultural background rooted in rote memorization and collective knowledge versus individual knowledge acquisition and expression (Ehrich et al., 2016; Hayes & Introna, 2005). Accordingly,

this paper defines academic integrity as a culturally constructed concept shaped by values, educational norms, and external pressures.

For many students from collectivist cultures, like China, knowledge isn't seen as something owned by an individual, but as something that is shared or communal. As a result, writing practices, like patchwork writing, where pieces of text are woven together from various sources, might not signal cheating, but instead reflect accepted academic norms (Hayes & Introna, 2005; Zhang & Yin, 2020). Conversely, in a typical college course in the United States, a student who commits patchwork plagiarism can be charged with serious academic misconduct. As a result, significant misunderstandings can arise when educators and institutions do not acknowledge or provide training for culturally diverse students, and faculty, to help them understand the shift from a collectivistic to an individualistic academic culture. Without this acknowledgement and support, confusion around plagiarism and authorship can lead to unfair treatment, further reinforcing existing inequalities and discriminatory practices in college classrooms (Cutri et al., 2021).

Like students, faculty perceptions of plagiarism are also shaped by their own academic training and cultural backgrounds (Lei & Hu, 2015). The potential for exponential variations makes it clear that institutions should not just rely on individual judgment when it comes to upholding academic standards. Instead, there is a significant need for universities to create clear, inclusive policies and provide regular professional development that helps educators and students alike to navigate these ethical issues with shared knowledge and intention.

Cultural and Psychological Influences

Many agree that academic misconduct does not happen in a vacuum; it's often shaped by a mix of personal and environmental pressures. Given this, cultural context also plays a significant role in how students understand and justify academic behavior. In the United States, where values like individualism and academic entitlement are emphasized, students might rationalize misconduct as a means to achieve personal success or to stay competitive (Heckler & Forde, 2015; Stiles et al., 2019). In contrast, in China Confucian values like respect for authority and group harmony can make the Western emphasis on originality feel unfamiliar or even inappropriate (Jian & Wang, 2019). With the additional influence of peer pressure, especially for students trying to fit into unfamiliar academic spaces, ethical decision-making is no longer about just knowing the rules, but also about navigating competing cultural narratives of what constitutes "right" and "wrong" (Zhang & Yin, 2020).

From imposter syndrome to intense academic competition and mental health struggles, there are many variables that can push students to making unethical choices, especially in high-stakes environments where success feels necessary (Cutri et al., 2021; Blachnio et al., 2022). Some students navigate these pressures while also managing cultural adjustments or language barriers, which might increase the temptation to bend the rules to survive, rather than make an intentional decision to deceive. This complexity challenges the idea that academic misconduct is always a representation of a clear, moral failure. Simultaneously, many of the reasons (pressure to achieve and fear of disappointing families) lead to students choosing to actively engage in dishonest behavior (Blachnio et al., 2022).

However, the varying impact of predictors across countries suggests that students' interpretations and enactments of academic honesty are filtered through both internal psychological traits and external, learned cultural norms (Blachnio, 2022). For example, the

influence of independent self-construal (how students view themselves as compared to others) demonstrates how collectivist or individualist values might shape decisions around cheating or plagiarism (Blachnio et al., 2022). Perfectionism also emerged as a factor to cheat in most countries listed in the study while self-construal emerged as a significant predictor for cheating in the United States and Ghana where individualistic success is revered (Blachnio et al., 2022). Such findings underscore the importance of designing academic integrity policies and interventions that consider students' cultural backgrounds in relation to social expectations with the local academic rigor of the institutions in which they enroll.

Clearly, the relationship between culture and academic integrity is not static or predictable, as it evolves, especially as students move between cultural contexts. For example, recent broad cultural shifts from collectivism toward individualism among students are starting to challenge long-held assumptions that academic dishonesty is rooted in collectivist ideals, like group success or respect for authority (Zhang & Yin, 2020). In some cultures, students might even cheat to protect the reputation of their family; in others, it might stem from personal ambition or peer competition. Either way, these behaviors reflect a complex mix of societal and cultural factors, which makes one-size-fits-all integrity policies less effective and potentially unintentionally harmful across diverse student populations (Blachnio et al., 2022).

Most academic integrity policies have overlooked the culturally diverse interpretations of the ethical foundations that shape the concept. Still, many institutions continue to rely on rigid, punitive frameworks that don't reflect the realities of culturally diverse classrooms or student beliefs. In fact, a study by Bannister et al. (2024) found that 97% of institutional policies lacked any culturally inclusive lens, which raises serious concerns about fairness and accessibility. On top of that, both students and faculty often lack the necessary education around generative AI usage, leading to confusion, inconsistent enforcement, and even unintentional violations (Lei & Hu, 2015). Without stronger support systems and clearer guidance, current policies risk doing more harm than good. This realization certainly complicates how to generally approach academic misconduct but still confirms that each instance must be evaluated as a unique case to ensure an ethical and equitable approach and preserve just practices.

Implications for Generative AI Use and Academic Integrity Policy

Generative AI tools have changed the way we understand academic misconduct, particularly around ideas of authorship and cheating (Alghazo et al., 2025). These boundaries, which were already ambiguous for many students and faculty, are now even more difficult to unpack and navigate. Some see generative AI as just another digital tool, like Grammarly or Google, while others are vilifying any and all usage as plagiarism. These vastly extreme interpretations often depend on students' and educators' perceptions, disciplines and experiences with digital tools, as well as whether they have been explicitly taught how to responsibly use, cite, or critique AI-generated content (Bannister et al., 2024). In this new academic landscape, much of the confusion centers on the fact that the rules around generative AI usage are simply not clearly defined, which is even further problematized by the inconsistent messaging on accepted usage across academic disciplines.

What is needed now is a shift toward more intentional, inclusive teaching about academic integrity, especially in the context of generative AI usage. Students cannot be expected to just know how to use tools, like ChatGPT, responsibly if no one has modeled ethical and responsible usage. Often, we forget that integrity, like any academic skill, must be explicitly taught, not just

enforced (Cutri et al., 2021). This strategic approach would provide a more empathetic, student-centered methodology to help close the gap between institutional, faculty and student expectations. Without question, this education must take into account students' (and educators') varied cultural backgrounds and experiences, as these factors influence how one understands and engages with cultural norms and ethical practices (Alghazo et al., 2025).

As a result, to develop culturally responsive generative AI policies, institutions need to rethink how academic integrity policies were created and are communicated. Relying solely on Western ideals of ethics and learning is not enough, because this approach often assumes that there's one "right" way to think about academic integrity. Instead, institutions need to design policies and assignments around inclusive pedagogy that respects language diversity, cultural differences, gender dynamics, and multiple ethical perspectives (Bannister et al., 2024; Alghazo et al., 2025). This means actively involving students from different backgrounds and questioning assumptions built into academic frameworks. When done well, this kind of approach does not just promote ethical behavior, it creates a learning environment that prioritizes equitable and fair practices when developing any policy to uphold academic standards while still providing space for the diverse traditions and practices students and educators bring with them (Bannister et al., 2024; Zhang & Yin, 2020).

What Now?

Any change in academic spaces provides an opportunity to validate and re-envision our pedagogical, curricular and assessment strategies. Is the course content still relevant? Are the assessments gauging student learning, skill building and knowledge transfer? While some may argue that professional development is necessary to fully address these questions, it is likely that most training might only offer baseline recommendations that are not discipline specific. In the meantime, as faculty, we must review our syllabi and audit the efficacy of the assessments required in our courses. There is no singular approach to assuage the myriad of ways generative AI might, unexpectedly or expectedly, enter our college classrooms. Yet, there are active approaches to mitigate the potential impact to preserve curricular integrity and student learning. As expected, these strategies include developing clear generative AI course policies, including directed AI use (or not) in assignment guidelines, as well as transforming assessment tools to include multimodal and verbal delivery techniques to demonstrate student knowledge acquisition.

Develop a Course-Specific Academic Integrity Policy as a Social Contract

Faculty must openly state expectations and nurture a culture of academic integrity (Balalle & Pannilage, 2025). Dedicating a session, or two, early in the semester to transparently discuss the parameters of integrity expected in a specific course will exponentially improve the collective understanding and approach to the work of the course. Integrative Social Contract Theory (Donaldson & Dunfee, 1994), Gregory (2021) argues that this method provides students an explicit understanding of expectations of a course and its work. This approach does not presume any prior student knowledge as it offers an opportunity for every member of a course to gain understanding collectively as a learning community. For faculty, this provides a rich opportunity to question our own assumptions while also clearly articulating disciplinary and course-related ethical guidelines to help dismantle any potential bias in student expectations. A

potential activity to achieve this is to have students co-create the course's academic integrity policies and rubrics to nurture a collective understanding of individual expectations and accountability (Bowen & Watson, 2024).

Develop Clear Assignment Details and Outline Expectations in Process

Bowen and Watson (2024) argue that AI tools generate average work, and it is the responsibility of the academy to provide clear targets for student success and then expect higher rigor and quality in student work. For example, since AI tools provide competent support in grammar and outline development, faculty can guide students in ethical, responsible use of AI tools in the writing process (brainstorming, outlining), but then set clear scaffolding to support an individually written essay (Bowen & Watson, 2024). However, using AI tools, in any capacity, requires faculty to explicitly model each step of the writing process through to final content delivery. When instructors assume students already know the ethical boundaries, especially with Generative AI use, for any stage of this process, they unknowingly create conditions that may lead to unintentional plagiarism.

Add In-Class Assessment Tools

As AI tools become more sophisticated, it will become more difficult to discern the authenticity of student written work which will impact overall student learning and the perceived value of degrees being awarded. This means that faculty must identify alternate modes of assessing knowledge acquisition and skill development. Implementing in-class, verbal assessments may serve as one strategy to reduce the misuse of AI tools and more accurately assess students' cognitive knowledge. However, this is not as readily adaptable across disciplines, particularly those that rely heavily on written work as the primary assessment. In such cases, embedding scaffolded writing processes into each assignment, through regular faculty-student conferencing and peer-to-peer writing communities, allows instructors to observe the development of student thinking and writing over time. This strategy actively integrates intrinsic and extrinsic motivators that encourage students to invest more deeply in their writing, knowing that faculty and peers are actively observing and supporting their growth. (Bowen & Watson, 2024).

Conclusion

Looking ahead, there is a real need to move beyond short-term fixes and start building a deeper, understanding of how generative AI is reshaping our understanding of academic integrity and higher education in general. This means prioritizing cross-cultural, longitudinal studies that explore the evolving ethics of generative AI usage across diverse student populations, disciplines and academic systems (Blachnio et al., 2022). We also need to invest in sustained faculty development, not just one-time workshops or online training modules, and hold institutions accountable for creating academic frameworks that are flexible and culturally responsive (Lei & Hu, 2015; Cutri et al., 2021). As generative AI continues to influence higher educational practices, the goal should be to provide education that develops with the technology, guiding the ethical and responsible practices.

Ultimately, generative AI is not just a challenge to academic integrity. Instead, it is an opportunity to reimagine it by realizing that plagiarism is an infraction of a social contract that needs to be explicitly addressed in every course, because academic integrity is a fluid, culturally-

mediated construct. The consequences of failing to engage with building clear guidelines and best practices for students and faculty will lead to ethical confusions and inequitable academic outcomes (Jian & Wang, 2019; Hayes & Introna, 2005). As mentors and faculty, we must teach students to utilize AI tools responsibly and appropriately in our disciplines. With flexible, culturally aware policies and pedagogical practices, institutions can create academic environments that are not only ethical and transparent, but also equitable. For the collective good, academic integrity should be regarded as a learned, developmental process rather than an innate moral standard (Cutri et al., 2021; Hayes & Introna, 2005).

Supporting student success in higher education requires a shift away from enforcing rigid standards of academic integrity and toward intentional education on ethical practices that evolve alongside emerging educational technologies (Bannister et al., 2024; Cutri et al., 2021; Alghazo et al., 2025).

References

Alghazo, R., Fatima, G., Malik, M., Abdelhamid, S. E., Jahanzaib, M., Nayab, D. e, & Raza, A. (2025). Exploring ChatGPT's role in higher education: Perspectives from Pakistani university students on academic integrity and ethical challenges. *Education Sciences*, *15*(2), 158-. https://doi.org/10.3390/educsci15020158

Balalle, H., & Pannilage, S. (2025). Reassessing academic integrity in the age of AI: A systematic literature review on AI and academic integrity. *Social Sciences &Humanities Open*, *11*, Article 101299. https://doi.org/10.1016/j.ssaho.2025.101299

Bannister, P., Penalver, E. A., & Urbieta, A. S. (2024). International students and generative artificial intelligence: A cross-cultural exploratory analysis of higher education academic integrity policy. *Journal of International Students*, *14*(3), 149-. https://doi.org/10.32674/jis.v14i3.6277

Błachnio, A., Cudo, A., Kot, P., Torój, M., Oppong Asante, K., Enea, V., Ben-Ezra, M., Caci, B., Dominguez-Lara, S. A., Kugbey, N., Malik, S., Servidio, R., Tipandjan, A., & Wright, M. F. (2022). Cultural and psychological variables predicting academic dishonesty: a cross-sectional study in nine countries. *Ethics & Behavior*, *32*(1), 44–89. https://doi.org/10.1080/10508422.2021.1910826

Bowen, J. A., & Watson, C. E. (2024). *Teaching with AI : a practical guide to a new era of human learning*. Johns Hopkins University Press.

Chen, L. (2022). The concepts of academic dishonesty of undergraduate students in China in the situation of online education. *Journal of Higher Education Theory and Practice*, *22*(6), 44–52. https://doi.org/10.33423/jhetp.v22i6.5227

Cutri, J., Freya, A., Karlina, Y., Patel, S. V., Moharami, M., Zeng, S., Manzari, E., & Pretorius, L. (2021). Academic integrity at doctoral level: the influence of the imposter phenomenon and cultural differences on academic writing. *International Journal for Educational Integrity*, *17*(1), 8–16. https://doi.org/10.1007/s40979-021-00074-w

Donaldson, T., & Dunfee, T. W. (1994). Toward a unified conception of business ethics: Integrative social contracts theory The Academy of Management Review, 19, 252–284. https://www.jstor.org/ stable/258705?seq=1

Ehrich, J., Howard, S. J., Mu, C., & Bokosmaty, S. (2016). A comparison of Chinese and Australian university students' attitudes towards plagiarism. *Studies in Higher Education (Dorchester-on-Thames)*, *41*(2), 231–246. https://doi.org/10.1080/03075079.2014.927850

Hayes, N., & Introna, L. D. (2005). Cultural values, plagiarism, and fairness: When plagiarism gets in the way of learning. *Ethics & Behavior*, *15*(3), 213–231. https://doi.org/10.1207/s15327019eb1503_2

Heckler, N. C., & Forde, D. R. (2015). The Role of Cultural Values in Plagiarism in Higher Education. *Journal of Academic Ethics*, *13*(1), 61–75. https://doi.org/10.1007/s10805-014-9221-3

International Center for Academic Integrity. (2020). *Facts and statistics*. https://www.academicintegrity.org/aws/ICAI/pt/sp/facts

Gregory, J. L. (2021). Plagiarism as a social contract, a new way to approach plagiarism. *Journal of Academic Ethics*, *19*(3), 407–424. https://doi.org/10.1007/s10805-021-094091

Jian, H., Marion, R., & Wang, W. (2019). Academic integrity from China to the United States: The acculturation process for Chinese graduate students in the United States.

Ethics & Behavior, *29*(1), 51–70. https://doi.org/10.1080/10508422.2018.1468760
Lei, J., & Hu, G. (2015). Chinese university EFL teachers' perceptions of plagiarism. *Higher Education*, *70*(3), 551–565. https://doi.org/10.1007/s10734-014-9855-5
Singh, P., Thambusamy, R. X., & Druckman, Z. A. (2016). Insidious, invasive, invisible: academic dishonesty and on-going assessments in higher education. *The European Journal of Social & Behavioural Sciences*, *17*(3), 211–223. https://doi.org/10.15405/ejsbs.193
Stiles, B. L., Pan, M., LaBeff, E. E., & Wong, N. The role of academic entitlement in college cheating: A comparison between China and the United States. *Research in Higher Education Journal,* 33, 1-15.
Study.com. (n.d.). *Perceptions of ChatGPT in schools*. https://study.com/resources/perceptions-of-chatgpt-in-schools
Westfall, C. (2023, January 28). Educators battle plagiarism as 89% of students admit to using OpenAI's ChatGPT for homework. *Forbes*. https://www.forbes.com/sites/chriswestfall/2023/01/28/educators-battle-plagiarism-as-89-of-students-admit-to-using-open-ais-chatgpt-for-homework/
Zhang, Y., & Yin, H. (2020). Collaborative cheating among Chinese college students: the effects of peer influence and individualism-collectivism orientations. *Assessment and Evaluation in Higher Education*, *45*(1), 54–69. https://doi.org/10.1080/02602938.2019.1608504

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A composition and rhetoric specialist at West Chester University, Ilknur Sancak-Marusa also teaches professional and technical writing courses and serves as Writing Center Director. Over the past fifteen years, her scholarly agenda has focused on writing studies and developmental education, specifically examining pedagogical approaches that support student writers across diverse academic backgrounds.

Mentoring Through a Cultural Lens: Faculty Mentorship Experiences in the Bunche Fellows Undergraduate Research Program

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Abstract

This manuscript explores the significance of faculty mentorship in underrepresented student success within a culturally engaged on-campus research program. Drawing on data derived from the *Pathways Through Research* case study, a mixed-methods empirical study of the Bunche Fellows Program at the University of California, Los Angeles, this paper centers student voices to better understand the manifestations of cultural engagement among faculty mentoring experiences, and how these cultural experiences shape student development among the program's alumni. Guided by Critical Race epistemology and the Culturally Engaging Campus Environments (CECE) Model, this research highlights the effectiveness of mentoring relationships within a structured on-campus research program focused on promoting underrepresented students' academic, personal, and professional growth. Findings reveal how mentorship fosters belonging, confidence, and academic motivation. The study contributes to higher education research by emphasizing the importance of culturally relevant mentorship for underrepresented students in research settings.

Keywords: undergraduate research programs, faculty mentoring, cultural engagement, student development, student success

Mentoring Through a Cultural Lens: Faculty Mentorship Experiences in the Bunche Fellows Undergraduate Research Program

Retention and graduation rates of underrepresented students at four-year institutions remain a critical challenge in education. Retention rates among Black undergraduate students in 2022 were more than 12 percent lower than Asian and White undergraduate students (National Student Clearinghouse, 2024). In efforts to improve these outcomes, colleges and universities have implemented research mentorship initiatives that provide undergraduate students academic support through inquiry-driven learning experiences and mentor relationships with faculty and staff of the university community. By providing students a connection to faculty and the larger university culture, the aim of these opportunities is to foster student success in the undergraduate education experience (Lane, 2016; Santos & Reigadas, 2005). By providing students with faculty members as mentors, students receive direct interaction with faculty members that they do not commonly receive through traditional coursework. This type of mentorship has been shown to ease adjustment challenges and improve the academic success and retention of underrepresented students by building confidence, supporting their development as scholars, and encouraging graduate study (DeAngelo et al., 2016; Hawkins et al., 2023; Hurtado et al, 2016; Ngassa, 2013; Santos & Reigadas, 2005; Schneider et al., 2021).

While the presence of undergraduate research programs is a promising strategy to address common challenges among underrepresented students, they have been commonly critiqued for omitting culture in their program structures and consequently, evaluations of student success (Hawkins et al., 2023). Student success has historically been measured by race-neutral objectives such as academic achievement, i.e., GPA, test scores, and course grades, excluding any reference to cultural connection because student identity development and well-being has not been seen as correlated with student success (Hawkins et al., 2023). This critical gap has created a call for mentorship programs to be culturally-inclusive in the way they design and carry out their programs. This study enters the conversation by exploring the impact of faculty mentorship within a culturally engaged undergraduate research program and the impact of such experiences on student development among the program's undergraduate research fellow alumni. This study draws upon data derived from the *Pathways Through Research* case study, a mixed-methods empirical study of the Bunche Fellows Program (BFP) at the University of California, Los Angeles. We pose the following questions:

1. How does faculty mentoring within the Bunche Fellows Program shape student development among the undergraduate fellows?
2. How does the Bunche Fellows Program foster cultural engagement for their undergraduate fellows?

The findings of this study feature stories among the program's alumni. Their experiences illustrate how BFP successfully cultivates a 360-degree humanistic learning community for undergraduate fellows to experience cultural community and support along with academic rigor and growth. This learning community contributes to the larger undergraduate experience for underrepresented students by specifically addressing intellectual/ academic, social and cultural needs that counters social isolation and the cultural devaluation that is largely documented in the PWI experience (Allen, 1988; Harper & Hurtado 2007; Leath et al., 2022). Consequently, the fellows build confidence to see oneself as intellectuals and learn the importance of contributing to progressive change.

Literature Review

As primary agents of socialization for students on college campuses, faculty members play a critical role in the undergraduate education experience. For undergraduate students looking to make the most out of their education experience, interactions with faculty are an important factor in student motivation and academic involvement outside of coursework (DeAngelo et al., 2015; Weidman, 2006; Chickering and Gamson, 1987). The current study is situated within higher education research that examines undergraduate research programs and the ways that mentoring experiences enhance students' success and further shape their long-term outcomes. Undergraduate research programs that provide students with faculty mentors grant students access to important networks of information and people to aid them in their success, as well as the opportunity to feel welcome as scholars in their disciplines (DeAngelo et al., 2015). Therefore, programs inclusive of faculty mentorship shape student success for diverse student populations. We begin by reviewing literature regarding faculty mentorship and its connection to student success for marginalized students. From there, we highlight exemplary undergraduate research programs and their mentoring models in the larger higher education landscape. In doing so, this literature review aims to articulate the relationship between undergraduate research programming and student success through faculty mentorship, positioning BFP as an innovative, Afrocentric model of undergraduate research programming that advances the field of undergraduate research by emphasizing the importance of cultural engagement.

Faculty Mentorship in Undergraduate Research Programs

While institutions strive to support diverse students, colleges and universities across the U.S. continually face challenges in campus climate that hinder diverse students' adjustment to college and their success in undergraduate studies (Santos & Reigadas, 2004; Leath & Chavous, 2017). Faculty mentorship has been identified as a viable strategy to address persistence and retention among marginalized students at four-year institutions (Santos & Reigadas, 2004). Existing research on faculty mentorship at an undergraduate level has explored the characteristics of informal and formal faculty mentorship experiences (Williams, 2018). Informal mentoring is the natural coming together of a mentor and protégé (Williams, 2018). Existing research asserts that informal mentoring occurs when the faculty mentor is invested in positively shaping the younger generation, and protégés are informally selected based on the perception of the mentor that the prospective protégé is a high-performing rising star (Williams, 2018). These relationships tend to form when mentors select proteges who align with their professional goals (Williams, 2018).

While informal mentorship can be highly impactful, not all students will connect with a mentor, making formal mentorship programs an important alternative that expands access to mentoring. Formal mentoring is defined in foundational research to occur when an organization develops *"*A program and process for mentoring to take place. The relationship is usually short-term (one-year) formally, with the hope it will develop informally over the long-term*"* (Williams, 2018, p. 35). Formal inquiry-driven programs that provide faculty mentorship can be found across a large number of colleges and universities. The construction of formal mentoring relationships through organizations has been undertaken by various academic departments, university initiatives, and federal agencies (NIH, Department of Education), as well as by philanthropic donors.

Undergraduate Research Programs in the Education Landscape

Undergraduate research programs vary widely. One common structural model across 151 college campuses in the U.S. is the Ronald E. McNair Scholars Program. The McNair program provides students with research opportunities under the guidance of a faculty mentor. The objective of the McNair program is to increase the number of first-generation, low-income and/or underrepresented students in Ph.D. programs, ultimately diversifying the workforce. In the context of the University of California system, the McNair program operates on multiple campuses and is a two-year research-based program open to upperclassmen undergraduate students (juniors and seniors). Students must have a strong interest in pursuing graduate education to be considered for the McNair program. As part of the program structure, the program requires students to complete an independent research project under the guidance of a faculty mentor. In sum, through research opportunities and faculty mentorship, the McNair initiative has been largely successful in bolstering graduate school enrollment for underrepresented students. While the McNair program is a well-known undergraduate research program, it is limited to students pursuing graduate education, excluding students interested in pursuing the law or medicine track.

Another exemplary undergraduate research program is the Meyerhoff Scholarship Program at the University of Maryland, Baltimore County (UMBC). Founded in 1988, the Meyerhoff Scholarship Program is a multicomponent program aimed at increasing diversity among future leaders in science, technology, engineering, and related fields by supporting undergraduate, Ph.D., or M.D./Ph.D. degrees and research careers (Carter et al., 2009). This undergraduate research program provides financial assistance, mentoring, advising, and research experience to underrepresented undergraduate students (Carter et al., 2009). *The Influence of On-Campus, Academic Year Undergraduate Research on STEM Ph.D. Outcomes: Evidence from the Meyerhoff Scholarship Program* studied the relationship between participation in on-campus, academic year research programs and the subsequent pursuit of a STEM Ph.D. degree. Through a quantitative analysis across thirteen cohorts of the Meyerhoff program, researchers found that participation in on-campus, academic-year research programs is associated with an increase in the probability that minority scientists and engineers will pursue Ph.Ds (Carter et al., 2009). The McNair Scholars Program and Meyerhoff Program provide the contextual foundation for this study, undergraduate research programs that are built on a variety of pedagogical strategies that are considered high-impact practices.

The Bunche Fellows Program

The Bunche Fellows Program and the undergraduate fellows are at the center of this scholarship (see Figure 1.0). Launched at the start of the 2018 academic year, BFP is a multidisciplinary research fellowship program housed within the Ralph J. Bunche Center for African American Studies at UCLA. The undergraduate fellows join ongoing research projects of prominent scholars as full-fledged team members and work with BFP graduate fellows. The structural components of BFP are illustrated in Figure 1.0. On a meso-program level, BFP includes a biweekly undergraduate research course that brings all the undergraduate fellows together in one classroom. The course is designed to be an Afrocentric collaborative academic space for undergraduate fellows to learn how to (A) survey different research perspectives and methods across Black studies scholarship, (B) engage with classic and exemplary scholarship, (C) participate in a collaborative academic environment to further build a supportive learning community, and (D) conceptualize their Black studies research projects. On the micro-level of the program, the undergraduate fellows are paired with BFP faculty mentors upon acceptance into the program. BFP faculty mentors are distinguished scholars across campus who create research

training opportunities for their fellows and pair them with BFP graduate fellows to work closely in mentoring them (Figure 1.0). In sum, BFP invests in faculty mentorship to further surround undergraduate students with cultural relevance through smaller-scale learning communities in addition to the culturally-responsive program course. In doing so, the structure of BFP integrates various forms of knowledge about the Black experience into a single program, fostering a collective examination of Black life through diverse perspectives that highlight different aspects of the Black experience.

Conceptual Framework

The intentionality behind building the Bunche Fellows Program aligns with critical race epistemology as an overarching system of knowledge shaped by the conditions under which Black and people of color live and learn (Delgado Bernal, 2002; Ladson-Billings, 2000). Therefore, the conceptualization of this knowledge project is shaped by the critical race epistemological assumption that Black and people of color are holders and creators of knowledge (Delgado Bernal, 2002; Pérez Huber, 2009). By employing a critical race epistemological approach to emphasize the importance of culture within student development, this knowledge project offers a distinct understanding of the impact of faculty mentoring experiences for underrepresented students in an undergraduate research program. We employ the Culturally Engaging Campus Environments (CECE) model to theorize how BFP shapes the development and success of the underrepresented students they serve. The CECE model is a culturally relevant framework that identifies elements of campus environments associated with success among diverse populations (Museus et al., 2014). On a macro level, the CECE model suggests various college experience characteristics fall into two interrelated categories, cultural relevance and cultural responsiveness.

Cultural Relevance and Cultural Responsiveness

Principles of a culturally engaged campus environment that fall into the cultural relevance category include cultural familiarity, culturally relevant knowledge, cultural community service, cross-cultural engagement, and cultural validation. This study is first grounded in cultural familiarity, which refers to opportunities for students to connect with institutional agents who have similar cultural backgrounds (Museus et al., 2014). This study also emphasizes culturally relevant knowledge, which emphasizes the importance of opportunities for students to learn and exchange knowledge that is relevant to their own cultural communities (Museus et al., 2014). The final principle of cultural relevance that this study is grounded in is cultural validation, which defines the impact of the previous principles, the extent to which students feel like their cultural backgrounds and identities are valued at their respective institutions (Museus et al., 2014).

The later principles of the CECE model fall into the cultural responsiveness category, which focus on how campus environments are responsive to the cultural norms and needs of diverse populations (Museus et al., 2014). In our discussion of empowering diverse students through faculty mentoring in a culturally engaged research program, this study is grounded by the humanized educational environment principle, which highlights the depth to which students can connect with faculty and staff with whom they can develop meaningful relationships and who care about their success. The final principle this study is rooted in is the collectivist cultural orientations principle, which refers to the extent to which campus cultures are collectivist and collaborative, as opposed to individualistic and competitive.

Together, these principles demonstrate how the BFP faculty mentoring experiences incorporate culture into the engagement, which positively contributes to student development among the participants. This conceptual framework challenges traditional paradigms on faculty

mentoring and undergraduate research programs by prioritizing student voice in articulating these experiences.

Methodological Design: Pathways Through Research Case Study

The findings from this study are extracted from the *Pathways Through Research* case study. Launched in October 2023, *Pathways Through Research* is a mixed-method case study that collects data to measure student development and success among the Bunche Fellows community, which includes student alumni and faculty leadership. While methodological measures in this study include survey, observation, and interview methods, the data in this project is drawn explicitly from the semi-structured interview component of the case study, which collected data from twelve undergraduate fellow participants across four cohorts. The findings from this study are presented from the student standpoint of faculty-mentoring experiences. By combining student accounts of their faculty mentoring experiences with their experiences in the program environment, we get a new understanding of how to improve undergraduate research programs for diverse students in higher education. Using this approach, we examine the impact of mentorship on the educational ambitions and actions of underrepresented students.

Data Collection and Analysis

The sample pool of the pathways through research case study consists of 17 participants. Data collection took place in two cycles. The first cycle collected data from February to March 2024, in a 30-day open recruitment phase only open to program alumni who were in the 2019-2022 cohorts. The second cycle took place in February 2025 and was expanded to include program alumni from the 2023-2024 cohort. The rationale behind the multiple phases of data collection is to have data from the most recent program alumni continuously. The findings in this project are from participants in the 2019-2022 cohorts, since the second phase was in active data collection and cleaning when this manuscript was built.

The data analysis design of this study employed a systematic inductive approach to analyze the data included in this study. Employing an inductive approach involves a systematic procedure to analyze qualitative data in which the analysis is guided by specific evaluation objectives (Thomas, 2006; Nowell, 2017). The first phase included reading the raw data with a set of guidelines, targeting stories that contained information about experiences with faculty mentors. In this phase, researchers identified aspects of the transcripts that were interesting to them. After becoming familiar with the data by highlighting broad faculty mentoring stories, the researchers searched for themes within these stories that aligned with the conceptual framework of this study. The final phase of the analytical strategy involved constructing the findings section to present all participants in the research, along with their individual experiences.

Limitations and Trustworthiness

Although the case study provides an in-depth examination of mentoring, this study has limitations. First, the sample size represented in this project is a fraction of participants from the larger case study that explores an array of higher education issues related to undergraduate education. More specifically, the broader case study included 17 participants, both students and staff. Although all participants were asked the same questions and reported similar experiences, some narratives were excluded due to manuscript constraints and ongoing data collection. Lastly, mentor perspectives were not included in this paper, which would elevate the understanding of faculty mentorship from the standpoint of the faculty mentor. However, existing research supports the idea that mentees' perceptions are often more predictive of outcomes than mentors' perspectives (Eby & Allen, 2002; Eby et al., 2008a, 2010; Limeri et al., 2019; Scandura, 1998).

Aside from utilizing data from a case study that employed semi-structured interviews for participants to decline questions they did not want to answer openly, trustworthiness measures included peer debriefing and reflexive writing. Peer-debriefing of the data took place throughout the coding process to examine how our thoughts and ideas as researchers evolved as we engaged with the data (Thomas, 2006; Nowell, 2017). Researchers also took reflexive notes during our respective theme development process, and our ideas were then sorted through as a collective during research team meetings. Together, these numerous measures that were taken strengthen the trustworthiness of our study (Thomas, 2006; Nowell, 2017).

Findings

The findings that follow are a series of reflections among BFP alumni. The quotes shared in this section are a series of experiences within the program's course component where undergraduate fellows had the opportunity to interact with faculty directors, as well as experiences with their respective faculty mentors. These insights are systematically categorized by the conceptual frameworks' two macro-level categories, cultural relevance and cultural responsiveness. From there, we unpack each experience with the principles of the CECE model to identify the specific elements of BFP that are associated with student success through the participant's voice.

The participants were asked to reflect on the time when they first met their program faculty mentors. Specifically, we asked the participants how they felt meeting their mentors and what some expectations or standards they were held to.

Adina shares where she was in her education journey when she joined the Bunche Fellows Program. In the quote that follows, Adina reflects on her first conversation with her faculty mentor.

> I had never heard of him before, but I was only a freshman, so it made sense. He was like, 'You're Ethiopian,' and I was like, 'Yes,' and then that kind of kick-started everything. He was like, 'you know, I wrote a whole thing in Sudan, I wrote this research paper about Kenya'…We were going off of each other, just bonding seriously, because he doesn't get a lot of students that are interested in East African politics and that's most of the research that he's ever done and then I don't find anyone who cares about African politics either and I'm trying to get into that research. So, we were just bouncing off ideas and talking about where we come from and talking a lot about his work that he's done in the past, and then my interests as well. So, it was a perfect match.

Adina expressed that the connection between her research interest and the opportunity to work with her faculty mentor was a perfect match. Both of them had a passion for studying East African politics, which facilitated a lively mentoring relationship at the intersection of culture. The cultural familiarity within this mentorship dynamic brought cultural relevance to Adina's experience in the program.

Maya shared a similar experience to Adina in having a positive experience with the faculty mentor matching. In the quote that follows, Maya describes the commonalities between their research interests and their faculty mentor match.

> Meeting my faculty mentor for the first time was amazing, to say the least. I am really, really grateful for the Bunche program and the effort that they put into really matching you with somebody that's in alignment with your interests. When I was doing the application, I mentioned how I'm very interested in maternal-fetal medicine, like obstetrics and gynecology, anything to do with women of color and giving birth. They basically matched me with someone who was a Black woman, a doctor, and a lot of her research had been

> heavily based in the relationships between mom and babies and the effects of childbirth as well as like generational trauma. I was shocked there was even somebody like this that. I had been on a campus for four years and I didn't even know that she existed. So, I was really grateful to be a part of her team and get access to her resources and her previous research. I was really grateful to meet her, know her, and learn from her.

Maya's mentoring experience is similar to Adina's in her expression of gratitude towards BFP for the faculty matching, as they had the opportunity to meet a faculty member conducting research on Black women, which they previously considered nonexistent on the UCLA campus. This example resembles cultural familiarity as well as culturally relevant knowledge, allowing them to participate in inquiry-driven learning that is relevant to her own cultural identity.

Megan expressed how they initially felt nervous in meeting their faculty mentor. In the quote that follows, Megan articulates the significance of a faculty mentor extending resources and sharing knowledge.

> Okay, so I was working with Dr. [faculty mentor] and I thought that she was a Barbie and that she was perfect and so smart. So, I was a little nervous to meet her, but she was really…I mean, yes, she's all those things, but she was very approachable, very home girl in a way. One thing that really left a mark on me was how willing she was to put me on. She was all about putting other folks on and sharing knowledge. I remember when we were prepped to do – what were we doing – for Bunche, we would have to present every so often and she would coach me through practice runs. And she, one time was like, 'Oh, yeah, girl, we gon' have, we gon' practice.' That always stuck with me and I tell people that now. It was a little nerve-wracking, but I think the match was so perfect, and I learned a lot from her and she was so dope. It was, it was perfect.

Megan described their faculty member's approach to mentoring as a cultural term of *homegirl*. Megan's mentoring experience speaks to the impact of culturally-engaged investment from faculty mentors in student development. While Megan expressed being nervous to meet their faculty mentor, she expressed that she learned a lot being a member of their learning community.

Cultural Responsiveness inside the Undergraduate Research Program Classroom

The participants were asked how it felt to be in a classroom with same-race peers and instructors. This question gives way to cultural relevance and opportunities for students to connect with various institutional agents who have similar cultural backgrounds to them. In the findings that follow, participants share their experiences within the BFP course component.

Maya describes the realities of being in a culturally engaged classroom and what that meant to them in their college experience.

> Not to be overly exaggerated, but I thought it was a dream come true. Being in a space where you don't have to second-guess everything you say or worrying about code-switching, or it being so obvious that you and your classmates have very different life experiences. Being in a classroom with people who look like me and who understand my journey and my experience…was just beautiful to have that community. I definitely didn't take it for granted.

Maya detailed how they could show up in the Bunche Fellows classroom without having to code-switch or second-guess their self-expression. Being in community with classroom peers who understood their lived experiences was a dream come true for Maya.

Megan expressed similar sentiments to Maya, in experiencing positive feelings associated with the classroom space. In the reflection that Megan highlights the mentoring experience with one of the program's faculty directors.

> It felt good, I remember at the beginning of class, we would check in with each other, it felt like a reunion. The lead professor was so dope and always encouraging us. Giving us words of affirmation, and he made the space feel so warm and welcoming, he was dope. He was huge to the experience, the way that he talks to students and lets us know you belong. He was amazing.

From Megan's experience, we learn the power of faculty leadership being present in the classroom space. Through affirming interactions with undergraduate fellows expressing that they belong in the academic community, the faculty leadership positively impacted their overall experience in the program.

Shannon builds on this pattern of positive sentiments of the classroom space. In the reflection that follows, Shannon details what the classroom experience meant to them in a cultural sense.

> I thought it was so cool. I think it was one of my favorite experiences from UCLA. I felt like I looked forward to coming to this class. I love seeing Black excellence, I loved seeing my people. I think being in an environment where we're able to just share what we're doing and what we're thinking, and our ideas, is so enriching. There was just an abundance of love and happiness in that room, and I really appreciated it. I think it's also inspiring because not only did I appreciate the thoughts of my peers, but I loved seeing, like our other mentors, being in such inspirational positions like [teaching assistants] becoming a doctor right in front of our eyes is so… is so cool. And I think it really encouraged us and that we can do it. You can do it; we can do it. And like, not just that, but we have people supporting us along the way. So, it's not an isolated journey if we decide to do so.

Shannon's reflection deepens our understanding of the impact of affirming classrooms for undergraduate students. While Shannon enjoyed the opportunity to build community with their peers, they also expressed how the opportunity to observe the teaching assistants' educational journey was motivating for them, knowing they have a community that will carry with them on their educational pathway.

Discussion

The current study examined faculty mentoring experiences among students in an undergraduate research program to understand how faculty mentoring shapes student development among the undergraduate fellows represented in this study, and how BFP fosters cultural engagement for the undergraduate fellows. From this analysis, we draw two major conclusions of the impact of faculty mentoring with a culturally engaged research program. First, the pairing of faculty mentors with undergraduate students is an opportunity to facilitate cultural relevance. Our second major finding is the significance of a course component within a research program and the potential of cultural responsiveness. In the discussion that follows, we unpack these two major themes to account for the specificity within cultural relevance and cultural responsiveness.

"I thought that she was a Barbie and that she was perfect and so smart" Cultural Relevance as Faculty Mentoring Pairing

All of the participants represented in cultural relevance expressed joy in being paired with their faculty mentors. These experiences served as relevant to their cultures in various ways. Adina felt a connection to her faculty mentor through her Ethiopian heritage and his passion for producing African political scholarship. Within the CECE framework, this commonality is defined as cultural familiarity. The opportunity for students to connect with various institutional agents who have similar cultural backgrounds as them, was also experienced by Maya, who was excited that she was in community with a faculty mentor who had similar research interests as her and was rooted in cultural relevance. Megan described her faculty mentor as a Barbie, being perfect and smart.

Furthermore, she described the way her faculty mentor disseminated knowledge to her as a mentor was done in such a way that embodied culture, describing her mentoring as being done in a homegirl type of way. Together, these findings demonstrate how the relevance of culture manifests in faculty mentoring matching within an undergraduate research program.

"I love seeing Black excellence, I loved seeing my people. I think being in an environment where we're able to just share what we're doing and what we're thinking, and our ideas, is so enriching" Cultural Responsiveness in the Classroom

All of the participants represented in this aspect of the findings expressed positive experiences within the course component of the undergraduate research program, reflecting a humanized educational environment. Maya shared that the classroom relieved them from code-switching and fostered a sense of cultural connection with peers. Megan deepens this theme of the classroom feeling comfortable by describing the space to feel like a reunion, highlighting check-ins with each other as a regular practice. Shannon builds on this idea of comfortability in the classroom, expressing that the Bunche Fellows course was one of their favorite experiences at UCLA. She illustrates the classroom as having an abundance of love and happiness. The opportunity to be mentored by faculty directors and observe the teaching assistants in their own graduate journey served as a cultural form of mentoring, specifically demonstrating "you can do it, we can do it." This finding draws a connection to the humanized educational environment principle of the CECE framework, speaking to the depth to which students can connect with faculty and staff who care about their success. Together, they reflect the power of a collectivist classroom and illustrate how cultural responsiveness supports student development.

Future Directions

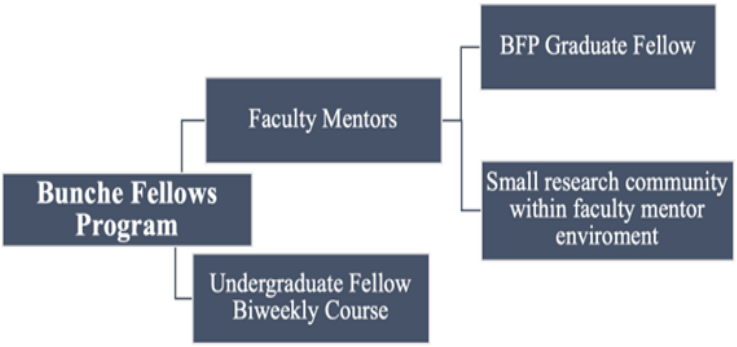
Future research that explores the possibilities of cultural engagement programming in student development and success would benefit from a longitudinal study design that follows students beyond their participation in the program. This type of study could provide deeper insight into how culturally relevant mentoring shapes students' long-term academic, personal and professional paths. While student narratives provided significant insight into the impact of undergraduate research programs, future research could supplement such findings with the experiences of faculty mentors to further explore how culturally relevant mentoring shapes faculty member's own sense of purpose and professional identity. This specific research design could further strengthen the call for more undergraduate research programs with opportunities for culturally relevant mentorship.

Conclusion

The Bunche Fellows Program occupies a unique position within undergraduate research programming, as existing research has not significantly explored cultural approaches to faculty mentorship for underrepresented students through undergraduate research programs. Through measuring the impact of faculty mentorship through student voice, the findings of this study highlight cultural experiences within an undergraduate research program that strives to be a creative arena for students invested in studying the conditions of Black life. The larger contribution of this work is the articulation of the significance of culturally relevant faculty mentoring for undergraduate students, as it offers representation, cultural understanding, and relatability. Faculty mentors act as motivating role models for students, boosting their self-esteem and confidence. Mentorship fosters a sense of belonging by building a supportive group, giving students the confidence to have high objectives. The findings also demonstrate the significance of undergraduate research programs incorporating a course component into their structure. This learning space proved to be an additional opportunity for undergraduate fellows to experience

culturally engaged mentoring through acollectivist framing. Together, this study provided significant evidence of the impact of a culturally relevant research program on student development and how such intentionality provides cultural familiarity that positively impacts students' development as people of color, as well as their academic growth.

Figure 1: The Bunche Fellows Program Structure



References

Allen, W. R. “Black Students in U.S. Higher Education: Toward Improved Access, Adjustment, and Achievement.” Urban Review, 1988, 20(3), 165–188.

Bandura, A. (1977). Social learning theory. *Englewood Cliffs*.

Bandura, A. (1971). Vicarious and self-reinforcement processes. *The nature of reinforcement*, *228278*.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Prentice Hall.

Bernal, D. D. (2002). Critical Race Theory, Latino Critical Theory, and Critical Raced-Gendered Epistemologies: Recognizing Students of Color as Holders and Creators of Knowledge. *Qualitative Inquiry*, *8*(1), 105–126. https://doi.org/10.1177/107780040200800107

Bernal, D. D., & Villalpando, O. (2002). An apartheid of knowledge in academia: the struggle over the “legitimate” knowledge of faculty of color. Equity and Excellence in Education, 35 (2), 169–180.

“Bunche Fellows Program.” *UCLA Bunche Center*. bunchecenter.ucla.edu/research/bunche-fellows-program/. Accessed 29 July 2023.

Carter, F. D., Mandell, M., & Maton, K. I. (2009). The influence of on-campus, academic year undergraduate research on STEM Ph.D. outcomes: Evidence from the Meyerhoff scholarship program. *Educational Evaluation and Policy Analysis*, *31*(4), 441–462. https://doi.org/10.3102/0162373709348584

Clayton, A. B., Davis, T. J., & Givens, J. R. (2023). UNDERRESOURCED STUDENTS AND UNDERGRADUATE RESEARCH. *Social Class Supports: Programs and Practices to Serve and Sustain Poor and Working-Class Students through Higher Education*, 36.

Cotton, J. & Ragins, B. (1999). Mentor Functions and Outcomes: A Comparison of Men and Women in Formal and Informal Mentoring Relationship. Journal of Applied Psychology, 84 (4), 529-550.

Chickering, A., & Gamson, Z. (1987). Seven principles for good practice in undergraduate education. AAHE Bulletin, 39,3–7.

Chuang, S. (2021). The applications of constructivist learning theory and social learning theory on adult continuous development. *Performance Improvement*, *60*(3), 6–14.

DeAngelo, L., Mason, J., & Winters, D. (2016). Faculty Engagement in Mentoring Undergraduate Students: How Institutional Environments Regulate and Promote Extra-Role Behavior. *Innovative Higher Education*, *41*(4), 317–332. https://doi.org/10.1007/s10755-015-9350-7

Eby, L. T., Allen, T. D. (2002). Further investigation of protégés’ negative mentoring experiences: Patterns and outcomes. *Group & Organization Management*, 27(4), 456–479. 10.1177/1059601102238357

Eby, L. T., Butts, M. M., Durley, J., Ragins, B. R. (2010). Are bad experiences stronger than good ones in mentoring relationships? Evidence from the protégé and mentor perspective. *Journal of Vocational Behavior*, 77(1), 81–92. 10.1016/j.jvb.2010.02.010

Eby, L. T., Durley, J. R., Evans, S. C., Ragins, B. R. (2008a). Mentors’ perceptions of negative mentoring experiences: Scale development and nomological validation. *Journal of Applied Psychology*, 93(2), 358–373

Harper, S. R., & Hurtado, S. (2007). Nine themes in campus racial climates and implications for institutional transformation. *New Directions for Student Services*, *2007*(120), 7–24. https://doi.org/10.1002/ss.254

Hawkins, C. K., Espiritu, G. L., & Miller, D. (2023). Enhancing culturally engaging research: (Re)imagining high impact research practices for undergraduate students. *New Directions for Student Services*, *2023*(181), 29–40. https://doi.org/10.1002/ss.20453

Hurtado, S., & M. Kevin Eagan, Tanya Figueroa, B. E. H. (2016). Reversing Underrepresentation: The Impact of Undergraduate Research Programs on Enrollment in STEM Graduate Programs Sylvia, (0757076), 1–23.

Lane, T. B. (2016). Research Environments as Counterspaces? Examining Spaces that Inhibit and Support Science Identity Development for Black Students in STEM. *Urban Education Research and Policy Annuals*, *4*(1), 160.

Leath, S., Quiles, T., Samuel, M., Chima, U., & Chavous, T. (2022). "Our Community Is So Small": Considering Intraracial Peer Networks in Black Student Adjustment and Belonging at PWIs. *American Educational Research Journal*, *59*(4), 752–787. https://doi.org/10.3102/00028312221092780

Leath, S., & Chavous, T. (2018). Black women's experiences of campus racial climate and stigma at predominantly White institutions: Insights from a comparative and within-group approach for STEM and Non-STEM majors. Journal of Negro Education, 87(2), 125–139. https://doi.org/10.7709/jnegroeducation.87.2.0125

Limeri, L. B., Asif, M. Z., Bridges, B. H. T., Esparza, D., Tuma, T. T., Sanders, D., & Dolan, E. L. (2019). "Where's my mentor?!" Characterizing negative mentoring experiences in undergraduate life science research. *CBE—Life Sciences Education*, 18(4), ar61. 10.1187/cbe.19-02-0036

Museus, S. D., Zhang, D., & Kim, M. J. (2016). Developing and Evaluating the Culturally Engaging Campus Environments (CECE) Scale: An Examination of Content and Construct Validity. *Research in Higher Education*, *57*(6), 768–793. https://doi.org/10.1007/s11162-015-9405-8

Ngassa, F. N. (2013). Mentoring undergraduate research: Opportunities and challenges. ACS Symposium Series, 1156, 39–50. https://doi.org/10.1021/bk-2013-1156.ch004

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*, *16*(1). https://doi.org/10.1177/1609406917733847

Santos, S. J., & Reigadas, E. T. (2005). Understanding the Student-Faculty Mentoring Process: Its Effects on At-Risk University Students. *Journal of College Student Retention: Research, Theory & Practice*, *6*(3), 337–357. https://doi.org/10.2190/kgvc-7218-dper-rmbc

Scandura, T. A. (1998). Dysfunctional mentoring relationships and outcomes. *Journal of Management*, 24(3), 449–467. 10.1016/S0149-2063(99)80068-3

Sinanan, A. (2016). The value and necessity of mentoring African American college students at PWI's. *Journal of Pan African Studies*, *9*(8), 155-166.

Solórzano, D. G., & Yosso, T. J. (2002). Critical race methodology: Counter-storytelling as an analytical framework for education research. *Qualitative inquiry*, *8*(1), 23-44.

Schneider, K. R., Kuperman, A., Watts, A., Barulich, D., & Campbell, T. (2021). Tracking and Assessing Undergraduate Research Campus-wide: Demographics,

Academic Success, and Post-Graduation Plans. Journal of the Scholarship of Teaching and Learning, 21(1). https://doi.org/10.14434/josotl.v21i1.30290

Thomas, D. R. (2006). A General Inductive Approach for Analyzing Qualitative Evaluation Data. *American Journal of Evaluation*, *27*(2), 237–246. https://doi.org/10.1177/1098214005283748

Williams, D. (2018). *Examining the Impact that Mentoring Has on Minority Students at Predominately White Institutions* (Order No. 10825019). Available from ProQuest Dissertations & Theses A&I; ProQuest Dissertations & Theses Global. (2066657596). https://www.proquest.com/dissertations-theses/examining-impact-that-mentoring-has-on-minority/docview/2066657596/se-2

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The Power of Intentional Programming: Amplifying Student Voices as a Catalyst for Student Engagement at HBCUs

Jason D. Etheridge

Abstract

Student engagement is a critical factor in retention and success, particularly at Historically Black Colleges and Universities (HBCUs). This study explores the development and implementation of intentional programming designed to foster inclusion, leadership, and academic success at an HBCU in the southeastern United States. Using a student-centered approach, initiatives such as leadership conferences, study halls, and identity-affirming programs were developed to address gaps in student engagement. Through qualitative data collection and student feedback analysis, findings suggest that integrating student voices into programming enhances institutional responsiveness, strengthens campus culture, and improves retention. This study highlights best practices, challenges, and implications for student-centered programming in higher education.

The Power of Intentional Programming: Amplifying Student Voices as a Catalyst for Student Engagement at HBCUs

Higher education institutions bear the responsibility of developing inclusive programming that reflects the diverse needs of their student populations. According to Kuh et al. (2005), student engagement is a fundamental mechanism for fostering connections to campus culture, ultimately contributing to academic success. While academic achievement remains a key institutional priority, fostering inclusivity, equity, and diversity should be regarded as equally essential components of the student experience. Developing programming that effectively engages all student populations requires intentionality, strong campus connections, and a comprehensive understanding of student needs (Kuh, 2008; Tinto, 1993). More importantly, programming should be designed with direct student input, as their participation and engagement ultimately shape their sense of belonging and connection to the campus community (Inkelas et al., 2008).

Student engagement encompasses various dimensions, including leadership development, career training, communication skills, guest lectures, social and recreational activities, and opportunities for participation in student organizations and clubs. Collectively, these initiatives contribute to a holistic collegiate experience. However, many institutions struggle to fully address the diverse needs of their student body due to an insufficient understanding of their students' identities, backgrounds, and lived experiences. Research indicates that living-learning communities and other structured engagement initiatives play a critical role in strengthening students' sense of belonging and improving retention rates by fostering strong campus connections through intentional programming (Spanierman et al., 2013; Purdie & Rosser, 2011). Actively integrating student perspectives into the design of engagement programming enhances inclusivity and belonging at HBCUs and also promotes sustained engagement, improved retention, and graduation outcomes (Ghebreyessus et al., 2021; Hawkins, 2023; Samayoa et al., 2018).

The concept of student voice is central to this endeavor. Healy, Flint, and Harrington (2014) define "student partnerships" as collaborations between students, faculty, staff, and administrators aimed at shaping meaningful engagement experiences. Within an Office of Student Life, Student Engagement, or Student Activities, these partnerships are especially vital, as these offices serve as primary points of contact for students navigating their campus involvement. When effectively implemented, student partnerships elevate student leadership, enrich co-curricular engagement, and foster collaborative program development, ensuring that institutional programming is not only responsive to student needs but also actively shaped by those it seeks to serve (Kuh, 2008; Kezar & Holcombe, 2019).

This study presents an empirical examination of the development, implementation, and challenges associated with intentional student programming. The analysis includes examples such as a comprehensive study hall program, a men's and women's planning conference, a conference designed to support members of the LGBTQ+ community, and programming tailored to assist students, faculty, and staff who practice Islam. These initiatives were developed on the campus of a Historically Black College or University (HBCU) in the southeastern United States.

Theoretical Framework

Student engagement and inclusion are critical factors in academic success, particularly for students from historically marginalized communities (Tinto, 1993; Strayhorn, 2018). Theoretical research has highlighted several models and theories that align. The following serves as a framework for intentional programming with student voice as a primary partner.

Student Engagement Theory (Kuh, 2005)

Kuh's Student Engagement Theory emphasizes that student involvement, in academic and co-curricular activities, is essential for success. He identifies "high-impact practices" such as undergraduate research, learning communities, and service learning as critical to student development. Engagement is linked to higher retention and graduation rates, as students who actively participate in meaningful campus experiences are more likely to persist. Institutions play a key role in fostering engagement by creating supportive environments that promote interaction among students, faculty, and staff.

Tinto's Model of Student Retention (1993, 2012)

Tinto's model suggests that student retention is influenced by both academic and social integration. Students who feel connected to their institution through faculty relationships, peer support, and campus involvement are more likely to persist. His framework highlights the role of institutional commitment, early interventions, and structured support programs in reducing dropout rates. Tinto argues that successful retention strategies require institutions to create inclusive environments where students develop a strong sense of belonging and purpose, reinforcing their commitment to completing their education.

Culturally Relevant Pedagogy (Ladson-Billings, 1995)

Ladson-Billings' Culturally Relevant Pedagogy (CRP) framework promotes inclusive teaching that affirms students' cultural identities while fostering academic excellence. CRP consists of three core principles: academic success, cultural competence, and critical consciousness. Educators using this approach validate students' diverse backgrounds, incorporate culturally meaningful content, and encourage critical thinking about social inequalities. In higher education, CRP supports the development of programming that acknowledges students' lived experiences, leading to more inclusive and equitable learning environments that improve student engagement, retention, and success.

Inclusive Excellence Framework (AAC&U, 2005)

The Inclusive Excellence Framework, developed by the Association of American Colleges and Universities (AAC&U), integrates diversity, equity, and inclusion into institutional

policies, curricula, and student experiences. It emphasizes that inclusion should not be an isolated initiative but rather a core component of academic excellence. This model encourages institutions to create environments that recognize and support underrepresented students while promoting equitable learning opportunities. By embedding diversity into the institutional culture, Inclusive Excellence enhances student engagement, fosters belonging, and improves overall educational outcomes for historically marginalized populations.

Sense of Belonging Theory (Strayhorn, 2012)

Strayhorn's Sense of Belonging Theory suggests that belonging is a fundamental student need, particularly for underrepresented groups. Students who feel connected to their campus community, through peer relationships, faculty support, and inclusive programming, are more likely to persist and succeed. The theory highlights that belonging is dynamic and context-dependent, shaped by students' interactions and lived experiences. Institutions can enhance students' sense of belonging by creating affirming spaces, supporting identity-based organizations, and fostering meaningful engagement opportunities, ultimately improving retention and academic achievement.

Student Voice & Partnership Models (Healey, Flint, & Harrington, 2014)

Healey, Flint, and Harrington advocate for student-faculty partnerships where students play an active role in shaping their educational experiences. This model moves beyond traditional student involvement by positioning students as co-creators in curriculum design, institutional decision-making, and co-curricular programming. By incorporating student voices, institutions develop more responsive and inclusive practices that enhance engagement, academic success, and student agency. Partnerships foster a culture of shared responsibility, strengthening institutional effectiveness and empowering students to contribute meaningfully to their educational environments.

These theoretical perspectives provide a foundation for designing intentional programming that prioritizes student voice, engagement, and inclusion. By integrating these models, institutions can develop equitable and student-centered initiatives that support retention, academic success, and holistic student development.

Thought Process Behind Program Development

Understanding Campus Culture for Effective Student Programming

Effective student programming begins with a comprehensive understanding of student needs, institutional priorities, and the overarching goal of fostering an inclusive campus environment. The initial step in this process involves assessing the current campus culture by examining institutional policies, historical practices, implementation constraints, and previous successes. Additionally, qualitative insights from students, student leaders, and campus stakeholders provide valuable perspectives that inform program development (Kuh, 2008; Tinto, 1993).

A thorough cultural assessment helps identify patterns and establish institutional norms. However, it is important to approach subjective narratives from colleagues and students with an awareness of perceptual variance. While certain aspects of these narratives may be grounded in factual experiences, others may be shaped by emotional responses. Both contribute to program development: factual details inform logistical planning, while emotional insights help measure perceived impact and engagement (Healy et al., 2014).

The depth and accuracy of the assessment are enriched by collecting multiple data points. The more comprehensive the data collection process, the stronger the foundation for effective programming. However, the time required for assessment is fluid and dependent on environmental constraints, institutional culture, and the duration of engagement with a particular campus community. Given these variables, understanding the pulse of the student body, through the voices of those who directly influence and experience campus life, serves as a critical starting point for intentional programming.

Institutional Priorities and the Role of Student Engagement Professionals in Program Development

Program development in higher education should align with the values, traditions, and goals that an institution seeks to promote among its student body. Institutional programming, such as speaker series, convocations, historical events, annual celebrations, and alumni engagement activities, reinforce these values while offering students holistic developmental experiences (Kezar & Holcombe, 2019).

Higher education professionals responsible for student engagement should be recognized as experts in understanding student interests and campus culture. Their involvement in the decision-making process ensures that institutional programming is both relevant and compelling for students. By leveraging their professional insight into program development, institutions can design initiatives that naturally appeal to student participation, reducing reliance on external incentives such as giveaways, raffles, or attendance-based mechanisms.

This is not to suggest that students should be excluded from the program implementation process. Rather, incorporating the perspectives of experienced professionals who can accurately interpret and communicate student needs ensures that programming is developed in ways that resonate with diverse student populations. Their role is instrumental in supporting institutional efforts to create impactful, inclusive, and meaningful engagement opportunities (Ghebreyessus et al., 2021; Healy et al., 2014).

Strategic Development and Implementation of Student-Centered Programming

This study examines the creative and strategic processes involved in the development of several student engagement initiatives at the host institution. The creation of these programs were informed by a thorough analysis of campus climate, highlighting gaps in student engagement and institutional support. Based on these findings, the following initiatives were designed to address specific student needs and enhance campus inclusivity.

The Legacy Builder's Men's Conference & Embracing the Next Level Women's Conference

These gender-based cohort-styled achievement programs were developed in response to the guiding question: *How can we create cohort-styled, gender-based achievement programs where students serve as the foundation of their development?* The solution was to introduce these initiatives through men's and women's conferences, which served multiple purposes:

- Introducing students to impactful speakers who were relatable and did not hold a "celebrity" status.
- Inspiring students through engaging sessions and role models with similar lived experiences.
- Offering students the opportunity to express their needs and expectations regarding the creation of a cohort-based achievement program.

Everyone Loves Study Hall & Amps in the Amphitheater

These initiatives were developed to address the needs of students who may not be interested in traditional campus activities such as parties or student organizations. The guiding question for these programs was: What can be created to engage students who do not attend conventional campus events?

These open-access programs required no prerequisites for participation and were designed to foster a sense of belonging. *Everyone Loves Study Hall* provided a communal space for academic support, while *Amps in the Amphitheater* created a casual, social atmosphere where students could gather for live music during lunchtime on Thursday afternoons. These efforts aimed to foster belonging through alternative forms of engagement.

ASU Renaissance & Iftaar/Quiet Room

These programs were developed to acknowledge and support historically underrepresented student populations, including members of the LGBTQIA+ community and those who practice Islam. The ASU Renaissance addressed the guiding question: How can the university demonstrate recognition, appreciation, and celebration of its LGBTQIA+ students, faculty, and staff? Similarly, the Iftaar/Quiet Room program was guided by the inquiry: How can the university support the religious practices of its Islamic students, faculty, and staff?

Both programs were designed to foster institutional acknowledgment and provide spaces for identity affirmation and religious observance, ensuring that these communities felt valued and supported on campus.

Guiding Principles for Program Development

Establishing guiding questions as a foundational step allowed for open and creative thinking in program design. Students, faculty, and staff with relevant experience or interest were invited to participate in the development process. Once the conceptual framework was developed, student groups were empowered to take ownership of the implementation, fostering a sense of agency and leadership.

All initiatives followed a structured approach that included:

- Guiding Questions – Establishing a foundation for program purpose and direction.
- Creative Forethought – Encouraging innovative and inclusive program design.
- Collaborative Preparation – Engaging key stakeholders, including students, faculty, and staff.
- Student-Driven Implementation – Empowering students to lead and execute program initiatives with institutional support.

This intentional and collaborative approach ensured that programming was responsive to student needs, fostered inclusivity, and contributed to a dynamic and engaging campus environment.

Case Studies of Inclusion in Practice

Everyone Loves Study Hall & Amps in the Amphitheater

Academic engagement and social connection are pivotal to student retention and success, necessitating innovative approaches that meet students in their current contexts (Tinto, 1975). Regularly scheduled programs provide students with opportunities they can incorporate into their weekly routines, fostering a sense of community and belonging. Two such initiatives, Amps in the Amphitheater and Everybody Loves Study Hall, exemplify these principles.

Amps in the Amphitheater

Purpose and Student Need. This program offers a weekly social gathering every Thursday from 11:00 a.m. to 1:00 p.m. in the campus amphitheater adjacent to the cafeteria. Students are invited to engage with peers before, during, or after their meals while enjoying music from a student DJ, exploring club and organization tables, and participating in small events. Such social integrations play a pivotal role in student retention, particularly for students from diverse backgrounds (Strayhorn, 2018).

How Student Voice Shaped It. Initially curated by the Director of Student Life, the program evolved through active contributions from student leaders within the activities board, Student Government Association (SGA), and Student Life Ambassadors. Their input transformed the event from a simple DJ session into a vibrant gathering featuring multiple student groups, thereby enhancing its appeal and inclusivity.

Key Takeaways and Results. Amps in the Amphitheater has proven to be a straightforward yet effective mechanism for boosting student morale and fostering connections. It provides numerous opportunities for clubs and organizations to engage with the broader student body, thereby enriching the campus community.

Everybody Loves Study Hall

Purpose and Student Need. Research indicates that self-directed study halls can significantly enhance procedural skill acquisition, especially when faculty availability is limited (McGaghie et al., 2023). Recognizing the importance of providing a conducive environment for independent academic engagement, this weekly study hall program offers students a dedicated space to focus on their studies outside of classroom hours. Held in a spacious ballroom with controlled entry and exit points, the setting features soft background music to create a calming atmosphere. Students are encouraged to find a comfortable spot and engage with their academic work at their own pace.

How Student Voice Shaped It. Feedback from participants highlighted desires for amenities such as light snacks, access to tutors, and proximity to campus eateries. In response, the program relocated to a venue adjacent to the campus Starbucks, established a partnership with a local grocery store to provide fresh baked goods, and incorporated student tutors to offer on-the-spot academic assistance.

Key Takeaways. Everybody Loves Study Hall effectively addresses the needs of students seeking structured, supportive environments for academic engagement. By bridging efforts between student affairs and academic affairs, the program exemplifies collaborative strategies that bolster student success. Overall, it offers a practical, community-based approach to academic achievement, fostering both individual growth and collective engagement.

The Legacy Builder's & Embracing the Next Level Conferences

Empowering students through leadership and personal development requires intentional programming that aligns with their lived experiences and aspirations. Research suggests that student engagement initiatives that incorporate mentorship and leadership training significantly impact student retention and academic success (Kuh, 2008; Tinto, 2012). In response to the need for targeted engagement initiatives, the Legacy Builder's Men's Conference and the Embracing The Next Level Women's Conference were developed to provide intentional programming tailored to male and female students, respectively.

Purpose and Student Need

Recognizing a gap in structured leadership development programs for male and female students, a comprehensive initiative was conceptualized. The conferences served two primary functions:

1. Introducing students to impactful speakers—allowing them to engage with role models who could provide insights into leadership and success.
2. Collecting student input—ensuring that their voices were central to the development of a long-term cohort-based achievement program.

To achieve these goals, two parallel multi-day conferences were held—one for male students and one for female students. Each event featured keynote speakers (three for the men's conference and two for the women's conference) and interactive sessions facilitated by the

Director of Student Life. These sessions encouraged students to provide feedback and contribute to the framework for a sustained leadership initiative.

How Student Voice Shaped It

A team of nine student volunteers collaborated with the Director of Student Life to develop and execute the conferences. Their contributions included:

- Designing the program itinerary
- Selecting meal options and event decorations
- Establishing a color scheme and clothing theme
- Curating music and entertainment
- Serving as event hosts to foster a welcoming environment

This student-led approach ensured that the conferences were engaging, culturally relevant, and aligned with student interests. Additionally, participating students actively engaged with speakers and provided valuable data that informed the development of long-term leadership initiatives.

Key Takeaways

The conferences provided critical insights into student needs and preferences, reinforcing the importance of student voice in leadership development programming. The analysis of student responses revealed the following key takeaways:

- Students value mentorship opportunities and benefit from exposure to non-celebrity speakers who share practical leadership insights.
- Interactive programming fosters engagement—students responded positively to sessions where they could contribute to shaping future initiatives.
- Student-led planning increases participation—students were more likely to attend and engage in programs that reflected their input in planning and execution.

By incorporating student voices into both the design and implementation of leadership initiatives, institutions can create sustainable programming that fosters engagement, retention, and long-term student success (Strayhorn, 2018). Moving forward, the data collected from these conferences will inform the continued development of student achievement initiatives that prioritize inclusion, mentorship, and professional development.

Table 1: Student Feedback and Suggested Programmatic Responses from the Men's & Women's Conferences

Category	Key Themes & Student Feedback	Suggested Programmatic Response
Residential Experience	Need for safety measures, RA-led programming, and financial literacy spaces.	Implement security enhancements, train RAs, and create financial literacy workshops.
Social/Emotional Programming	Interest in mental health support, alumni mentorship, and male engagement.	Expand mental health initiatives, develop mentorship programs, and create male-focused spaces.
Financial Literacy	Strong interest in investing, credit-building, and taxation.	Offer interactive workshops and gamify financial literacy.

ASU Historical Knowledge	Desire to learn about ASU alumni and campus history.	Develop storytelling initiatives and digital archives.
Gamified Success Markers	Preference for career-related rewards.	Align gamification with professional development.
Entrepreneurship	Interest in long-term entrepreneurship and creative ventures.	Introduce foundational workshops and alumni networking.

ASU Renaissance & Iftaar and Quiet Room

Creating spaces of belonging is essential for student success, particularly for LGBTQ+ and Muslim students who often navigate unique challenges in higher education. Even on some Historically Black Colleges and Universities (HBCU) campuses, students from certain demographics may lack intentional connections. As access to information grows, many campuses are becoming more deliberate in engaging underserved demographics.

Purpose and Student Need

Building upon the success of previous programming, attention shifted toward creating opportunities for underserved communities on campus. These initiatives aim to position the university to recognize, respect, and appreciate the presence of students, faculty, and staff within these demographics, ultimately improving morale, increasing retention, and solidifying the university as a safe space.

Iftaar & Quiet Room

How Student Voice Shaped It

For students, faculty, and staff who practice Islam, at least three of their five daily prayers occur during the school or workday. When asked about their current prayer locations, many responded, "I go to my dorm room/office and close the door." Aligning with the institutional goal of preparing students for global citizenship, an idea emerged to provide a dedicated space for Islamic prayer or a quiet room to reflect and refocus. Recognizing that establishing a permanent space required approval, a temporary adjustment was proposed in collaboration with students: aligning the Quiet Room's availability with Ramadan. Additionally, hosting an Iftaar (the meal at the end of a fasting day that breaks the daily Ramadan fast) to welcome all to celebrate the fasting period was suggested as a communal benefit.

ASU Renaissance

How Student Voice Shaped It

Campuses across America have populations of students who are members of the LGBTQ+ community. As with any marginalized student demographic, steps must be taken to engage them to increase their retention and graduation rates. The option of hosting a smaller conference was presented to students and was met with enthusiasm. Day one would feature a notable speaker, a panel discussion, and a resource fair, while day two would feature an invitation-only Ballroom event for students and community members to celebrate.

Key Takeaways

Due to factors beyond the office's control, both programs were denied, despite the evident need, effectiveness, and opportunity to impact these demographics. This outcome underscores that even with a thorough understanding of the student body and supporting research and data, external influences, political landscapes, and other non-institutional pressures can negatively affect program implementation.

Challenges and Lessons Learned

While inclusive programming is necessary for student success, institutional barriers such as funding constraints, administrative resistance, and cultural perceptions often impede implementation. While the creative process requires a certain level of thought, an equal amount of energy is required in building a rapport of understanding and acceptance to allow these opportunities to flourish. Additionally, mindsets across the campus community can also hinder the acceptance of certain types of programming that is beyond certain norms of thought.

Institutions work tirelessly to maintain a positive view to the broader community. Some choose to remain consistent rather than to move forward with the times and changing thought processes of the world. Off the record conversations with colleagues and those familiar with campus can inform you on some of the traditional modes of operation. Conversations with students, both student leaders and those who are not affiliated with student organizations, also give you a view of how they feel seen through the eyes of the institution. The challenge, after gaining this understanding, is how to navigate and implement an impactful program for the betterment of the students who have called for them, despite certain opposing thoughts. As described through this text, program implementation began with programs that were created and accepted by all students. Programming then moved to developing programs for traditionally accepted demographics. Finally, programming moved to development for underserved demographics. As work continues, this outline will likely remain, and other options will be explored to recognize and appreciate students in underserved demographic communities on campus.

Implications and Future Considerations

Institutions aiming to incorporate student voices into their programming must develop intentional strategies that prioritize inclusivity, adaptability, and sustained student engagement. The student body constitutes a vital component of the institutional framework, comparable to the roles of faculty and staff. Therefore, it is imperative to establish formal channels through which students can express their perspectives, ensuring their voices are acknowledged and valued across all levels of campus operations. Respecting and integrating student input is essential for the development, creation, and implementation of effective programming. While not all institutional initiatives may necessitate direct student involvement, incorporating student feedback can significantly enhance the relevance and impact of programs. Engaging students as partners in program development fosters a sense of belonging and connection to the campus culture, which research indicates is linked to increased retention and graduation rates (Sun & Holt, 2022).

Practical methods for collecting student input include establishing volunteer planning teams, soliciting feedback through surveys and focus groups, and maintaining open forums for idea exchange. These approaches not only facilitate continuous improvement of programs but also empower students, enhancing their affinity for the institution and their perceived value within the campus community. By actively involving students in institutional advancement efforts, universities can create more responsive and effective educational environments that promote student success and institutional excellence.

Furthermore, Student Affairs professionals play a pivotal role in promoting student well-being, which is closely associated with student retention in higher education institutions. This support should emphasize academic success and holistic development rather than merely responding to students' immediate wants. Although the distinction between students' needs and desires may at times become ambiguous, it is the responsibility of Student Affairs professionals to maintain a strategic focus on fostering environments that support persistence, progression, and retention. This commitment remains essential, even though many Student Affairs units traditionally operate separately from direct academic instruction.

Conclusion

Higher education programming must shift beyond traditional models and adopt student-centered approaches that reflect the lived experiences and needs of diverse student populations. Research indicates that integrating student voices into programming enhances student engagement, retention, and overall academic success (Cook-Sather, 2020; Kuh, 2008). When students are actively involved in shaping campus initiatives, they develop a stronger sense of belonging, which is directly linked to academic persistence and graduation rates (Strayhorn, 2018). Institutions that prioritize student-led initiatives have reported increased satisfaction with programming, greater student involvement, and improved institutional loyalty (Allen & Nichols, 2023).

To further these benefits, future research should explore scalable models for student-driven initiatives while addressing institutional barriers. Strategies such as leveraging student data to refine support programs (Sun & Holt, 2022) and implementing digital engagement platforms (Tinto, 2012) offer promising directions for innovation. By adopting these approaches, institutions can foster inclusive, adaptable learning environments that promote student success and long-term institutional growth.

References

Allen, J., & Nichols, C. (2023). Do you hear me? Student voice, academic success, and retention. *Student Success Journal*, 14(2). https://studentsuccessjournal.org/article/view/509/375

Association of American Colleges and Universities. (2005). *Making excellence inclusive: Diversity, equity, and inclusion as core elements of educational excellence*. AAC&U.

Cook-Sather, A. (2022). Student voice in higher education: The importance of distinguishing who and what. *Higher Education*, 84(4), 1–16. https://doi.org/10.1007/s10734-022-00851-7

Ghebreyessus, K., Ndip, E. M., Waddell, M. K., Asojo, O. A., & Njoki, P. N. (2021). Cultivating success through undergraduate research experience in a Historically Black College and University. *Journal of Chemical Education*, 99(1), 307–316.

Hawkins, L. (2023). Enhancing culturally engaging research: (Re)imagining high-impact research practices for undergraduate students. *New Directions for Student Services*.

Healey, M., Flint, A., & Harrington, K. (2014). *Engagement through partnership: Students as partners in learning and teaching in higher education*. Higher Education Academy.

Inkelas, K. K., Soldner, M., Longerbeam, S. D., & Leonard, J. B. (2008). Differences in student outcomes by types of living–learning programs: The development of an empirical typology. *Research in Higher Education, 49*(6), 495-512. https://doi.org/10.1007/s11162-008-9087-6

Kezar, A., & Holcombe, E. (2019). *Shared leadership in higher education: Important lessons from research and practice*. American Council on Education.

Kuh, G. D. (2005). *Student engagement in higher education: Theoretical perspectives and practical approaches for diverse populations*. Routledge.

Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter*. Association of American Colleges and Universities.

Ladson-Billings, G. (1995). But that's just good teaching! The case for culturally relevant

pedagogy. *Theory Into Practice, 34*(3), 159–165. https://doi.org/10.1080/00405849509543675

McGaghie, W. C., Barsuk, J. H., & Wayne, D. B. (2023). Effects of a self-directed study hall on skill acquisition in a simulation-based mastery learning curriculum. *Advances in Simulation, 8*(1), Article 12. https://doi.org/10.1186/s41077-023-00261-4

Purdie, J. R., & Rosser, V. J. (2011). Examining the academic performance and retention of first year students in living-learning communities and first-year experience courses. *College Student Affairs Journal, 29*(2), 95-112.

Samayoa, A. C., Stolzenberg, E. B., Zimmerman, H. B., & Gasman, M. (2018). Understanding Black students' social agency at Historically Black Colleges: Data from a national survey. *Frontiers in Education*.

Spanierman, L. B., Soble, J. R., Mayfield, J. B., Neville, H. A., Aber, M. S., Khuri, L., & De La Rosa, B. (2013). Living learning communities and students' sense of community and belonging. *Journal of Student Affairs Research and Practice, 50*(3), 308-325. https://doi.org/10.1515/jsarp-2013-0022

Strayhorn, T. L. (2018). *College students' sense of belonging: A key to educational success for all students* (2nd ed.). Routledge.

Strayhorn, T. L. (2012). *College students' sense of belonging: A key to educational success for all students* (2nd ed.). Routledge.

Sun, X., & Holt, D. (2022). Student engagement and voice in higher education: Students' perceptions. *Journal of Learning Development in Higher Education*, (23). https://journal.aldinhe.ac.uk/index.php/jldhe/article/view/838

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*(1), 89–125. https://doi.org/10.3102/00346543045001089

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). University of Chicago Press.

Tinto, V. (2012). *Completing college: Rethinking institutional action*. University of Chicago Press.

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The Success Equation: Scaling the PIVOT Framework for STEM & Healthcare Student Success

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Abstract

Student success in STEM and healthcare increasingly depends on intentional design of equitable, scalable pathways that integrate structured programming, immersive experiential learning, and modern workforce-aligned upskilling. This manuscript introduces the PIVOT Framework—Pathways, Innovation, Vision, Opportunity, and Transformation—as a comprehensive, evidence-driven model for reimagining student success strategies in STEM and healthcare education. The framework emphasizes early engagement, longitudinal support, and competency-based preparation, ensuring students develop the skills and professional identities necessary for success. Drawing from a range of high-impact practices—including paid internships, research-based learning experiences, mentoring structures, digital skills integration, and stackable credentialing—the manuscript demonstrates how coordinated institutional strategies improve persistence, accelerate career readiness, and expand representation in the STEM and healthcare workforce. By centering equity, adaptability, and cross-sector collaboration, the PIVOT Framework offers a scalable model for institutions seeking to prepare students for the demands of a rapidly evolving global workforce.

Keywords: STEM education, healthcare pathways, PIVOT Framework, experiential learning, career readiness, longitudinal programming, internships, equity, workforce development, stackable credentials, digital skills, mentorship, high-impact practices

The Success Equation: Scaling the PIVOT Framework for STEM & Healthcare Student Success

The PIVOT Framework—Pathways, Innovation, Vision, Opportunity, and Transformation, is a scalable solution to a persistent problem: too many students who begin in STEM and health trajectories do not persist to degree or into the professions, and those who do are still not representative of the populations they will serve. National data show that nearly half of bachelor's entrants in STEM leave the field within six years, a leakage that significantly reduces degree attainment and weakens the talent pipeline (Chen & Soldner, 2013). At the same time, the physician workforce remains markedly unrepresentative. About 6% Black and 7% Hispanic physicians versus populations of roughly 12% and 19%, respectively, while the nation faces a projected physician shortfall approaching 86,000 by 2036 (Hill, 2025; AAMC, 2024).

PIVOT's objectives are explicit: increase retention and on-time completion; modernize preparation through high-impact practices (structured mentorship, authentic experiential learning, targeted upskilling); and cultivate a representative STEM and health workforce by removing barriers that disproportionately affect first-generation and historically marginalized learners (Kuh & O'Donnell, 2013). It operationalizes these aims through five integrated pillars—*Pathways*: structured academic and career progression with proactive advising and stackable credentials; *Innovation*: equitable access and academic relevance via simulation, digital fluency, and flexible delivery; *Vision*: future-of-work skillsets (data literacy, interprofessional teamwork, digital intelligence, entrepreneurial thinking and clinical professionalism); *Opportunity*: employer partnerships that convert learning into paid experiences, apprenticeships, and clear hiring pathways; and *Transformation*: scaling impact through governance, layered funding, and fundamental changes to institutional culture, practice and policy.

Together, these pillars shift isolated programs into a coordinated, operationalized system that raises persistence and completion and accelerates a diverse, practice-ready STEM and healthcare workforce**,** even as recent improvements in medical-school matriculant diversity indicate progress while gaps persist (AAMC, 2024).

Pathways: Structured Academic and Career Progression

Institutions that clearly map, sequence, and clearly communicate student pathways, from entry to completion and employment, see stronger early momentum and persistence, especially when reforms are implemented at scale (Bailey, Jaggars, & Jenkins, 2015; Jenkins, Lahr, & Fink, 2020). A leading example is CUNY's Accelerated Study in Associate Programs (ASAP), which pairs guided pathways with proactive advising, structured schedules, and financial support. ASAP has achieved a 53% three-year graduation rate about double comparison groups in rigorous evaluations (Scrivener et al., 2015; MDRC, 2017; Bailey et al., 2017).

Stackable, career-aligned credentials also make paths visible and navigable. Miami Dade College publishes credential maps by meta-major that show how industry certifications ladder into STEM degrees, an approach reinforced by the national Right Signals initiative to make credentials transparent and employer-legible (AACC, 2016; Miami Dade College, 2017). Given that the U.S. now hosts more than 1.0 million distinct credentials across institutions, industry, and noncredit providers, clear, competency-based maps are essential to translate learning to work (Credential Engine, 2023).

Early college/dual-enrollment on-ramps are a proven accelerator within structured pathways. More than 1.4–1.5 million high-school students take college-credit courses annually,

and participation is associated with higher college enrollment, faster credit accumulation, and increased degree completion, with particularly strong effects for first-generation and low-income students when designed for equity (An, 2013; Edmunds et al., 2012; NCES, 2022).

Articulated research pathways such as NSF's Louis Stokes Alliances for Minority Participation (LSAMP) demonstrate durable effects on advancement for underrepresented students: alliances report substantial multiyear gains in URM STEM enrollment and baccalaureate production, alongside elevated transition rates into graduate STEM study relative to peers (NSF, 2021; Clewell et al., 2006).

Creating pathways earlier in the pipeline cannot be forgotten, as early and intentional engagement is critical to developing the attitudes, skills, and identities that sustain persistence in STEM and health fields. Data from Morehouse School of Medicine's Health Careers Opportunity Program (HCOP) Academy further demonstrates the transformative potential of longitudinal programming. Through strategies such as offering targeted one-on-one tutoring, providing preparatory courses for key entrance exams, and embedding near-peer mentoring, the HCOP Academy has achieved exceptional outcomes. Among its graduate participants, 90%+ successfully matriculated into medical school, 100% of supported high school students enrolled in college, and more than 92% declared STEM majors as a result of sustained programming and wraparound support (R. Clark, personal communication, August 26, 2025).

A clear example of this longitudinal approach at the institutional level can be found in Oregon Health & Science University's On Track OHSU! program, which currently supports 3,000+ middle school students across feeder schools that transition into the high schools they serve, as well as more than 475 high school students receiving direct, targeted programming. This dual-level structure intentionally builds continuity by engaging students early and maintaining consistent support as they advance academically. What distinguishes On Track is its embedded staffing model, where Community Managers and Student Success Facilitators are placed directly within partner high schools, often with dedicated office and classroom space to implement programming. This intentional integration fosters strong collaboration with school leadership and partner teachers, ensuring alignment, trust, and consistent student engagement throughout the academic year. Across their middle schools, 89% of students demonstrate measurable growth in mindset development, which rises to 97% among participating high school students. Similarly, 72% of middle school students report a stronger sense of belonging and identity in STEM/health fields, increasing to 90% by high school. Among high school participants, 98% report heightened interest in pursuing STEM/health careers, and 97% feel better prepared for their future educational and professional journeys (J. W. Lockhart, personal communication, August 25, 2025). Together, these findings underscore the importance of capturing attitude, perception, and behavior shifts earlier in the pipeline, as longitudinal engagement—starting in middle school and sustained through high school—creates momentum that meaningfully predicts increased matriculation and success in postsecondary STEM and health pathways.

Under PIVOT, "Pathways" integrates these evidence-based elements, guided program maps, proactive advising, stackable credentials, dual-enrollment bridges, and research/transfer articulation, into a cohesive operating model. By incorporating longitudinal programming that builds sustained engagement and skill development over time, PIVOT strengthens early intervention efforts and continuous support, resulting in fewer decision points for students, clearer milestones for students and advisors, and measurable gains in persistence, completion, and equitable transition from classroom to career (Bailey et al., 2015; Jenkins et al., 2020).

Innovation: Driving Equitable Access and Academic Relevance

Innovation is a cornerstone of the PIVOT Framework, not only in the adoption and strategic integration of technology but also in rethinking how education is accessed, delivered, and experienced. In this context, innovation includes flexible course delivery models, AI-enhanced academic supports, and gamified or challenge-based learning that increase student engagement and performance. Meta-analyses show gamification yields small-to-moderate positive effects on cognitive, motivational, and behavioral outcomes, and reviews of challenge-based learning link the approach to gains in problem-solving and practical application, evidence that supports intentional use of these designs in high-enrollment, foundational college level courses (Sailer & Homner, 2020; Leijon et al., 2022).

Model programs underscore the payoff. Arizona State University's adaptive courseware and active-learning redesigns yielded a 17% rise in College Algebra success after integrating ALEKS (Every Learner Everywhere, 2022), with vendor reports showing pass rates moving from 62% to 74% in two years when andragogy and platform are aligned (McGraw Hill, 2018). At the two-year level, Bunker Hill Community College's Learn & Earn pairs paid, industry-aligned work ($18+/hour) with a credit-bearing internship course, translating classroom learning into real-time application (Boston Foundation, 2021). To expand access and lower cost, large-scale open education research (OER) initiatives have saved students $10.7M across 160,000 enrollments, with several colleges seeing higher credits earned, especially for Pell-eligible learners (Achieving the Dream/SRI, 2020). Because smartphone-only internet use is disproportionately common among lower-income adults, mobile-first courseware and advising reduce digital barriers (Pew Research Center, 2024). Finally, AI nudges (personalized, digital prompts delivered AI systems) like Georgia State's "Pounce" chatbot reduced fall non-matriculation by 4% in a randomized trial, illustrating how automation can scale proactive advising (Georgia State University, 2024). Consistent with human-centered design principles, soliciting student input to shape courses and policies further strengthens relevance and outcomes (NASEM, 2018). Together, these innovations advance PIVOT's aims—equitable access, academic relevance, and measurable gains in engagement, progression, and completion.

Vision: Developing Future of Work Skillsets

As workforce demands evolve, postsecondary institutions must embed future-of-work skillsets into their academic and co-curricular offerings. These skill sets go beyond technical competencies to include interdisciplinary collaboration, data fluency, digital agility, emotional intelligence, and entrepreneurial thinking. Employer surveys consistently prioritize these abilities: in NACE's most recent Job Outlook, problem-solving (88.7%)**,** teamwork (78.9%), and written communication (72.7%) are among the top attributes employers seek on new-grad resumes (NACE, 2024). At the same time, technology adoption is accelerating with over 75% of companies expect to adopt big data, cloud computing, and AI within five years, and 86% foresee integrating digital platforms/apps, underscoring the need for data/AI literacy and adaptable skillsets (WEF, 2023).

The University of Texas at El Paso (UTEP) has adopted an institution-wide focus on 21st-century skill development through the EDGE Program, which ensures that students participate in High-Impact Practices (HIPs) such as undergraduate research, service learning, entrepreneurship, and internships; UTEP's NSSE metrics show 69% of first-year students and 80% of seniors engage in at least one high impact practice, with 49% of seniors reporting two or

more, which is levels above peer benchmarks. EDGE also emphasizes e-portfolios to help students articulate competencies to employers; multi-campus evidence links e-portfolio use to gains in GPA and retention (course GPA rising from 3.213 to 3.508 and cumulative GPA from 2.933 to 3.095 in one implementation). (UTEP, 2020; AAC&U Peer Review synthesis).

Similarly, Wake Tech Community College aligns curriculum with employer-identified competencies by embedding micro-credentials/digital badges into courses. Students can display these on resumes/CVs and LinkedIn profiles. Wake Tech's collaboration with IBM adds industry-recognized Open Badges (a co-branded blockchain badge), positioning learners inside a rapidly scaling credential ecosystem with 1,076,358 unique U.S. credentials counted in 2023. (Wake Tech; Credential Engine, 2023; IBM, 2025).

Under the Vision pillar, PIVOT-adopting institutions integrate interdisciplinary courses, simulation labs, capstones, micro-credentials, and career-readiness modules, guided by employer-validated frameworks, to graduate STEM learners who not only secure roles but also reshape teams, industries, and systems through adaptable, data-informed, human-centered practice. (NACE, 2024; WEF, 2023).

Opportunity: Building Industry Partnerships & Workforce Pathways

Partnerships with employers, community organizations, and government agencies are the engine that converts learning into paid, career-relevant experience, and when designed with equity at the center, they widen access to diverse STEM and healthcare talent (NACE, 2024). Under PIVOT, partnerships are built to (1) co-design curricula with employers, (2) embed paid work-based learning tied to academic credit, (3) guarantee clear hiring pathways (interviews, apprenticeships, job offers), and (4) remove participation barriers (stipends, transit support, flexible schedules) that disproportionately affect first-generation and historically marginalized students (Lightcast, 2025).

Community College Model

Arizona's Maricopa County Community College District aligns with semiconductor employers (Intel, TSMC) to deliver accelerated technician pathways with embedded paid work and guaranteed interviews, creating direct employment routes for learners who might otherwise be screened out by traditional hiring (MCCCD, 2022; MCCCD, 2024; MCCCD, 2025).

Four-year Model

Georgia State University's Panther PRIME layers mentorship and wraparound support for underrepresented men with a robust employer network that prioritizes paid internships aligned to majors and career goals, turning experiential learning into job offers (GSU News, 2020; GSU Career Service).

Institutional Infrastructure

Career centers, academic advising, alumni networks, and faculty champions are integrated with labor-market intelligence so students, especially those from underrepresented groups, can target high-demand, high-wage roles in health and STEM (Lightcast, 2025).

Accountability for Diversity Outcomes

Partner MOUs include equity benchmarks (percent of paid placements for underrepresented learners, conversion and retention targets, pay transparency), while institutions track who gets access to opportunities and close gaps in real time (NACE, 2024).

In short, PIVOT's Opportunity pillar turns isolated employer relationships into equitable, stackable workforce pathways that both meet regional talent needs and grow a community-reflective STEM and healthcare workforce (NACE, 2024; Lightcast, 2025).

Transformation: Scaling Impact & Institutionalizing Success

Sustainable transformation occurs when small, high-impact initiatives become standard culture, practice, and policy. California's systemwide Guided Pathways effort illustrates this shift: 100+ colleges redesigned programs and supports around student-centered pathways, and statewide credentials rose roughly 25% from the 2016–17 baseline to 2021–22 (from 117,700 to 147,500 awards), signaling movement from pilots to scaled outcomes (CCCCO, 2022). The state catalyzed this work with a $150 million one-time Guided Pathways investment in 2017–18, enabling colleges to institutionalize program maps, proactive advising, and work-based learning as core practices (CCCCO, 2017; LAO, 2017).

Transformation also requires measurement and continuous improvement. California's public dashboards, LaunchBoard and DataVista, allow colleges to track momentum and completion disaggregated by race/ethnicity, Pell status, and age, supporting targeted action to close equity gaps essential to building a diverse STEM and healthcare workforce (LaunchBoard/DataVista, 2025). At the college level, Northern Virginia Community College (NOVA) employs strategic dashboards and equity scorecards to monitor retention, completion, transfer, employment, and licensure, keeping leaders, faculty, and advisors aligned to common KPIs (NOVA, 2025).

Finally, sustainable change rests on faculty development that embeds evidence-based teaching at scale. A meta-analysis across 225 STEM courses found that active learning improved exam performance (6%-point gain) and cut failure rates by 55% versus lecture. These effects are especially consequential in gateway college courses where first-generation and historically marginalized students are disproportionately lost (Freeman et al., 2014). Accordingly, the PIVOT model urges longitudinal investment in consistent faculty learning, institutional research capacity, and governance (policy, funding, accreditation) that bakes equity into program review, hiring pipelines, and employer partnerships. In practice, that means disaggregated targets, equity-tied MOUs with clinical/industry partners, and routine gap analyses, so scaled reforms translate into higher retention, completion, and workforce entry for a more representative STEM and healthcare talent pool (CCCCO, 2022; NOVA, 2025).

Scaling High-Impact Practices (HIPs) for Student Success

This section details how the PIVOT Framework scales three evidence-based, high-impact practices, mentorship, experiential learning, and upskilling, to boost persistence, completion, and workforce readiness in STEM and healthcare. The urgency is clear: the U.S. faces a projected shortfall of up to 86,000 physicians by 2036, underscoring the need for robust, equity-minded pathways into health professions (AAMC, 2024). Research consistently links high-impact

practices to stronger student outcomes: internships convert to jobs at higher rates and with better salaries, and recent employer surveys still show meaningful offer advantages for interns; undergraduate research experiences increase interest and persistence in STEM and broaden participation; and multi-campus studies associate high-impact practice participation with higher six-year completion (McDaniel and Van Jura, 2022). At the same time, labor-market signals show that digital skills carry significant wage premiums across sectors, making targeted upskilling essential to graduates' competitiveness. Accordingly, PIVOT integrates structured mentoring networks, credit-bearing clinical/research placements, and stackable, competency-based micro-credentials, supported by flexible curricula, faculty development, digital advising, and diverse funding, to move high impact practices from isolated programs to a coordinated system for student success and equitable workforce development (Chittum et. al, 2022).

Mentorship: A Proven Driver of Retention and Identity Formation

Mentorship programs that scale effectively are embedded in the student journey and not offered as optional add-ons. Across higher education and in both STEM and Medical programs, rigorous reviews link high-quality mentoring to higher academic performance, persistence, and degree attainment, with tremendous benefits for first-generation and historically underrepresented students. The National Academies further emphasize identity development, belonging, and culturally responsive practice as critical mechanisms (Eby et al., 2013; Gershenfeld, 2014; NASEM, 2019).

At North Carolina A&T State University, the Aggie Success Academy and related first-year mentoring initiatives pair peer/faculty mentoring with study strategies, identity work, and professional exploration. This embedded approach supports student transition through gateway STEM courses (North Carolina A&T, 2025a, 2025b). At San Jacinto College (TX), faculty/staff mentoring models, specifically the Men of Honor and MOSAIC models, operate alongside advising and career coaching. During a ten-year period of scaled student-success reforms, San Jacinto recorded a 140% increase in certificate/degree completers (2007-2015) and rising fall-to-fall persistence (from 73%-79%), improvements the college attributes to integrated supports that include mentoring (NCHEMS, 2017; San Jacinto College, 2016).

Within academic medicine, Morehouse School of Medicine's Mentoring M.E. (Mentoring Academy) uses constellation-based and e-mentoring models aligned with national best practices, while Oregon Health & Science University's M.D. Diversity Mentorship Program pairs underrepresented in medicine and first-gen medical students with physician mentors as part of the school's retention strategy (MSM, n.d.; OHSU, 2019, 2025). The bottom line is when mentoring is built into program maps (bridge programs, first-year seminars, research/clinical placements), belonging and self-efficacy rise, and so do retention, completion, and progression into STEM and healthcare careers, directly advancing a more representative workforce (NASEM, 2019; Eby et al., 2013).

Experiential Learning: A High-Impact, Scalable Practice

Experiential learning is essential for preparing students for STEM and healthcare careers, particularly for first-generation and historically marginalized learners. Course-based undergraduate research experiences (CUREs) have shown large, equity-relevant gains: in a longitudinal study, students who completed all three semesters of a freshman research program

had a 94% predicted probability of earning a STEM degree versus 71% for matched peers, and 83% versus 66% six-year graduation—effects that held across gender, race/ethnicity, and first-generation status (Rodenbusch et al., 2016).

In healthcare, simulation makes authentic clinical exposure scalable without sacrificing outcomes. The National Council of State Boards of Nursing (NCSBN) reports that up to 50% of traditional clinical hours can be replaced with high-quality simulation with equivalent educational results—a critical lever for capacity-constrained programs (NCSBN Simulation Study). At the Community College of Baltimore County, licensure data show consistently high performance across health programs (Dental Hygiene 100% NDHE pass in FY2023; RN NCLEX 93.0%), with 87% of graduates employed within one year, demonstrating how well-designed simulation and clinical practice translate to workforce readiness (CCBC PAR Indicators).

Externships and internships further connect learners to employment. Nationally, employers offered roles to almost 67% of 2022–23 interns and converted 53% to full-time hires, evidence that structured work-based learning is a durable on-ramp to jobs (NACE, 2024). At Oregon Health & Science University (OHSU), more than 20 structured summer internship programs are offered annually across medicine, dentistry, nursing, pharmacy, public health, biomedical sciences, neuroscience, cancer research, and health equity. These opportunities span high school, undergraduate, and graduate students, providing paid, immersive experiences designed to strengthen technical, professional, and research skills while advancing equity by reducing financial barriers (Oregon Health & Science University, n.d.).

Collectively, these approaches—course-embedded research, high-fidelity simulation, and paid work-based learning opportunities like those offered at OHSU—are proven, scalable strategies to increase persistence, accelerate hiring, and broaden representation in the STEM and health workforce.

Upskilling for Modern Workforce Demands

Workforce-aligned education requires continuous upskilling in digital, data, and durable skills alongside clinical and technical competencies. Labor-market scans show 95% of postings in professional/scientific/technical fields request at least one digital skill, while roughly 48 million U.S. workers lack foundational digital skills, underscoring the equity imperative of accessible upskilling (Lightcast; National Skills Coalition). In healthcare specifically, 2024 industry analyses highlight rapid demand growth for data, AI, and informatics capabilities across roles, reinforcing the need for stackable credentials and modular training (AHA Workforce Scan; Credly/Training Industry).

Institutions are meeting this demand by embedding industry-recognized credentials and micro-credentials into programs. For example, Delgado Community College offers CompTIA A+ preparation and a Cloud Computing C.T.C. that builds toward an Associates of Applied Science (AAS), enabling students to graduate with both degrees and job-ready certifications. This approach supports adult, transfer, and part-time learners (Delgado program/catalog pages; AWS course announcement). At the ecosystem level, community-college–to-university pathways that integrate e-portfolios, employer panels, and transfer-focused supports (e.g., UMBC's STEM Transfer Student Success Initiative) have been funded and scaled regionally. UMBC reports career outcomes for graduates that exceed national benchmarks, illustrating the payoff of coordinated upskilling and career services at scale (UMBC; Gates-funded t-STEM).

OHSU's interdisciplinary internships also serve as powerful upskilling pipelines, giving students across all levels the opportunity to develop digital, technical, and research competencies alongside domain-specific expertise. Many OHSU programs include stipends, which expand access and increase participation among historically marginalized learners while equipping participants with transferable skills critical for entering high-demand STEM and healthcare fields (Oregon Health & Science University, n.d.).

Finally, internships remain a key conversion channel for credentialed students. Despite cyclical labor market shifts, employers continue to use internship pipelines heavily, with over 50% conversion in recent cohorts—evidence that pairing stackable credentials, intentional upskilling, and structured paid experiential opportunities like those at OHSU is an efficient route to diversifying and strengthening the STEM and healthcare talent pipeline (NACE, 2024).

PIVOT, Integrated: Leader Recommendations for Holistic Program Design

To institutionalize the PIVOT framework and scale its impact, colleges and universities should first recognize that while each pillar of the PIVOT can stand alone, the most impactful programs intentionally weave all five elements into a unified model. As outlined in the figure below, institutions that aim to elevate student success across STEM and healthcare fields should approach PIVOT not as a menu of isolated strategies, but as an ecosystem of interconnected practices that collectively shape a student's academic journey and career trajectory.

Program Design Guidance: Incorporating All Five PIVOT Elements

Figure 1.

PIVOT Pillar	Design Strategy
Pathways	Develop a multi-year roadmap for students that includes onboarding, academic advising, articulation agreements, and completion goals. Embed dual enrollment, summer bridge programs, and stackable credentials.
Innovation	Integrate adaptive technologies (AI tutors, learning management systems), experiential simulations, and gamified learning into curriculum delivery. Use student-centered design principles for curricula and program development.
Vision	Focus on future-of-work readiness by embedding micro-credentials, digital portfolios, and interdisciplinary skill development (data fluency, teamwork, etc.). Align curriculum with NACE competencies and regional workforce needs.
Opportunity	Establish paid internships, industry-aligned mentoring, job shadowing, and workforce partnerships. Create pipelines to regional employers through MOUs and employer advisory boards.
Transformation	Build institutional ownership through faculty training, equity dashboards, longitudinal tracking, and integration into strategic plans. Ensure scalability and sustainability through cross-functional partnerships and funding diversification.

Conclusion

The PIVOT Framework offers a field-informed, future-ready model for addressing the most pressing challenges in STEM and healthcare education across two- and four-year institutions. By grounding institutional strategy in Pathways, Innovation, Vision, Opportunity, and Transformation, the framework provides a cohesive roadmap for shifting from fragmented, siloed initiatives toward an integrated, scalable ecosystem. Through its emphasis on longitudinal programming, high-impact experiential learning, paid internships, and intentional upskilling, PIVOT equips institutions to foster belonging, accelerate skill development, and expand access to educational and career opportunities—especially for students from historically underrepresented and marginalized backgrounds.

In an era defined by rapid technological change, shifting workforce demands, and persistent equity gaps, PIVOT positions institutions to respond with clarity, adaptability, and purpose-driven design. Its flexibility enables implementation across diverse contexts—from rural community colleges to large urban research universities—while maintaining academic rigor and aligning programming with the skills, mindsets, and credentials required by the modern workforce.

As higher education increasingly prioritizes equity, digital fluency, and career readiness, the PIVOT Framework offers a sustainable strategy for cultivating inclusive, future-ready learning environments. Institutions that embrace this model not only strengthen student success but also establish themselves as leaders in educational innovation, equitable access, and workforce development, preparing the next generation of STEM and healthcare professionals to thrive in an evolving global economy.

References

Achieving the Dream & SRI Education. (2020). *OER Degree Initiative: Outcomes at scale. Silver Spring, MD: Achieving the Dream*. https://www.achievingthedream.org/resource/oer-degree-initiative-outcomes-at-scale/

American Association of Community Colleges (AACC). (2016). *The Right Signals Initiative: Building a skills-based credentialing system*. Washington, DC.

American Hospital Association (AHA). (2024). *Health Care Workforce Scan 2024*. AHA. https://www.aha.org

An, B. P. (2013). *The impact of dual enrollment on college degree attainment: Do low-SES students benefit?* Educational Evaluation and Policy Analysis, 35(1), 57–75. https://doi.org/10.3102/0162373712461933

Arizona State University Action Lab. (2021). *The impact of adaptive learning in mathematics: A multi-institutional study*. https://actionlab.asu.edu

Aspen Institute College Excellence Program. (2017). *Aspen Prize for Community College Excellence: Finalist profiles — San Jacinto College*. The Aspen Institute. https://highered.aspeninstitute.org/

Association of American Colleges & Universities (AAC&U). (2019). *ePortfolios & HIPs: Evidence of impact (Peer Review synthesis)*. Washington, DC: AAC&U. https://www.aacu.org/peerreview

Association of American Medical Colleges. (2019). *Diversity in medicine: Facts and figures 2019*. Washington, DC.

Association of American Medical Colleges. (2023). *FACTS: Applicants and matriculants to U.S. medical schools by race/ethnicity (2019–2023)*. Washington.

Association of American Medical Colleges (AAMC). (2024). *The Complexities of Physician Supply and Demand: Projections From 2021 to 2036*. Summary Report. https://www.aamc.org/media/75236/download?attachment.

Bailey, T. R., Jaggars, S. S., & Jenkins, D. (2015). *Redesigning America's Community Colleges: A clearer path to student success*. Cambridge, MA: Harvard University Press.

Bailey, T. R., Belfield, C. R., & Jenkins, D. (2017). *What we know about guided pathways. Community College Research Center (CCRC) Research Overview*. New York, NY: Teachers College, Columbia University.

Boston Foundation. (2021). *The State of Early College and Career Pathways in Boston*. https://www.tbf.org/

Bunker Hill Community College. (n.d.). *Learn & Earn: Paid work-based learning for BHCC students*. https://www.bhcc.edu/learnandearn/

California Community Colleges Chancellor's Office (CCCCO). (2017). *Guided Pathways Award Program: 2017–18 Budget Act one-time funding of $150 million*. Sacramento, CA: CCCCO. [Program/Budget overview].

California Community Colleges Chancellor's Office (CCCCO). (2021). *Vision for Success progress update: Guided Pathways implementation and student success metrics*. Sacramento, CA: CCCCO.

California Community Colleges Chancellor's Office (CCCCO). (2022). *Systemwide outcomes: Degrees, certificates, and awards (2016–17 to 2021–22)*. Sacramento, CA: CCCCO.

California Community Colleges LaunchBoard/DataVista. (2025). *Student Success Metrics & Guided Pathways dashboards: Disaggregated outcomes by race/ethnicity, Pell, and age.* Sacramento, CA: CCCCO/WestEd.

Carpi, A., Ronan, D. M., Falconer, H. M., & Lents, N. H. (2017). *Cultivating minority scientists: Undergraduate research increases self-efficacy and career ambitions for underrepresented students in STEM.* Journal of Research in Science Teaching, *54*(2), 169–194. https://doi.org/10.1002/tea.21341

Chen, X., & Soldner, M. (2013). *STEM attrition: College students' paths into and out of STEM fields (NCES 2014-001)*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Chittum, J. R., Enke, K. A. E., & Finley, A. P. (2022). *The effects of community-based and civic engagement in higher education.* American Association of Colleges and Universities.

Clewell, B. C., Cosentino de Cohen, E., & Deterding, S. (2006). *A final report on the evaluation of the National Science Foundation Louis Stokes Alliances for Minority Participation (LSAMP) program*. Washington, DC: The Urban Institute.

Community College of Baltimore County (CCBC). (2024). *Performance Accountability Report (PAR): Health Professions licensure pass rates and graduate outcomes*. Baltimore, MD: CCBC. https://www.ccbcmd.edu

Credential Engine. (2023). *Counting Credentials 2023: Estimated Count of U.S. Postsecondary and Training Credentials*. Washington, DC: Credential Engine. https://credentialengine.org/counting-credentials-2023/

Delgado Community College. (2025). *Catalog and program pages: CompTIA A+, Cloud Computing C.T.C., and AWS-aligned coursework*. Delgado CC. https://www.dcc.edu

Eby, L. T., Allen, T. D., Evans, S. C., Ng, T., & DuBois, D. L. (2013). *Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals.* Journal of Vocational Behavior, 83(1), 106–116. https://doi.org/10.1016/j.jvb.2013.02.004

Edmunds, J. A., Bernstein, L., Unlu, F., Glennie, E., Willse, J., Smith, A., & Arshavsky, N. (2012). *Expanding the start of the college pipeline: Ninth-grade findings from an experimental study of the Early College High School model*. Journal of Research on Educational Effectiveness, 5(2), 136–159. https://doi.org/10.1080/19345747.2012.656182

Estrada, M., Hernandez, P. R., & Schultz, P. W. (2016). *A longitudinal study of how quality mentorship and research experience integrate underrepresented minorities into STEM careers.* CBE—Life Sciences Education, *15*(1), ar9. https://doi.org/10.1187/cbe.15-09-0187

Eynon, B., & Gambino, L. M. (2017). *High-Impact ePortfolio Practice: A Catalyst for Student, Faculty, and Institutional Learning.* Sterling, VA: Stylus Publishing.

Every Learner Everywhere. (2022). *Adaptive courseware in gateway math at Arizona State University (Case study)*. https://www.everylearnereverywhere.org/resources/

Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). *Active learning increases student performance in science, engineering, and mathematics*. Proceedings of the National Academy of Sciences, 111(23), 8410–8415. https://doi.org/10.1073/pnas.1319030111

Georgia State University (GSU) News. (2020). *Panther PRIME: Mentorship and Career Preparation for African American Male Students*. Atlanta, GA: Georgia State University.

Georgia State University Career Services. *Handshake at Georgia State University: Employer Network and Paid Internships*. Atlanta, GA: Georgia State University.

Georgia State University News. (2024). *How GSU's AI chatbot Pounce reduces summer melt and supports student success*. https://news.gsu.edu/

Gershenfeld, S. (2014). *A review of undergraduate mentoring programs*. Review of Educational Research, 84(3), 365–391. https://doi.org/10.3102/0034654313520512

Graham, S. (2018). *Institutional transformation to support student success: Organizational culture change at work*. Journal of Student Success and Retention, *5*(3), 35–50.

Hayden, J., Smiley, R. A., Alexander, M., Kardong-Edgren, S., & Jeffries, P. R. (2014). *The NCSBN National Simulation Study: A longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education*. Journal of Nursing Regulation, 5(2 Suppl), S1–S64. https://doi.org/10.1016/S2155-8256(15)30062-4

Hora, M. T., Benbow, R. J., & Smolarek, B. B. (2019). *Rethinking soft skills and student employability: A new paradigm for undergraduate education*. Change: The Magazine of Higher Learning, *51*(4), 30–37. https://doi.org/10.1080/00091383.2019.1652074

IBM. (2025). *IBM Training & Skills: Digital Badges and Credentials* (Milestone announcement). Armonk, NY: IBM. https://www.ibm.com/training/digital-badges

Jenkins, D., Lahr, H., & Fink, J. (2020). *Implementing guided pathways: Early insights from the AACC Pathways colleges*. Community College Research Center (CCRC), Teachers College, Columbia University.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.

Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter*. Washington, DC: Association of American Colleges & Universities.

Leijon, M., Gordani, Y., & Prasolova-Førland, E. (2022). *Challenge-based learning in higher education: A systematic review*. International Journal of Educational Technology in Higher Education, 19, 1–25. https://doi.org/10.1186/s41239-022-00358-9

Legislative Analyst's Office (LAO). (2017). *The 2017–18 Budget: Higher Education Analysis—Guided Pathways*. Sacramento, CA: State of California LAO. [Policy analysis].

Lightcast. (2025). *Lightcast Labor Market Analytics: Data Sources and Methodology (Postings, Skills, Wages).* Lightcast.

Maricopa County Community College District (MCCCD). (2022). *Semiconductor Technician Quick Start: 10-Day Entry Pathway with Employer Interviews*. Phoenix, AZ: MCCCD. [Program overview/press release].

Maricopa County Community College District (MCCCD). (2024). *MCCCD Awarded $1.7M from the National Semiconductor Technology Center Workforce Partner Alliance*. Phoenix, AZ: MCCCD. [Press release].

Maricopa County Community College District (MCCCD). (2025). *Semiconductor Workforce Partnerships with Intel and TSMC: Co-Designed Training and Paid Work-Based Learning*. Phoenix, AZ: MCCCD. [News/announcement].

McDaniel, A., Van Jura, M. (2022). *High-Impact Practices: Evaluating Their Effect on College Completion.* Journal of College, Student Retention: Research Theory & Practice, Vol. 24(3), 740-757. https://journals.sagepub.com/doi/10.1177/1521025120947357

McGee, E. O. (2020). *Black, brown, bruised: How racialized STEM education stifles innovation*. Harvard Education Press.

McGraw Hill. (2018). *Case Study: Arizona State University improves student outcomes with ALEKS*. https://www.aleks.com/about_success

Miami Dade College. (2017). *STEM Ladder Program: Stackable credentials maps and meta-major pathways.* Miami, FL.

Morehouse School of Medicine. (n.d.). *Mentoring M.E. (Mentoring Academy): Constellation-based and e-mentoring programs*. MSM Office of Faculty Affairs and Development. https://www.msm.edu

National Academies of Sciences, Engineering, and Medicine. (2018). *How people learn II: Learners, contexts, and cultures*. Washington, DC: The National Academies Press. https://doi.org/10.17226/24783

National Academies of Sciences, Engineering, and Medicine. (2019). *The science of effective mentorship in STEMM*. The National Academies Press. https://doi.org/10.17226/25568

National Academies of Sciences, Engineering, and Medicine. (2020). *Promising practices for addressing the underrepresentation of women in science, engineering, and medicine: Opening doors*. The National Academies Press. https://doi.org/10.17226/25585

National Association of Colleges and Employers (NACE). (2024). *2024 Internship & Co-op Report (Executive Summary)*. Bethlehem, PA: NACE.

National Association of Colleges and Employers (NACE). (2024). *Job Outlook 2024: Attributes Employers Seek on a Candidate's Resume*. Bethlehem, PA: NACE. https://www.naceweb.org/job-market/trends-and-predictions/job-outlook/

National Center for Education Statistics (NCES). (2022). *Dual or concurrent enrollment in high school and postsecondary education: Condition of Education Indicator*. Washington, DC: U.S. Department of Education.

National Science Foundation (NSF). (2021). *Louis Stokes Alliances for Minority Participation (LSAMP): Program highlights and outcomes*. Alexandria, VA.

National Skills Coalition & Federal Reserve Bank of Atlanta. (2023). *Closing the digital skill divide: Worker and business perspectives on the digital skills gap*. Washington, DC: NSC. https://nationalskillscoalition.org

North Carolina A&T State University. (2025a). *Aggie Success Academy: Program overview and outcomes.* North Carolina A&T. https://www.ncat.edu

North Carolina A&T State University. (2025b). *Office of Strategic Planning and Institutional Research: Retention and graduation rates (Fact Book 2024–2025).* Greensboro, NC: North Carolina A&T. https://www.ncat.edu

Northern Virginia Community College (NOVA). (2025a). *Student Achievement Dashboard: Retention, completion, transfer, and employment outcomes*. Annandale, VA: NOVA. [Online dashboard].

Northern Virginia Community College (NOVA). (2025b). *Equity Scorecard and strategic KPI monitoring*. Annandale, VA: NOVA. [Institutional research brief].

Oregon Health & Science University. (n.d.). *Summer internships*. Oregon Health & Science University. Retrieved August 25, 2025, from https://www.ohsu.edu/education/summer-internships

Oregon Health & Science University (OHSU). (2019). *M.D. Diversity Mentorship Program: Program description and outcomes.* OHSU School of Medicine. https://www.ohsu.edu

Oregon Health & Science University (OHSU). (2025). *School of Medicine Diversity, Equity & Inclusion Annual Report*. OHSU School of Medicine. https://www.ohsu.edu

Pew Research Center. (2024). *Mobile technology and home broadband 2024*. https://www.pewresearch.org/internet/

Rodenbusch, C. E., Hernandez, P. R., Simmons, S. L., & Dolan, E. L. (2016). *Early engagement in course-based research increases graduation rates and STEM degree attainment*. CBE—Life Sciences Education, 15(2), ar20. https://doi.org/10.1187/cbe.16-03-0117

Sailer, M., & Homner, L. (2020). *The gamification of learning: A meta-analysis*. Educational Psychology Review, 32, 77–112. https://doi.org/10.1007/s10648-019-09498-w

San Jacinto College. (2016). *Student success and completion highlights: 2007–2015 progress report*. San Jacinto College. https://www.sanjac.edu

Scrivener, S., Weiss, M. J., Ratledge, A., Rudd, T., Sommo, C., & Fresques, H. (2015). *Doubling graduation rates: Three-year effects of CUNY's Accelerated Study in Associate Programs (ASAP) for developmental education students*. New York, NY: MDRC.

University of Maryland, Baltimore County (UMBC). (2024). *Career Pathways for STEM Transfer Students Success Initiative: Program overview and early outcomes*. UMBC. https://umbc.edu

University of Texas at El Paso (UTEP). (2020). *UTEP EDGE: High-Impact Practices and Student Engagement (NSSE/EDGE overview)*. El Paso, TX: UTEP. https://www.utep.edu/edge/

Wake Technical Community College. (2023). *Micro-Credentials and Digital Badges (QEP/Badging Initiative).* Raleigh, NC: Wake Tech. https://www.waketech.edu/

Weiss, M. J., Ratledge, A., Sommo, C., & Gupta, H. (2017). *The ASAP evaluation: Final report on three-year effects of ASAP in Ohio New York, NY*: MDRC.

World Economic Forum. (2023). *The Future of Jobs Report 2023*. Geneva: WEF. https://www.weforum.org/publications/the-future-of-jobs-report-2023/

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Bridging the Gap: Exploring the Impact of Graduate Preparation Programs on Undergraduate STEM Students

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Abstract

This study explores the impact of the "*A Step to the Doctorate*" (S2D) program on the academic trajectories of undergraduate STEM students, focusing on how it fosters academic success and prepares participants for graduate education. Drawing on data from pre and post surveys and semi structured interviews of 60 participants, the research addresses two primary questions: (1) Which program components do participants find most impactful? Moreover, (2) How has the program influenced their academic aspirations and preparedness for graduate school? The findings highlight that mentorship, peer networking, and targeted workshops are key in boosting academic self-efficacy and enhancing participants' confidence in the graduate school application process. These components have significantly shaped participants' academic trajectories by demystifying the application process, improving research skills, building a sense of community, and increasing motivation to pursue graduate education. The study also identifies areas for improvement, such as refining the program pacing and extending outreach efforts to reach students earlier in their academic careers. These insights offer valuable recommendations for improving bridge programs, particularly for underrepresented students, and enhancing diversity in graduate education.

Keywords: graduate preparation program; mentorship; STEM diversity; graduate education

Bridging the Gap: Exploring the Impact of Graduate Preparation Programs on Undergraduate STEM Students

The transition from undergraduate education to graduate programs represents a critical juncture in the academic pathway, particularly for students pursuing advanced degrees in STEM fields. This transition can be incredibly challenging for underrepresented groups, who face systemic barriers such as limited access to resources, a lack of role models, and financial constraints (Cadena et al., 2023). To address these challenges, numerous initiatives have been developed to support students in navigating the graduate application process, building academic self-efficacy, and fostering a sense of belonging in higher education. Such programs, often characterized by a combination of mentorship (Dang et al., 2023), skill-building workshops, and exposure to academic networks, aim to reduce attrition rates and promote diversity in STEM graduate education (Russell, 2020). Research indicates that interventions targeting academic preparedness and self-efficacy are critical in shaping students' decisions to pursue and persist in graduate studies (Alzukari, 2024; Gueroni et al., 2023; Harackiewicz & Priniski, 2018).

However, despite the proliferation of these initiatives, there remains limited empirical evidence on their long-term impact and the mechanisms through which they influence participants' trajectories (Harris & Vick, 2023; Grace-Odeleye & Santiago, 2019). This study seeks to contribute to this growing body of literature by examining how targeted graduate preparation programs facilitate academic transitions for underrepresented STEM students. By analyzing survey data from past participants of a graduate preparation initiative, we investigate key aspects of the program, such as its influence on participants' perceptions of graduate school, their academic and professional self-confidence, and the role of mentorship and networking in their journeys. We also explore the broader implications of such interventions in addressing systemic inequities in access to advanced STEM education. This exploration is guided by two questions: Q1: What program components do participants find most impactful? And Q2: How has the program influenced their academic aspirations and preparedness for graduate school? In the end, we suggest what lessons can be drawn to inform the design of similar programs. Our approach combines quantitative data on participants' academic outcomes with qualitative insights into their lived experiences, allowing us to capture the multifaceted nature of the program's influence.

This paper explores the themes emerging from the data from the A Step to the Doctorate (S2D) program, facilitated by Virginia Tech's Center for the Enhancement of Engineering Diversity (CEED), designed to support undergraduate STEM students in navigating the complexities of the graduate school application process while introducing them to resources vital for academic success. By situating this analysis within the broader context of equity in STEM education, we aim to provide actionable insights for educators, policymakers, and program designers. Our findings highlight the importance of culturally responsive programming, the value of peer and mentor networks, and the need for targeted support in overcoming barriers to graduate education. Ultimately, this study contributes to a deeper understanding of how graduate preparation programs can serve as catalysts for equity and excellence in STEM fields.

Context

The primary goal of the S2D program is to increase the number of underrepresented students successfully transitioning into graduate school, especially in STEM fields, equip them with the knowledge and resources needed to pursue graduate education, and familiarize them

with the graduate student application process. Research has highlighted the significant barriers that underrepresented groups face in accessing graduate education, including a lack of information, mentorship, and academic preparation (Nelson & Rogers, 2020; Hurtado et al., 2011). This program is designed to mitigate these challenges by providing the necessary tools, resources, and guidance for students to succeed in graduate school applications.

The program is hosted by the CEED Office at Virginia Tech and was founded in 2020. While it is primarily marketed towards undergraduate Virginia Tech students pursuing science, technology, engineering, and mathematics (STEM) degrees, it is a program open to students of any academic background including graduate students. Students of any classification can apply for the program, but it is geared towards students with junior-level credits or the equivalent. Students also have the option of being a participant in multiple cohorts. Recruitment for the A Step to the Doctorate (S2D) program is grounded in a strategic, student-centered approach that identifies and engages high-potential undergraduate students who may benefit from structured preparation for graduate study. The program employs a multi-pronged strategy that includes faculty and staff nominations, partnerships with institutions such as Historically Black Colleges and Universities (HBCUs) and Minority-Serving Institutions (MSIs), and outreach conducted at national engineering conferences. These efforts are designed to strengthen cross-institutional pathways and encourage participation from students who may not have direct access to graduate school preparation resources.

In addition to institutional collaborations, the program expands its reach through targeted outreach campaigns within academic departments and through student-led organizations such as the National Society of Black Engineers (NSBE), the Society of Hispanic Professional Engineers (SHPE), and the Society of Women Engineers (SWE). By engaging students in familiar academic and peer communities, S2D builds trust and encourages early planning for graduate education. This approach not only increases awareness of graduate pathways but also supports students in making informed decisions about their academic and professional futures.

A Step to the Doctorate program offers workshops, one-on-one mentoring, opportunities for students to gain insights into the application process, and assistance with writing personal statements and preparing for graduate school interviews. The program has been in operation for four years and has supported a growing number of undergraduate students from various STEM disciplines. The program primarily serves undergraduate students, but it also includes participants from diverse academic backgrounds, such as graduate students. This allows them to understand the evolving dynamics of job market requirements while pursuing their graduate degrees, which in turn helps them tailor their CVs more effectively.

Literature Review

Academic bridge programs are interventions designed to support the transition, particularly those from underrepresented groups (Perry, 1997; Chism Hansen & Williams, 2008). These programs typically offer academic preparation, social support, and orientation to college life (Cairncross et al., 2015).

Graduate bridge programs aim to provide academic preparation, mentorship, research opportunities, and social integration, all of which are critical factors in preparing students for the demands of graduate study. Programs such as the McNair Scholars Program or Postbaccalaureate Research Education Programs (PREP) offer underrepresented students structured support through research experiences, GRE preparation, and faculty mentorship. These programs have

the potential to level the playing field by equipping students with the skills, confidence, and networks necessary to thrive in graduate environments that may otherwise be unfamiliar or unwelcoming. Research suggests that bridge programs can positively impact academic performance, retention rates, and students' sense of belonging (Chism, Hansen & Williams, 2008; Strayhorn, 2011). Del Carpio and Azurdia (2023) research showcased how UCLA's Competitive Edge program enhances the preparedness and sense of belonging among students from underrepresented groups (Del Carpio & Azurdia, 2023).

Academic bridge programs are also crucial in increasing diversity and supporting underrepresented minority (URM) students in higher education. These programs address barriers to achievement, provide academic preparation, and offer social support (Alexander & Mitchell, 2010). While some studies have shown mixed results for Academic Bridge programs (Grace-Odeleye & Santiago, 2019), others report improvements in academic self-efficacy, skills, and first-semester grades (Strayhorn, 2011), and may be particularly beneficial for first-generation and minority students in STEM fields (Perry La, 1997; Nagchaudhuri & Singh, 2001). They have been associated with increased diversity and intent to practice in underserved areas (Grbic et al., 2021). Successful programs focus on academic and social aspects, offering mentorship, professional development, and field-based experiences (Joyner et al., 2021). Universities have developed dedicated programs to support underrepresented populations (Katehi et al., 2003). Further research like Villarreal et al. (2023) emphasizes the importance of trust networks in facilitating the success of initiatives such as Cal-Bridge (Villarreal et al., 2023).

Diversity initiatives in engineering have demonstrated significant positive impacts on improving academic performance, retention, and representation of underrepresented groups within STEM fields. Universities have adopted various comprehensive strategies, including curricular reforms, peer mentoring, and faculty workshops, to foster inclusive environments (Forin et al., 2017). with some indication that research-based bridge programs have reduced the delay in degree attainment and contributed to student success (Tekian & Hruska, 2004). Similarly, summer bridge programs have demonstrated positive outcomes in problem-solving, communication skills, and student retention (Erickson-Ludwig & Clyne, 2014). Other studies have demonstrated that summer bridge programs and pre-orientation initiatives have prepared female and minority students for engineering education (Erickson-Ludwig & Clyne, 2014).

Bridge programs can be implemented at various educational levels, from middle school to university (Sheets et al., 1997). Outreach programs targeting high schools have shown increased awareness of engineering careers (Kuyath, 2004). By promoting diversity, these programs address social and political dimensions and enhance academic inquiry through intellectual plurality (Hinsdale, 2011).

Integrating quantitative and qualitative research has informed programmatic decisions to improve student performance (Sullivan et al., 2015). Community colleges have implemented strategies to attract diverse students, including summer robotics programs and workshops (Gayle et al., 2019). Engaging undergraduate students in research projects and providing financial assistance have improved learning outcomes and retention of minority students in engineering (Chowdhury & Seif, 2010).

The ongoing need for diversity, equity, and inclusion (DEI) efforts in higher education, particularly in doctoral degree attainment, is well-documented. A key challenge in increasing DEI in graduate education is understanding how various factors contribute to the enrollment and success of underrepresented groups. In their study, *Who Goes to Graduate School and Who Succeeds?* Baum and Steele (2017) offer a demographic analysis of the landscape of graduate

education, finding a significant correlation between income and undergraduate degree attainment. Specifically, higher income increases the likelihood of enrolling in and completing graduate programs. This highlights a crucial barrier: students from lower-income backgrounds face increased obstacles in accessing and succeeding in graduate school. However, while income remains a critical factor, other underrepresented groups, including racial and ethnic minorities, face unique challenges that intersect with socioeconomic status, further complicating access to graduate education (Baum & Steele, 2017).

Evaluations of graduate bridge programs are often narrow in scope. Many rely heavily on quantitative metrics such as enrollment numbers, retention rates, or immediate admission to graduate programs. While such data is useful for demonstrating reach and general outcomes, it does not adequately address the underlying mechanisms of student success, such as increased academic self-efficacy, a sense of belonging in academia, identity development, or the cultivation of scholarly ambition. For example, a student may be admitted to a graduate program, but without sustained confidence or academic preparation, they may struggle or drop out. This complexity is frequently missed in evaluations that prioritize outcomes over process.

In addition, the literature often treats bridge programs as monolithic, failing to consider how differences in program design, institutional context, and student population impact effectiveness. A program at a well-resourced research university may function very differently from one at a smaller, underfunded institution. Likewise, the needs of Latinx students in STEM fields may differ significantly from those of first-generation humanities majors, yet many evaluations do not differentiate among these nuances.

To advance equity in graduate education, it is essential to move beyond surface-level evaluation and conduct rigorous, mixed-methods research that captures both the statistical and experiential dimensions of program impact. Qualitative methods such as interviews, focus groups, and longitudinal case studies can offer rich insights into how students perceive the value of bridge programs, what aspects are most supportive, and how these experiences shape their graduate trajectories. Understanding the nuanced experiences of underrepresented students and the specific program elements that contribute to their academic and personal development is vital for informing policy, improving program design, and ultimately closing the opportunity gap in graduate education. Future research must prioritize not only whether these programs work, but also how and why they work, to ensure that efforts to support marginalized students are both effective and equitable.

Mentorship is also a vital aspect of the bridge programs. One example is the Purdue University GradTrack Scholars program, evaluated by McDermott and Beagle (2023). Their evaluation emphasizes the importance of mentorship in promoting graduate program enrollment, presenting enrollment data and scholarship recipient figures as evidence of the program's effectiveness (McDermott and Beagle, 2023).

The existing literature highlights the potential of graduate bridge programs in advancing equity in higher education but also points to a critical gap in evaluation practices. Most current assessments rely heavily on surface-level metrics, overlooking the complex, lived experiences of underrepresented students. To fully harness the impact of these programs, more comprehensive evaluations are needed, ones that integrate both quantitative data and qualitative insights. Such evaluations can uncover how specific program components influence student outcomes, guiding improvements in design and implementation. By understanding not just *if* these programs work, but *how* and *why* they do, researchers and policymakers can better support marginalized students and create more effective, equitable pathways to graduate education.

Methodology

This study forms part of a broader mixed-methods evaluation designed to assess the longitudinal impact of a structured academic support program. The evaluation integrates multiple data sources, including structured pre- and post-program surveys, semi-structured interviews, document analysis, and participant observation, in order to generate a comprehensive understanding of participants' experiences and the program's effectiveness.

For the purposes of this paper, we focus specifically on data derived from three key sources: (1) pre- and post-program surveys administered to all participants, (2) an alumni follow-up survey administered to past participants, and (3) semi-structured interviews conducted via phone and Zoom. These sources allowed for both quantitative measurement and qualitative insight into how the program influenced participants' academic trajectories, graduate school preparation, and professional aspirations.

Data Collection and Instruments

Data collection was conducted in three distinct phases to ensure robust temporal and demographic representation. The first phase included pre-program surveys administered at the beginning of the academic cycle; the second phase captured post-program responses upon completion; and the third phase involved a follow-up alumni survey. The alumni survey was designed to gather retrospective feedback on how the program supported participants in applying to and succeeding in graduate school. Surveys included both Likert-scale and open-ended items addressing mentorship, academic preparation, and long-term outcomes.

All surveys consisted of standardized questions to ensure consistency across cohorts. A set of six open-ended questions was used to explore participants' personal experiences, perceived program benefits, and recommendations for improvement. Follow-up emails and reminders were sent to maximize response rates. In parallel, semi-structured interviews were conducted with a purposive sample of survey respondents to allow for deeper exploration of themes emerging from the survey data. These interviews were conversational in tone but guided by a core set of prompts to ensure thematic consistency.

To enhance the reliability and depth of our findings, data from these diverse sources were triangulated. This methodological triangulation enabled us to cross-validate findings and provided a richer, more nuanced understanding of the program's impact across different dimensions of student development.

Sample and Participant Demographics

The study focused on participants from the program's first four cohorts (2020–2023), encompassing a total of 75 individuals. Participation in the program increased over time: the 2020 cohort included 10 students, followed by 11 in 2021, 18 in 2022, and 36 in 2023. All students from these cohorts were invited to complete the surveys, regardless of their level of engagement with the program. Out of the total of 75, 60 participated in the pre and post survey interviews.

Survey response rates were higher for the newer cohorts. For the 2020 cohort, 7 out of 10 students (70%) responded; among these, 3 had completed graduate programs, and 2 were pursuing doctoral studies. For the 2021 cohort: 9 of 11 students (82%) responded; 8 were enrolled in graduate programs, and 1 was awaiting admissions results. For the 2022 cohort: 17 of

18 students (94%) responded, providing detailed and reflective feedback. For the 2023 cohort, 36 students were contacted and 27 students (75%) participated. This cohort included some returning students who had previously participated in the program.

It is important to note that the program allows students to return for additional support (e.g., graduate school application guidance and academic writing assistance). To avoid duplication in data analysis, each participant was counted once and assigned to the cohort corresponding to their original year of entry. For example, two alumni who returned in later years but completed the alumni survey were counted only in their initial cohort.

Demographic data were collected through self-report. Across all cohorts, 15 participants identified as male, 12 as female, and 9 did not specify gender. In terms of race/ethnicity, 17 identified as African American or Black (including Afro-Latinx), 5 as Hispanic/Latinx, 3 as White (non-Hispanic), and 2 as Asian, with 9 participants not disclosing this information. While some data on gender identity, sexual orientation, and racial/ethnic background were incomplete, particularly in the earlier cohorts (2020–2022), the available information nonetheless offers a partial demographic snapshot.

Table 1

Participant Information

Year	Number of Students Enrolled	Number of Survey Respondents	Graduate Degree Status	Gender	Race
2020	10	7	3 completed graduate degrees, 2 pursuing Ph. D.s , 2 not enrolled in Graduate School	Data not available	Data not available
2021	11	9	8 pursuing graduate education, 1 awaiting admission	Data not available	Data not available
2022	18	17	Data not available	Data not available	Data not available
2023	36	27	The majority are	15 male, 12 female,	17 African American/Black , 5 Hispanic, 3

	awaiting graduate school admission decisions	nine did not answer	Caucasian/White, 2 Asian, nine did not answer

Data Analysis

Data were analyzed to address two guiding research questions: Which program components did participants find most impactful? And how has the program influenced their academic aspirations and preparedness for graduate school?

All qualitative data including survey responses, and interview transcripts, were transcribed, anonymized, and uploaded to NVivo software for thematic analysis. Coding was organized into categories including "academic preparation," "mentorship," "program structure," and "skill development." Comparative analysis across cohorts revealed both consistent themes and shifts over time, capturing the program's evolution and the diversity of its participants.

Triangulation across methods strengthened the reliability of findings. Three researchers independently coded the data and engaged in collaborative interpretation to reconcile discrepancies and ensure analytic rigor. This iterative process enhanced the validity of the interpretations and produced a nuanced understanding of the program's impact. The study adhered to institutional ethical standards, including IRB approval. All participants provided informed consent, and confidentiality was protected through anonymization and aggregate reporting.

Positionality

Our research team comprises diverse racial and ethnic identities (Black/African American, Latinx, Multiracial, Southeast Asian), gender identities (cisgender men and women), academic disciplines (education, sociology, engineering), and professional roles (professors, administrators, doctoral students, undergraduates). This diversity shaped our approach, allowing us to integrate various perspectives, lived experiences, and insights into higher education systems to guide the interview process. These varied viewpoints were crucial in uncovering deep and meaningful insights into how participants assess and prioritize the components of the A Step to the Doctorate program.

Our analysis specifically examined the program's influence on participants' academic trajectories and their perceptions of its impact on academic success. One of our co-authors, an alumnus of the A Step to the Doctorate program, played a key role in conducting many interviews. As a male of African American heritage, this researcher shared cultural commonalities with most participants, fostering comfort and openness. This rapport led to detailed, reflective responses. To ensure the trustworthiness of our findings, we carefully cross-checked our interpretations with existing literature, staying closely connected to the data throughout the analysis process. We actively challenged our assumptions and worked to mitigate potential biases, ensuring that the analysis remained grounded in the participants' voices and the program context (Creswell & Poth, 2018).

Results

In examining the questions regarding which program components participants found most impactful and how the program has influenced their academic aspirations and readiness for graduate school, several key aspects were identified as particularly valuable. In the post survey interviews participants highlighted access to resources, mentorship, networking opportunities, the demystification of graduate education as the most beneficial elements of the program. Access to resources through the Canvas learning management system platform enabled students to explore graduate school opportunities, funding options, and application strategies. The encouragement and guidance provided by mentors and peers fostered a supportive, collaborative atmosphere that many participants described as pivotal to their success. Exposure to graduate school's logistical and emotional aspects helped participants build self-efficacy. Several participants remarked that the program demystified graduate education, removing fears and uncertainties.

Although some participants found it difficult to articulate personal academic outcomes, they provided valuable feedback regarding the program's mentorship, curriculum, and overall structure. These insights will inform future iterations of the program and contribute to ongoing efforts to enhance support for underrepresented students in higher education.

Trends Across Cohorts

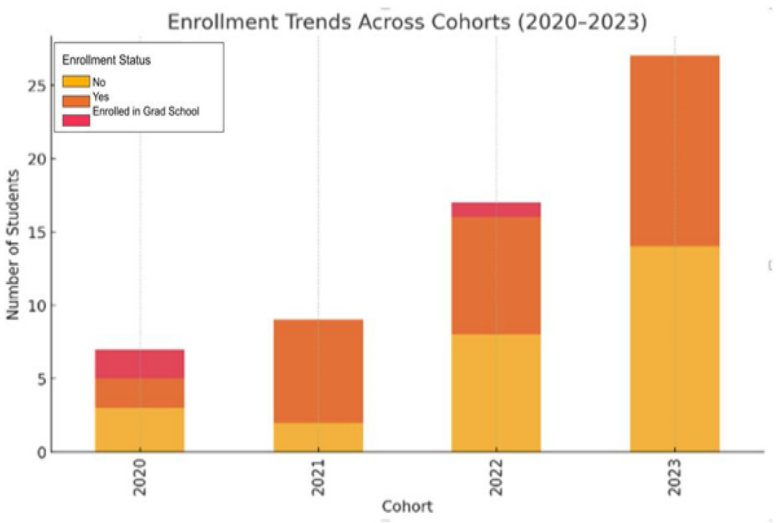
The enrollment trends across cohorts from 2020 to 2023 show the program's growing effectiveness. By 2021, the program showed modest improvements, likely due to better mentorship and support strategies. The 2023 cohort marked the highest levels of enrollment and graduation, indicating the program's maturation and success.

Program growth can be a positive sign, but by itself, it does not fully prove that a program is effective. Instead, it should prompt us to explore the reasons behind the increase in participation. In the case of A Step to the Doctorate, several factors likely contribute to its growth, including improved recruitment efforts, clearer application instructions, and more targeted outreach to students. These changes may help more students find and apply to the program.

Another key reason for growth appears to be word-of-mouth referrals. Many students who complete the program go on to recommend it to their peers. This shows that participants see real value in what the program offers, especially in areas like writing support, mentoring, and learning how to apply to graduate school. These referrals suggest that the program is meeting student needs and earning their trust. While better marketing has likely helped raise awareness, it is the students' experiences and willingness to share them that speak to the program's true impact.

Figure 1

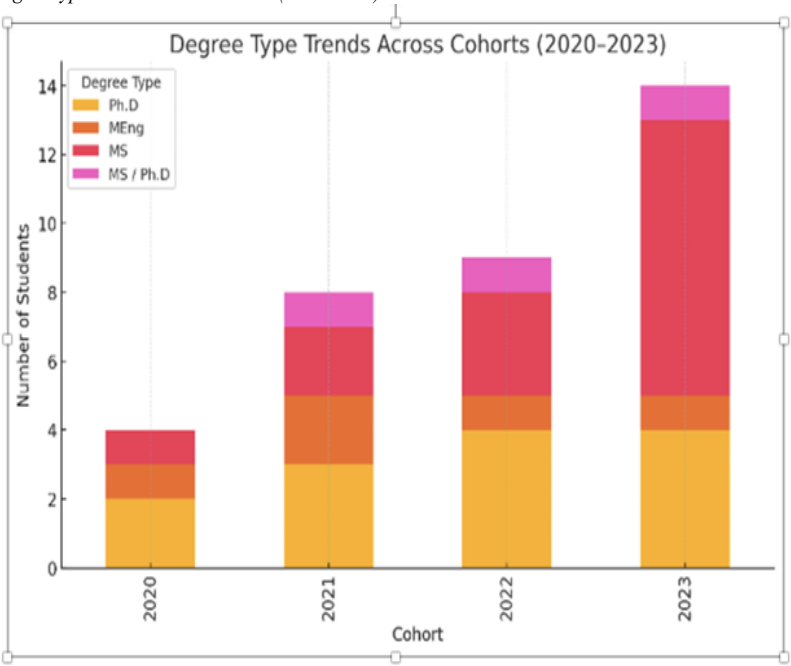
Enrollment trends across cohorts (2020-2023)



The distribution of degree types pursued by participants shifted notably across cohorts. Early cohorts, such as 2020, showed limited diversity in degree levels. As the program developed, the 2021 and 2022 cohorts saw steady increases in both MS and Ph.D. enrollments, reflecting greater program support and participant preparedness. By 2023, MS degrees became the most popular. This trend may reflect an expanded reach of the program's recruitment strategies or an increased appeal to students with varied academic and professional goals. However, without further evidence, it is not possible to attribute this shift to any specific programmatic change.

Figure 2

Degree type trends across cohorts (2020-2023)



Demystifying Graduate Education.

Over time, participants in the "A Step to the Doctorate" (S2D) program reported significant shifts in their perceptions and preparedness for graduate school, particularly as they progressed. These changes were evident in their academic trajectories and their growing confidence in pursuing advanced degrees. The program's ability to foster a supportive community of peers, mentors, and program staff played a pivotal role in these shifts, providing consistent guidance and a structured framework for success.

Participant feedback prominently featured familiarization with application processes and funding opportunities. Many noted that S2D helped them better understand the practical steps required to pursue advanced degrees while fostering a sense of preparedness and confidence in their ability to succeed in a graduate environment. The quotes below come from the post-program survey dataset. Participants shared their reflections on the outcomes of the conference, as well as their perceived levels of preparedness and confidence:

1. “Made the Ph.D. feel possible and realistic.”
2. “Understanding the basics of the application process.”
3. “Resources assured that grad school was possible even without a 3.0 [GPA].”

These changes were particularly apparent in the reflections of international students, who benefited from the program's clear explanation of the application process and its emphasis on

demystifying graduate education's logistical and procedural aspects. For many, the program not only made graduate school feel more accessible but also inspired a sense of belonging within the academic community, bridging gaps in both knowledge and confidence. As one participant noted: *"[Got] Helped as [an] international student because I [he] did not know the process."*

Participants expressed greater confidence in their ability to navigate graduate school. Many reported that they now view graduate education as attainable and a realistic next step in their academic and professional careers: *"emotional first step to grad school", "importance/significance of attending GS".* One participant shared some details by saying that *"This [conference] got me to start thinking of grad school earlier. [I] learned what things are important when selecting a grad school."* The program's collective nature also fostered collaboration and mutual support, further reinforcing participants' commitment to their academic goals.

Skill-Building for Graduate Applications

Workshops focused on personal statement development emerged as a transformative component of the "A Step to the Doctorate" (S2D) program. Participant feedback consistently underscored these sessions as a defining feature, frequently mentioned in personal program highlights and reflections on the program's most valuable aspects. These workshops offered actionable strategies for crafting persuasive application materials, which participants identified as critical skills essential in their graduate application journey.

In addition to addressing a fundamental part of the application process, these workshops played a broader role in reducing financial barriers. By providing free access to expertise that might otherwise require significant financial investment, the program created equitable opportunities for participants to strengthen critical components of their applications. Participants cited the clarity and practicality of the guidance provided as especially beneficial. The following are selected Participant Reflections communicating the aspects of clarity and practicality:

1. "Writing workshops with [workshop organizer] and her criticisms."
2. "Helped me [him] interview well."
3. "Learning and identifying fellowships."
4. "Assistance with valedictorian speech."

These workshops offered participants technical skills for application preparation and the confidence to present themselves effectively in diverse academic and professional contexts.

Mentorship and Cultivating a Supportive Academic Network

Participants frequently praised the program's emphasis on building community and fostering connections with mentors, peers, and alums. These networks provided emotional support and practical advice during the graduate application process. Mentorship was a recurring theme, with the program administrators receiving significant mention. Personal interactions with mentors were described as inspiring and motivating, fostering a sense of belonging and purpose. As participants mentioned: "Dr. W and M being great mentors", "constant support from Dr. W".

It was also found that many of the participants who responded to the survey found significant relationships among their fellow students in the program. Cultivating friendships and connections between peers with similar goals fostered a positive environment across multiple

cohorts in the program. Many students reported maintaining contact with fellow S2D program alums, as well as with program administrators and staff.

"relationship built to Dr. W and his guidance"

Representation emerged as a critical subtheme. Participants were inspired to pursue their goals by seeing mentors and peers from similar backgrounds succeed.
participants shared:
"*Seeing peers of all ages in the program, felt less alone.*"
"Meeting likeminded students"

The program's cohort model helped participants build friendships with like-minded individuals, reducing feelings of isolation. One participant summarized,

"S2D gave me the tools, mentorship, and friendships I needed to succeed."

For many participants, the program served as a bridge between their aspirations and actionable steps. Activities such as "Call Me Doctor," where participants envisioned themselves as scholars, encouraged them to take ownership of their academic journeys. One participant shared their thought on their academic journey and experience:

> "*As a first-generation college student from southern Africa, I have achieved many firsts. For example, I was the first in my family to acquire a bachelor's and master's degrees in any subject, let alone Engineering. I am also the first in my family to work at the management level in the corporate world. While I am grateful for my accomplishments thus far, I am intrigued by the prospect of achieving another first by earning a Ph.D."*

Another participant said of their experience:

> *"I really want to belong to the program and access quality training. I believe that breaking the social and economic gaps by accessing programs like this are a great opportunity for students in training and to contribute every day to the development and advancement of science.*

This exercise encouraged students to envision themselves as future scholars and contributed to building academic self-efficacy. Participants frequently reflected on how the program bolstered their self-confidence. Engaging with mentors, receiving personalized guidance, and mastering application skills helped participants feel empowered in their pursuit of graduate education."

Discussion

This study aimed to assess the impact of a graduate preparation program on the academic trajectories of undergraduate STEM students, focusing on their perceptions and the aspects they found most valuable. Survey and interview data from 60 participants across three cohorts revealed several key findings, shedding light on how the program influenced students' academic confidence, sense of belonging, and overall readiness for graduate education.

The analysis revealed that mentorship and networking opportunities were central to the participants' academic success. Participants consistently highlighted the importance of mentor guidance in shaping their decision to pursue graduate school. These findings align with existing literature that underscores the role of mentorship in promoting academic persistence and success, especially among underrepresented groups in STEM (Lent et al., 2000; Tinto, 2001).

The program's emphasis on networking helped participants feel more connected to the academic community, consistent with research indicating that social support plays a critical role in academic achievement (Strayhorn, 2012). A key outcome of this assessment is recognizing the program's ability to create an inclusive and supportive environment, which is crucial for

fostering a sense of belonging. Programs that prioritize mentorship, networking, and academic self-efficacy can significantly impact students' confidence and preparedness for graduate school. The data highlights the importance of tailoring the program to meet participants' needs, ensuring its relevance and effectiveness in supporting underrepresented students in STEM.

The study also emphasizes the critical role of personalized mentorship in building academic confidence and persistence. The feedback suggests that solid mentor-mentee relationships are essential in addressing the unique needs of underrepresented students. In addition, networking and peer support emerged as vital components, with participants expressing that connections with peers and faculty members strengthened their sense of community and commitment to their academic goals. This finding reinforces the value of fostering peer networks and a supportive academic environment.

The practical support provided through workshops and resources, particularly those focused on demystifying the graduate school application process, played a crucial role in alleviating participants' anxiety. Providing tools such as guidance on writing personal statements and identifying funding opportunities helped participants feel more prepared for the graduate application process. These concrete supports enhanced their confidence and readiness, aligning with best practices for preparing students for the challenges of graduate school. The early-stage findings suggest that maintaining and expanding these elements will continue to impact the success of underrepresented students in STEM.

Lessons Learned

Participant feedback on the "A Step to the Doctorate Program" (S2D) demonstrates overall satisfaction with the program while highlighting areas for improvement in scheduling and outreach. These insights reflect a recurring theme of balancing program intensity with accessibility to maximize participant engagement and impact.

One key concern expressed by participants was the limited time available to process the extensive information provided during the Opening Institute. As one participant stated:

> After the event, I felt a little overwhelmed with the bundle of information that was given, even though it was all valuable. I believe having a two-day event for this opening session would give students the 'breathing room' that's needed to think about what they learned in the first session and leave with 'homework' that could be presented to the institute in the next session (the second day session). Both sessions can be 3 hours long (10 am - 1 pm).

This feedback suggests reshaping the Opening Institute into two shorter sessions over consecutive days. This would allow participants to reflect on the material and engage more deeply with the content.

Another area of improvement identified by participants was the program's outreach strategy. One participant emphasized the importance of increasing program visibility:

> I think notifying NSBE of this program so that you all could come to a general body meeting in the spring or early fall to talk about the program and present that application to more people so that they are able to hear about the program.

Additionally, another participant noted the timing of outreach efforts, stating: "Scheduling-wise, I wish I was able to hear about this information my junior year, so getting the info out to more juniors and possibly having it be a 3-day long program with shorter hours."

These themes underscore the necessity of targeted outreach to student organizations and the importance of reaching students earlier in their academic journey while also emphasizing the

need to adjust the program's schedule to reduce cognitive overload. These improvements would enhance the program's effectiveness, ensuring it better meets the needs of its participants.

Program Effectiveness and Sustainability Measures.

The early-stage assessment has highlighted key insights into the program's effectiveness, particularly in enhancing students' academic trajectories and self-efficacy. Moving forward, the program will focus on structuring mentorship more intentionally, incorporating regular check-ins, and integrating alum mentors. Networking opportunities will be expanded through workshops and events throughout the year, better preparing students for the graduate application process. Sustaining funding and institutional support will be essential for the program's longevity. Its effectiveness will be measured through longitudinal assessments tracking students' progress into graduate programs, including graduation rates, enrollment, and academic achievements. Regular feedback from participants will be integrated to ensure continuous adaptation to their evolving needs and maximize long-term impact.

Limitations

While the findings of this study offer valuable insights into the impact of the graduate preparation program, several limitations should be acknowledged. One key limitation is the lack of data regarding participants' socioeconomic status (SES), sexual orientation, and parental education levels. These factors are critical in understanding the broader context of students' academic journeys and can influence their access to resources, sense of belonging, and overall experiences in the program. Without this demographic information, assessing how these intersecting identities may have shaped participants' perceptions of the program, and their academic trajectories is difficult. For instance, students from lower SES backgrounds may face additional financial barriers to graduate school. In contrast, students from diverse sexual orientations may have unique challenges related to inclusion and support that are not captured in this study.

Additionally, while the study provides valuable qualitative insights through surveys and interviews, the sample size of 60 participants, though reasonable, may need to be more representative of the broader population of undergraduate STEM students. The relatively small sample size limits the generalizability of the findings, as the experiences and perceptions of this specific group may reflect those of only some students who could benefit from similar programs.

Despite these limitations, the study provides important preliminary insights into the program's impact. It lays the foundation for future research to address these gaps and further refine the program's design and effectiveness.

Recommendation

This study offers actionable insights for enhancing graduate preparation programs. It focuses on mentorship, program structure, outreach, and demographic data collection to create a more impactful and inclusive experience for participants.

It was noted that mentorship played a key role in enhancing graduate preparation programs. Expanding the mentor pool to include individuals from diverse academic disciplines,

backgrounds, and experiences will provide participants with broader perspectives and better support their unique academic and career paths.

Many participants showed concern about the duration of program sessions. To reduce information overload, S2D and similar programs should consider spreading the information over time and the need for reflection. Restructuring the Opening Institute into two shorter sessions over consecutive days may allow for better cognitive processing. Each session could be three hours long, balancing content and reflection time.

To ensure the program's effectiveness, broadening the outreach efforts beyond academic organizations to non-conventional organizations, such as the National Society of Black Engineers (NSBE), to present program details at general body meetings would expand outreach to targeted populations. Additionally, students in their junior year should be targeted earlier in their academic journey to prepare them for graduate school applications.

To enhance the effectiveness of these programs and better understand their nuanced impacts on diverse populations, it would be advantageous to gather data on participants' socioeconomic status, sexual orientation, and parental education levels. Such insights can help tailor support to the unique circumstances of each individual, allowing the program to effectively address the barriers faced by students from varied backgrounds. By addressing these areas, the program can better support students from diverse backgrounds and improve its effectiveness in preparing undergraduates for graduate education.

Conclusion

The early-stage findings from the A Step to the Doctorate (S2D) program highlight its effectiveness in preparing underrepresented STEM students for graduate education. Key program components, personalized mentorship, targeted skill-building workshops, and peer networking which helped demystify the graduate school process and enhanced participants' academic confidence and aspirations. Participants credited these elements with making graduate education feel accessible and achievable. However, feedback also pointed to opportunities for improvement, including adjusting the program pacing and expanding outreach to reach students earlier. These insights can inform the design of future bridge programs committed to advancing equity and access in graduate education.

References

Alexander, C. J., & Mitchell, D. A. (2010). The role of enrichment programs in strengthening the academic pipeline to dental education. *Journal of Dental Education*, 74(10 Suppl), S110–S120.

Alzukari, R. (2024). Academic self-efficacy, achievement motivation, and academic success of international graduate students. *Theses and Dissertations. 6313*. https://scholarsjunction.msstate.edu/td/6313

Baum, S., & Steele, P. (2017). Who goes to graduate school, and who succeeds? SSRN *Electronic Journal*. https://doi.org/10.2139/ssrn.2898458

Bradford, B.C., Beier, M.E., & Oswald, F.L. (2021). A Meta-analysis of University STEM Summer Bridge Program Effectiveness. *CBE Life Sciences Education*, 20.

Cadena, M. A., Amaya, C., Duan, D., Rico, C. A., García-Bayona, L., Blanco, A. T., Agreda, Y. S., Villegas Rodríguez, G. J., Ceja, A., Martinez, V. G., Goldman, O. V., & Fernandez, R. W. (2023). Insights and strategies for improving equity in graduate school admissions. *Cell,* 186(17), 3529–3547. https://doi.org/10.1016/j.cell.2023.07.029

Chism, L. P., Baker, S. S., Hansen, M. J., & Williams, G. (2008). Implementation of first-year seminars, the Summer Academy Bridge Program, and themed learning communities. *Metropolitan Universities*, 19(2), 8–17.

Chowdhury, S., & Seif, M. (2010). Enhancement of learning outcomes and retention of minority students in engineering.

Creswell, J. W., & Poth, C. N. (2016). Qualitative inquiry and research design: Choosing among five approaches. *Sage Publications*.

Dang, T., Main, J.B., & DeLaurentis, D.A. (2023). A Meta-Analysis of STEM Bridge Programs at Four-Year Colleges. *2023 IEEE Frontiers in Education Conference* (FIE), 01-07.

Forin, T., Sukumaran, B., Farrell, S., Hartman, H., Jahan, K., Dusseau, P. R., Bhavsar, P., Hand, J. A., & Bruckerhoff, T. F. (2017). *Rethinking engineering diversity, transforming engineering diversity (REDTED)*.

Del Carpio, C.A., & Azurdia, D.E. (2023). UCLA's Competitive Edge Program Provides an Advantage to STEM Doctoral Students from Historically Excluded and Underrepresented Groups. *bioR*xiv.

Erickson-Ludwig, A., & Clyne, A. M. (2014). Summer diversity program enhances female and underrepresented minority students academic performance and retention in the Drexel University College of Engineering.

Gayle, M., Seo, D., & Mangra, D. (2019). Engineering diversity at Queensborough Community College. *2019 Fall Mid Atlantic States Conference Proceedings*.

Grace-Odeleye, B., & Santiago, J. (2019). A review of some diverse models of summer bridge programs for first-generation and at-risk college students. Administrative Issues *Journal: Connecting Education, Practice, and Research*, 9(1), 35–47.

Grbic, D., Poll-Hunter, N., Felida, N., & Andriole, D. A. (2021). Association of summer college academic enrichment program participation with medical student diversity and intent to practice in underserved areas. *JAMA Network Open*, 4.

Gueroni, L. P. B., Pompeo, D. A., Eid, L. P., Ferreira Júnior, M. A., Sequeira, C. A. D. C., Lourenção, L. G. (2023). Interventions for strengthening general self-efficacy beliefs in college students: An integrative review. *Revista Brasileira de Enfermagem*, 77(1), e20230192. https://doi.org/10.1590/0034-7167-2023-0192

Harackiewicz, J. M., & Priniski, S. J. (2018). Improving student outcomes in higher education: The science of targeted intervention. *Annual Review of Psychology*, 69, 409–435. https://doi.org/10.1146/annurev-psych-122216-011725

Harris, R. L., & Vick, B. (2023). Effects of a summer bridge program on student grade point average and retention. *Journal of College Student Retention: Research, Theory & Practice.* https://doi.org/15210251231214183

Hinsdale, M. J. (2011). Responsive mentorship. *Philosophy of Education*.

Jones, S. A., & Cairncross, C. (2016). Two-tiered summer bridge programming for at-risk engineering and computer science students. Envisioning the Future of Undergraduate STEM Education: *Research and Practice*, 1–6. © 2016 AAAS. Archived version is the final published version.

Joyner, D. M., Faris, E., Hernández, D., Moon Howard, J., Fullilove, R. E., Cohn, E., Odlum, M., Mitchell, D., & Hutcherson, H. (2021). A pipeline to increase public health diversity: Describing the academic enrichment components of the Summer Public Health Scholars Program. *Pedagogy in Health Promotion*, 7, 44S–50S.

Kuyath, S. (2004). Diversity in engineering technology: *An NSF project*.

Katehi, L. P., Denise, D., Percifield, C., Wright, J. R., & Kokini, K. (2003). A new paradigm for diversity in engineering.

Lent, R. W., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology,* 47(1), 36–49.

McDermott, J., & Beagle, J. (2022, August 23). GradTrack scholars: A comprehensive online mentoring program to build community and prepare the next generation of underrepresented minority graduate students *(Work in Progress).* Peer.asee.org. https://peer.asee.org/40778

Perry L. A. (1997). The Bridge Program: an overview. The ABNF journal : *official journal of the Association of Black Nursing Faculty in Higher Education, Inc, 8*(1), 4–7.

Russell, J.A. (2020). Enhancing Graduate Student Research, Recruitment, and Retention via a Summer Research Experience. *Kinesiology Review*, -1, 1–6.

Strayhorn, T. L. (2011). Bridging the pipeline: Increasing underrepresented students' preparation for college through a summer bridge program. *American Behavioral Scientist,* 55, 142–159.

Sullivan, J. F., Myers, B. A., O'Connor, K., Peck, F. A., Ennis, T. D., Stites, N. A., Louie, B., Cafarella, J., & Kotys-Schwartz, D. A. (2015). Continuously improving a diversity-bolstering system through integrating quantitative and qualitative engineering. *GoldShirt program facets.*

Tekian, A. S., & Hruska, L. (2004). A review of medical school records to investigate the effectiveness of enrichment programs for "at risk" students. *Teaching and Learning in Medicine*, 16, 28–33.

Tinto, V. (2001). Rethinking the first year of college. *Higher Education Monograph Series,* 9(2), 1–8.

Villarreal, C.D., Posselt, J.R., Hernandez, T.E., & Rudolph, A. (2023). Bridging the gap: A sequential mixed methods study of trust networks in graduate application, admissions, and enrollment. *Journal of Women and Minorities in Science and Engineering.*

Wolf, W. (2006). Diversity in engineering. *Women in Engineering ProActive Network*.

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Building Resilience One Connection at a Time: A Guide to Developing Retention Programming on College Campuses

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Abstract

Despite college students having the potential to be more socially connected than ever before thanks to technology and social media, many students still struggle with isolation, loneliness, and a lack of belongingness and community. These feelings and experiences not only increase the risk for suicidal behavior and diminish resilience, but they can also negatively impact student retention. Outreach programming that targets social connectedness will be described. Specific guidelines developed from first-hand experiences with implementing such programming will be highlighted, and readers will be encouraged to consider how similar programming could be implemented by various offices or personnel at their own institutions of higher education.

Keywords: social connection, resilience, outreach, retention

Building Resilience One Connection at a Time: A Guide to Developing Retention Programming on College Campuses

College Student Loneliness

With the help of technology and endless social media platforms and dating apps, college students have the potential to be more socially connected than ever before. However, college students are not reporting that this is the case. According to a recent Healthy Minds Survey of college students nationwide, 30% of students indicated that they often feel isolated, 26% indicated that they often feel left out, and 24% indicated that they often lack companionship (Healthy Minds Network, 2023). In a nationwide data pool of students receiving services from college counseling centers, 12.8% presented with social isolation as at least one of their concerns (Center for Collegiate Mental Health, 2023). When this pool of students was specifically asked about the impact of the COVID-19 pandemic on their lives, 60% identified loneliness or isolation as a negative impact. As we can see from this data, college students are feeling disconnected and isolated from others and not only is this impacting their mental health but their experience in college.

Culture of Disconnection

College students are struggling to feel a sense of meaningful connection to others, and this can have detrimental effects on students' mental health and functioning. The prevalence of smart phones, watches and other devices means that at baseline, college students always have technological distractions and information overload that can pull their attention away from the people they are interacting with. Social cues that indicate lack of attentiveness (e.g. poor eye contact, closed off body language, acting uninterested or under-responsive, ignoring) can immediately set a tone of disconnection, distraction, and disinterest. Those students who are struggling to build and maintain relationships may lack the social skills and confidence to be able to do so. In fact, one study found that even the mere presence of mobile devices during face-to-face conversations contributed to less fulfilling conversations and lower empathetic concern (Misra, Cheng, Genevie, & Yuan, 2016). Thus, this generation, more than any others before it, must work harder to stay present physically, mentally and emotionally with others, as this can communicate care and interest, and allow the other person to feel valued.

Impact on Mental Health

According to Dr. Joiner's Interpersonal Theory of Suicide, thwarted belongingness and perceived burdensomeness are two of the three identified factors that can contribute to an elevated risk for suicide (Joiner et al., 2009). In other words, feeling alone, or feeling as if you are a burden or that others would be better off without you can increase the risk that a student might consider suicide as an option if they are struggling, or going through a hardship. Loneliness can be deceiving, because loneliness is not a direct reflection of how big one's social circle is or how many friends someone talks to in a day. Instead, loneliness is a reflection of how connected to and supported we feel by others (Jed Foundation, 2024). So, when talking about students' sense of belonging and community, it is the depth and quality of their social connections that matters, not the sheer number. Feeling disconnected, isolated, or not

belonging can also diminish resilience (Emmons, 2007), or the ability to adapt to hardships or significant stressors and the American Psychological Association suggests that making connections with others is a way to build resilience (American Psychological Association & Discovery Health Channel, 2011). Thus, programs and initiatives on college campuses that promote connections and community-building represent a needed priority, as these can have far-reaching impact on college students' resilience, mental health, and ability to stay successfully enrolled in school.

Impact on Retention

Not feeling a sense of belonging or community at college can also lead to decreased student retention, as students may transfer to another institution in the hopes that their social experience will be better somewhere else. Hoyt (2021) found that the more students connected on campus and to campus resources and programs, the higher their retention rates. Boyd, Liu, & Horissian (2022) examined students' sense of connection and found that a sense of community, and more specifically, belongingness, connectedness, and bonding with others were the most consistent predictors of retention, thriving, well-being and satisfaction. Another study looked at the school experiences of youth between the ages of 13 and 18 and found that unequivocally, peer relationships were the most valued aspect of their school experience (Gowing, 2019). Thus, as many of these students go on to enroll at institutions of higher education, prioritizing connection-building with peers would seem integral to creating a college experience that will compel students to stay at their enrolled institution.

Connection Building Programs

At this institution of higher education, our counseling center faculty have developed a menu of outreach programs that are intentionally designed to promote connection-building among students on campus. After some trial and error, we have gained some useful insight into factors that are likely to lead to a more successful program in terms of attendance, overall experience, and ability to be replicated multiple times and in multiple settings on campus. The remainder of this brief report offers the structure and framework of one of these programs called Dine and Discuss, so that other colleges and universities might be able to implement similar versions of this with their student populations.

The overall premise of Dine and Discuss is to offer a space and a context in which students who either know each other well, not very well, or not at all, can come together in pairs or small groups and interact with each other in a meaningful way. Our primary method for this is the use of conversational prompts, which we call connection cards. The connection cards have questions that students can ask one another in order to get to know each other below the surface level knowledge of their year, major, where they live, etc. We have implemented the Dine and Discuss in two formats. One format is stationing our table outside of the dining hall on campus. We stop students who are entering the dining hall and ask if they would like to participate in the program. We explained the purpose of the program and how to use the connection cards. We let students know that if they participate in the program, they can get a giveaway (i.e. t-shirt, water bottle, journal, etc) when they leave the dining hall. We encourage students to put their phones away and use the connection cards to help facilitate conversation. For students that enter the dining hall by themselves, we have created a community table in the dining hall for students to

sit at if they want to meet other students. The other format we have used is reserving a large room in the student union and setting up high top tables and food from a local restaurant in the room. We utilize peer educators to help greet and talk with the students coming in. We have the connection cards at the tables and the peer educators to help facilitate connections between other students and with themselves.

Findings

The following guidelines are written out to help ensure that programming is as conducive to achieving this type of connection among students as possible.

Guideline 1: Go to Where the Students Are

The first guideline about this programming is to offer it in a location and context where students already are. In our experiences, inviting students to show up to a program across campus and enter into a context where they may not know anyone and might be asked to interact with others can be incredibly intimidating and anxiety-provoking, particularly for students who might already have more difficulty navigating new social situations. Places like the dining hall during peak mealtimes, or a high-traffic area of the student union are an ideal place to engage with students who do not have to make any additional effort to travel to your program. The focus is to bring the program to the students in order to decrease barriers of attendance. Based on our preliminary success of students engaging with these programs in these locations, our counseling center has future plans of providing our programming in the residence halls, and in other student spaces on campus (e.g. multicultural center, center for trans and queer advocacy, Greek life meetings). This preliminary success is evident in the average number of students who engage in the program each time it is offered, and in anecdotal feedback from students who participate. For example, an average of 116 students participated in the Dine and Discuss program each time it was offered during the 2024-2025 academic year. Further, when counseling center faculty have asked students about their experience when they retrieve their giveaway item, students typically speak highly of the program, often noting that they learned a lot about each other and felt more connected. We have also begun to incorporate these activities into the new student orientation programming that incoming students are asked to attend and during students' First Year Experience (FYE) classes. We believe that engaging with as many first year and transfer students as possible is particularly effective, as it offers the opportunity for connection-building as soon as they arrive to campus.

If our new students can build a sense of community and belongingness early in their college career, they are more likely to stay and continue to be engaged on campus, thus building a culture of belonging on campus that goes beyond their first year on campus. Our connection programming also helps to incorporate students from all years in school and ages and thus builds connection amongst all of our students. This is important because programming by the Division of Student Affairs, First Year Experience, and New Student Programs typically just focuses on first year students, and we believe it's important to attend to all of our students' needs. This is supported by Flynn's (2014) research that found that students who were socially engaged after their first year were more likely to earn baccalaureate degrees.

Guideline 2: Structured & Vulnerable

Another key feature that is supported by literature for this type of connection-building programming is that it is structured. A study found that we tend to get stuck in more shallow conversations (or "small talk") because both people falsely assume that the other person is not interested in going deeper, or wants to keep the conversation light (Kardas, Kumar & Epley, 2022). In reality, we tend to like and prefer deep conversations, and we perceive them as leading to a stronger sense of connection to others (Kardas, Kumar & Epley, 2022). However, since we do not readily initiate these kinds of conversations, having a structured context that prompts deeper conversation is valuable.

In our programming, we have compiled a deck of conversational prompts on cards that students can ask each other as a way of starting a conversation and getting to know each other and open up in a deeper, more meaningful way. Research has demonstrated that providing pairs of individuals with tasks that involve gradually escalating, reciprocal self-disclosure results in significantly greater interpersonal closeness than does small-talk (Aron et al., 1997). A willingness to share who we are and how we are really doing, and our willingness to listen to someone else's similarly vulnerable disclosures are the primary elements needed to form friendships (Mowreader, 2023). Thus, offering programming that is specifically designed to have students engage in more vulnerable conversations with each other sets the stage for deep and meaningful connections to form. Also, by providing conversation cards, it takes the pressure off the students to come up with questions on their own. Examples of the conversations cards are, "what is the most unexplainable thing that's ever happened to you?" and "What question are you trying to answer most in your life right now?"

Guideline 3: Have Designated Host/Facilitator(s)

Even if a connection-building program is offered in a convenient location where students naturally are, it can still feel intimidating to "show up" and engage with a program like this alone. This is why having a faculty or staff member, resident assistant, peer educator, or other student facilitators there for the purpose of welcoming in students who show up alone is so crucial. From the moment the student enters the programming space, they can feel a sense of belonging and be oriented to the logistics, so they are not left with that awkward or lost feeling. It also helps them not walk into an empty room and feel like they are the only one there for the program. Seemingly little things like where to sit, whether or not to grab food, or what to do can become huge obstacles for someone who is already feeling anxious and disconnected from others. Having other students be facilitators can be invaluable in the program as they can begin the connecting process. Student participants seem to feel more comfortable having conversations with their peers, and these student facilitators are ready to start and continue the connection and engagement. Hoyt (2021) talks about the importance of the peer-to-peer relationship as due to the "trust and connection that can develop among students who are all in the same boat together" (p. 489), so as much as students could talk to faculty/staff, we want to encourage that peer to peer connection

Guideline 4: Offer (Free) Food and/or Giveaways

The idea behind this guideline is two-fold: college students tend to find any mention of free food or giveaways on campus appealing. We recommend offering food from a popular takeout spot near campus as it might give students a welcomed break from their typical meal plan cuisine and give them something more tempting to come to a program for. Having free giveaways, such as t-shirts, water bottles, hats, etc. can also entice students to show up and engage with a program. Some schools may not have the availability in funding or campus policy to use outside food or giveaways, so it would be important to try to come up with other things that may attract students to participate. For example, faculty who teach courses related to mental health, relationships, wellness, etc. might offer extra credit if students participate in a program like this on campus. Students may also use the free food or giveaways as an excuse to participate in the program. The other reason for this guideline is that food offers students the opportunity to stay and linger, which means more time to connect. Research (Gregersen & Gillath, 2020) has found that offering and sharing food is associated with closeness between people and helps to facilitate and strengthen relationships.

Conclusion

Colleges and universities are having to be more creative in their retention efforts and are going to have to expand their focus beyond just students and their academics. We recommend that colleges and universities start targeting students' campus life and connections to others. Our program seems to be versatile, cost-effective, and an easy way to do so. Any office, department, or group on campus can host this connection programming and it can take place anywhere on campus. We have yet to collect formal data on this program and thus a limitation is that we do not have data to demonstrate its effectiveness. We just have the informal feedback we have received from participants, and a tally of how many students participate each time.

Facilitators of this type of programming can also emphasize the idea of taking steps to further the connections that students make at such events. Deep, meaningful connections take time and intentional effort to develop, so framing these programs or events as a springboard off of which students can continue to communicate and socialize with one another (e.g. exchange contact information, meet up again) is important.

College students are feeling disconnected and lonely. These feelings can contribute to an increased risk for suicide and other mental health concerns and can increase the likelihood that students will leave school or transfer to another school. Thus, one major way to improve student retention and satisfaction, as well as improve student mental health and well-being is to help students feel more connectedness and belonging at school. Offering events and programs where students can show up and meet and connect with peers in a meaningful way may sound simple, yet the mere act of providing the structure and invitation for students to come and interact with each other in this way is something that can often feel anxiety-provoking and cumbersome for students to initiate on their own. It is believed that replicating or adapting this type of connection-building programming to students at other institutions of higher education is a much needed and worthwhile endeavor.

References

American Psychological Association, & Discovery Health Channel. (2011). *The road to resilience*. https://www.uis.edu/sites/default/files/inline-images/the_road_to_resilience.pdf

Aron, A., Melinat, E., Aron, E. N., Vallone, R. D., & Bator, R. J. (1997). The experimental generation of interpersonal closeness: A procedure and some preliminary findings. *Personality and Social Psychology Bulletin, 23*(4), 363–377. https://doi.org/10.1177/0146167297234003

Boyd, N. M., Liu, X., & Horissian, K. (2022). Impact of community experiences on student retention perceptions and satisfaction in higher education. *Journal of College Student Retention: Research, Theory & Practice, 24*(2), 337–365. https://doi.org/10.1177/1521025120916433

Center for Collegiate Mental Health. (2023). *2022 annual report* (Report Publication No. STA 23-168). https://ccmh.psu.edu/assets/docs/2022%20Annual%20Report.pdf

Emmons, H. C. (2007). Chapter 10. *Journal of College Student Psychotherapy, 21*(3–4), 225 241. https://doi.org/10.1300/J035v21n03_10

Flynn, D. (2014). Baccalaureate attainment of college students at 4-year institutions as a function of student engagement behaviors: Social and academic student engagement behaviors matter. *Research in Higher Education, 55*, 467–493.

https://doi.org/10.1007/s11162-013-9321-8

Gowing, A. (2019). Peer-peer relationships: A key factor in enhancing school connectedness and belonging. *Educational and Child Psychology, 36*(2), 64–77.

https://doi.org/10.53841/bpsecp.2019.36.2.64

Gregersen, S. C., & Gillath, O. (2020). How food brings us together: The ties between attachment and food behaviors. *Appetite, 151*, 104654. https://doi.org/10.1016/j.appet.2020.104654

Healthy Minds Network. (2023). *Healthy Minds Study among colleges and universities, year*

(2021–2022) [Data set]. University of Michigan, University of California Los Angeles, Boston University, & Wayne State University. https://healthymindsnetwork.org/reserach/data-for-researchers

Hoyt, J. E. (2023). Student connections: The critical role of student affairs and academic support services in retention efforts. *Journal of College Student Retention: Research, Theory & Practice, 25*(3), 480–491. https://doi.org/10.1177/1521025121991502

Jed Foundation. (2024). *Understanding loneliness*. https://jedfoundation.org/resource/understanding-loneliness/

Joiner, T. E., Van Orden, K. A., Witte, T. K., Selby, E. A., Ribeiro, J. D., Lewis, R., & Rudd, M. D. (2009). Main predictions of the interpersonal-psychological theory of suicidal behavior: Empirical tests in two samples of young adults. *Journal of Abnormal Psychology, 118*(3), 634–646. https://doi.org/10.1037/a0016500

Kardas, M., Kumar, A., & Epley, N. (2022). Overly shallow?: Miscalibrated expectations create a barrier to deeper conversation. *Journal of Personality and Social Psychology, 122*(3), 367–398. https://doi.org/10.1037/pspa0000281

Misra, S., Cheng, L., Genevie, J., & Yuan, M. (2016). The iPhone effect: The quality of in person social interactions in the presence of mobile devices. *Environment and Behavior, 48*(2), 275–298. https://doi.org/10.1177/0013916514539755

Mowreader, A. (2023, March 15). Six factors to improve student connections. *Inside Higher Ed*. https://www.insidehighered.com/news/2023/03/15/six-factors-improve-student-connections

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Caring More for Our First-Year, First-Generation and Low-Income Students: Perceptions of Barriers and Transitional Success

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Abstract

First-generation and low-income (FGLI) students often encounter challenges during their transition into higher education, including limited access to institutional knowledge, social networks, and financial resources. While many colleges and universities offer targeted programs to support FGLI populations, not all eligible students enroll in or engage with these initiatives. This qualitative phenomenological study explores the lived experiences of first-year, non-programmatic FGLI students who are not actively participating in formal support programs to better understand how they navigate the transition to college. Through in-depth interviews, the study investigated the types of support these students seek independently, the institutional and social barriers they face, and their perceptions of belonging and access. Findings aim to inform more inclusive and accessible support structures that address the needs of FGLI students beyond program enrollment.

Keywords: socio-economic challenges, educational access, institutional barriers, inclusive support systems

Caring More for Our First-Year, First-Generation and Low-Income Students: Perceptions of Barriers and Transitional Success

Many higher education institutions, programs, and services exist to support first-generation and/or low-income (FGLI) student populations with their transition and retention while in college. These range from federally funded grants, such as TRIO programs, to state-funded programs and institutional initiatives (Bassett, 2021). Due to financial and social barriers, these programs and initiatives cannot holistically support all FGLI students on their campuses. This results in some FGLI students being connected to programs and services with personnel that are dedicated to their success, while others must rely on other means of support that are offered on or off campus. This is an important issue, as higher education's campus structures and cultures were not designed with this student population in mind (Bassett, 2021). These barriers for first-generation students have been identified and replicated across different higher education institutions, such as students being able to identify academic support services (Dika & D'Amic, 2016), finding a sense of belonging through community (Means & Pyne, 2017), and especially for lower-income students, financial aid services being accessible (McCallen & Johnson, 2020).

The purpose of this study is to listen to the voices of first-year FGLI students and provide an opportunity for higher education institutions, their student and academic affairs professionals, and administration to be better prepared to support the needs and wants of this population. At the public university where this study was conducted, a dedicated department offers preparation, orientation, and academic support programs tailored to students who are the first in their families to attend college and who may encounter distinct challenges stemming from educational or socioeconomic factors. Although some programming and services are open to students outside the department, some transitional and first-year services are only available to some applicants. For example, one program is an invitation-only program where selection occurs through a review of admitted students' admissions applications.

Given this structure, not all FGLI students at the institution have equal access to transitional and first-year support, particularly those I define as *non-programmatic* students—FGLI students who enter the university without enrolling in or engaging with programs specifically designed for. This raises important questions about how students outside of these programmatic pathways experience their transition into college and what resources they can rely on. First, (RQ1), what supports, if any, do non-programmatic FGLI students receive from other programs or services at or outside of the university? Second, (RQ2), what perceptions do non-programmatic FGLI students have about transitioning into college? Finally, (RQ3), what institutional or societal barriers do non-programmatic FGLI students perceive as restricting access to first-year and transitional support services?

Positionality Statement

I am a White, cisgender man with a first-generation college student identity. For this work, and much of my general worldview, I come with the lens of constructivism. To learn about a phenomenon such as transitioning to college and the first-year experience, it is important to listen to the voices of those experiencing it themselves. As I approached this research process, being a first-generation and low-income college student influenced my purpose and passion for wanting to hear from other students of similar identities and to understand the challenges and barriers they have faced in their journey. Yet, first-generation and low-income students possess several other intersecting identities, which impact the levels of privilege and marginalization

they experience both on and off campus. This was an important consideration for me to constantly reflect on throughout my interviews, as I worked to avoid assuming others' experiences would mirror my own.

This study was supported by a faculty mentor and two undergraduate research assistants, whose input and collaboration shaped various aspects of the research process. While I led the study design, data collection, and initial analysis, the research assistants contributed feedback, reviewed portions of the transcripts, and engaged in later analysis. The faculty mentor provided ongoing guidance and motivation throughout the research process. Including multiple voices in this process enhanced the trustworthiness of the findings and helped mitigate the influence of my singular perspective as the lead researcher.

Literature Review

Transitional and First-Year Experience Programs for Underserved Students

A specific type of programming at higher education institutions concerns the transition and first-year experience of historically underserved student populations. For example, there is a wide range of initiatives to contribute to the transitional success of these students, such as Summer Bridge programs (Bir & Myrick, 2015) and larger programmatic initiatives that are service-oriented. Most of these interventions focus on building college knowledge through a first-year experience course (Kezar & Kitchen, 2020). Then, there are first-year high-impact practices that are meant to develop academic skills. While these programs are designed to support students' transition, their effectiveness often depends on the conditions of access, factors such as living status, program eligibility, and students' comfort with seeking support.

Institutional Programs and the Conditions of Access

Residence hall environments have been found to contribute to a sense of belonging for all college students (Strayhorn, 2012), but the residential experience has a particularly significant impact on first-generation students (Garvey et al., 2020; Gallagher, 2021). In contrast, commuter students often face ongoing challenges in cultivating a sense of belonging due to reduced engagement with campus culture. Institutional responses to these commuter-based challenges are varied and include initiatives such as on-campus events, faculty and staff connections, and social support networks (Fernandes et al., 2017). However, little research has examined how commuter status intersects with FGLI identity to shape students' access to resources during their transition to higher education.

Beyond living status, much of the literature has focused on the effectiveness of support programs aimed at underrepresented students. These programs have been linked to outcomes, such as the development of academic and career self-efficacy (Kezar et al., 2019). Yet, studies also highlight limitations. For example, Bassett (2021) found that while FGLI students may recognize the importance of support services, their ability to ask for and access these services can shape their success during the first year. Similarly, Means and Pyne (2017) demonstrated how institutional support structures, when effective, can strengthen students' sense of belonging by following FGLI students from their participation in a college access program into their first year.

Support Gaps for Non-Program-Eligible Students

How can students who fall outside of the eligibility of these programs and initiatives receive support, guidance, and mentorship in gaining knowledge and exposure to the transitional areas that ensure success in higher education? Research has shown that while targeted programs (such as TRIO or opportunity programs) are effective, many FGLI students either do not qualify or are unaware of their existence (Engle & Tinto, 2008; Stephens et al., 2012). These students may face a "support gap," where institutional resources exist but remain inaccessible or underutilized due to eligibility limitations, lack of outreach, or feelings of not belonging. As non-programmatic FGLI students transition into college for the first time, their perceptions of what transitioning is like should be heard. Non-programmatic FGLI students may include those who narrowly miss financial eligibility criteria, transfer students, or those who choose not to self-identify as first-gen early on. As a result, they often navigate college without tailored support, which may impact their sense of belonging, access to resources, and academic performance. Centering their perceptions offers a deeper understanding of transitional challenges that may not be visible through institutional metrics. Listening to these lived experiences helps inform more inclusive practices that don't rely solely on program enrollment to provide support (Museus & Ravello, 2010).

Reevaluating the First-Generation Student Identity

Centering student voices will also continue to add to the literature that explores what it means to be first-generation and recognize that the term itself needs to be critically analyzed to mitigate the inequalities associated with being first-generation and other identities that students hold (Nguyen & Nguyen, 2018). For example, Bettencourt et al. (2020) found that students saw their first-generation status as an organizational and familial identity rather than a social identity. Intersectionality continues to be examined in connection to students who are first-generation and hold identities that are privileged and oppressed (Jackson et al., 2022).

Addressing Gaps in the Literature

My study addressed this research gap by focusing on first-year, non-programmatic FGLI students, their perceptions of transitioning into college, and the barriers that limit their ability to take advantage of support services on or off campus. This focus on challenges and barriers is a gap found in the current literature on the transitional and first-year experience for FGLI students. Also, there has been less of a focus on looking at how different FGLI populations are supported during their transition and first year in college.

Methods

Research Design

This study employed a qualitative phenomenological research design to explore the lived experiences of FGLI students who are not enrolled in formal institutional support programs during their first year of college. A phenomenological approach was chosen to capture the subjective perspectives of participants as they navigated academic, social, and institutional landscapes without the guidance of programmatic support. Data were collected through semi-

structured interviews, allowing participants to share in-depth reflections on their transitions, challenges, and sources of support. This design centers student voice and agency while revealing the systemic and interpersonal factors that shape their early college experiences. The study aimed to inform more inclusive support practices by identifying patterns and meaning across individual narratives.

Participants & Sampling

The research study was conducted at a four-year public university in the Southeast. The institution is a predominantly White institution (PWI), with 37.4% of its student population being classified as minority enrollment. Between the two campuses of the institution in Fall 2024, first-generation students make up 21.1% of the undergraduate population. Of those first-generation students, 54.4% are Pell-grant eligible (Author, 2024).

The target population was FGLI students at the university. More specifically, the following criteria defined what it means to be FGLI and were used for recruitment. Being first-generation means that "a student whose parent(s)/legal guardian(s) do not have a bachelor's degree or higher" (Author, 2025). Low-income means you are eligible for the federal Pell Grant, according to the Free Application for Federal Student Aid (Federal Student Aid, n.d.). More specifically, the non-programmatic FGLI are students who are not enrolled in the university's department programs for students who are the first in their families to attend college. This does not mean the students cannot interact with the department's events or students who are in the programs but do not receive support or have programming experiences based on enrollment and other qualifications. Additionally, it doesn't mean they cannot eventually participate in the department's programming and services in the future. Still, the student had not done so during the time this recruitment and interviewing took place.

To recruit participants, I developed a recruitment email containing key details about the research study, including its purpose, eligibility criteria, contact information, and a link to the screening survey. I designed a digital recruitment flyer, which was shared online and displayed in various locations across the university campus. With support from the university's Office of Institutional Research, I also obtained a targeted list of potential participants who met the study criteria to assist in the outreach effort.

Data Collection

Four non-programmatic FGLI participants were part of the research study: Abigail, Daniela, Imani, and Sarah. Data for this study were collected through four individual, semi-structured interviews that occurred either in person or over Zoom. While five participants were originally recruited, one participant ended up meeting the criteria as a programmatic FGLI student once the interview was conducted and was thereby removed. Additional interviews were conducted with five programmatic FGLI students; however, this data was analyzed separately from the scope of this study.

Although the number of participants may appear small, a sample of four is methodologically appropriate for a phenomenological study, which values depth of lived experience over breadth of representation (Creswell, 2018). The aim of this study was not to generalize findings to all FGLI students but to capture the nuanced perspectives of non-programmatic FGLI students, a group whose voices are often absent. The sample allowed for

detailed engagement with each participant's narrative, ensuring their experiences were heard, honored, and analyzed with care.

As Biddix (2018) notes, semi-structured interviews are effective for qualitative studies as they provide structure with an interview questionnaire protocol and allow room and freedom to ask follow-up questions according to participants' responses. Each interview lasted approximately 20-40 minutes. An interview protocol was used for this group of students (see Appendix A). The interview protocol used for this group was tailored to the experiences of non-programmatic FGLI students. Notably, all participants were in their second year at the time of the interviews, enabling them to reflect comprehensively on their first-year experiences.

Data Analysis

The four interviews with non-programmatic FGLI students were transcribed and carefully reviewed to ensure accuracy and preserve the integrity of participants' words. As part of my pre-coding process, I listened to the recordings while reading the transcripts, noting moments where students' stories, language, or emotions reflected their transitional experiences (Layder, 1998; Saldaña, 2021). This approach allowed me to stay close to their voices and begin recognizing connections to the research questions. I then conducted the first coding round using in vivo coding (Saldaña, 2021; Strauss, 1987), a method chosen to honor the participants' own words as the foundation for analysis. To support consistency and organization, I used Dedoose to track codes while maintaining attention to the individuality of each student's narrative.

In the second coding round, I used focused coding (Charmaz, 2014; Saldaña, 2021) to categorize the in vivo codes into seven thematic groups representing different aspects of students' transitional and first-year experiences: Hometown & Family, Financial & Budget, Academic, Social, Personal Interest, and University & City-specific. A seventh category, Feelings Associated with Transition and First-Year Experience, captured codes that reflected individual emotions but did not fit neatly into the other six aspects. As shown in Table 1, I developed descriptions for each category to refine my coding framework. This categorization allowed me to further address the research questions and conduct a final review of the transcripts to ensure all relevant codes were included. In total, 627 in vivo codes were categorized.

Table 1

Code Categories

Category Name and Color	Category Description	Coding Examples
Blue – Feelings associated with transition and first-year experience	Related to feelings of what it is like to transition into college.	"It, it's like a make-it-or-break-it kind of situation if you are really not careful with it."
Red – Hometown & family aspects	Based on hometown experiences or family dynamics and identities.	"On like my mom's side, she's an immigrant, so she, her family, is in a completely different country than where we are."

Yellow – Financial & budget aspects	The various dynamics of paying for college and financial awareness.	"I needed Bright Futures, and I was like going to get scholarships."
Green – Academic aspects	The challenges or successes of academics in college. Academic support programs or services.	"I was already going to like study sessions with, like the tutoring groups…"
Teal – Social aspects	Points of connection, or barriers of connection, with others.	"Definitely met some people in some of my classes who were also first-gen."
Pink - Personal interest aspects	Engagement or involvement based on personal interests.	"Since I'm pursuing like an art degree, I'm trying to build up a portfolio."
Orange – University and City-specific aspects	Terms or phrases that are based on university and city contexts.	"all I knew about like for first gen was the CARE and the Quest, and I wasn't in it."

The final coding round applied a deductive approach, using the seven categories to color-code transcripts for quick reference and visual classification in data analysis (Saldaña, 2021). I used Dedoose to assign unique colors to each category, facilitating the identification of patterns and themes. With these structured categories, I could synthesize findings and draw meaningful themes for each of the three research questions.

Findings

All non-programmatic FGLI study participants entered the university without enrolling in or engaging with programs designed for FGLI students. Instead, they sought support through broader institutional programs, university services, and personal connections with staff and peers. Their perceptions of the transition varied based on their pre-college background, expectations, and first-year experiences. They also encountered several challenges and barriers that limited their access to resources that could have supported their academic, social, and professional success.

Research Question 1: What supports, if any, do non-programmatic FGLI students receive from other programs or services at or outside of the university?

Theme: Institutional Support Systems

The students identified various programs and services in response to the interview questions. Sarah specifically highlighted the role of a Life Coach, stating, "It was nice having someone [a Life Coach] who's literally being paid to like handle that in a professional manner, and like, give you like the second person's experience." This coaching service was a key part of Sarah's transition and first-year experience at the university. Daniela and Ana named the Honors Program and the University's Undergraduate Research Program as beneficial in developing professional networks and skills. These examples underscore that, while non-programmatic

students did not seek FGLI-specific services, they leaned on mainstream institutional offerings to navigate their first year.

Beyond institutional programs and services, all four non-programmatic FGLI students emphasized the importance of peer support, particularly from fellow first-generation students, including roommates, friends, and classmates. Imani described how these peer connections played an academic role in her transition, explaining, "...definitely met some people in some of my classes who were also first-gen, that were a little bit older than me and because they've already been through it, they were really helpful." Daniela echoed this sentiment, noting that her roommate, also first-generation, was essential for cultural and emotional support, especially when confronting financial or social limitations that wealthier peers did not face. Collectively, these responses highlight the value of peer-to-peer support among FGLI students, not just within formal programs but also in everyday academic and social settings. However, such connections are not always organically established, especially when students lack opportunities to interact and recognize their shared experiences.

Research Question 2: What perceptions do non-programmatic FGLI students have about transitioning into college?

Theme: Institutional Perceptions

In both interviews, students reflected on how their perceptions of the university shaped their transition and first-year experience. Sarah and Imani shared examples of how specific university characteristics influenced their sense of belonging and support. Sarah, for instance, highlighted the impact of the university's large legacy student population, explaining, "I think a lot of the people that go here, they're like legacy students. So their parents went here. Their friends and families go here. So it's kind of like, if this is your first time, you have no other experience. It's sort of isolating." This sentiment underscores how the presence of many legacy students can create a perceived disconnect for first-generation students, making their transition feel more isolating.

Daniela further described this disconnect through the lens of institutional knowledge, noting how legacy students and peers with family connections appeared to have easier access to internships and professional experiences. She explained that many of her high school peers found opportunities through relatives, whereas she "had no cousins here… all my cousins [were] in Cuba." Abigail echoed these concerns in a different form, citing challenges with advising accuracy and navigating complex course requirements. Even after carefully planning her course load, she experienced confusion when advisors provided conflicting information, leaving her with unnecessary classes and wasted tuition dollars. These perceptions reflect how institutional processes can inadvertently reinforce a sense of inequity for first-generation students who lack the guidance that legacy peers often take for granted.

Research Question 3: "What institutional or societal barriers do non-programmatic FGLI students perceive as restricting access to first-year and transitional support services?"

Theme: Institutional Barriers

The barriers students identified spanned multiple aspects of their transitional and first-year experiences. When asked, "Do you think there are any barriers attached to being first-generation or low-income that have impacted your transition to college so far?" Imani responded, "I feel like Greek life is such a huge thing, and like a way that people network and move around and find success at the school. There's just like a financial barrier between being able to be involved in that."

Daniela built on this theme of exclusivity, explaining that information overload and poorly designed websites made it difficult to join organizations or locate opportunities. She described the process of navigating the student government website as "the most convoluted thing in the entire world," demonstrating how inaccessible information can effectively close doors before students even reach them. Abigail, meanwhile, pointed to limited advising access, where counseling appointments filled weeks in advance, and transportation barriers, which limited her ability to pursue jobs and competitions off campus. Both students also drew attention to the gatekeeping of selective organizations, from Greek life to business fraternities, where entry often depended less on merit and more on pre-existing networks. Collectively, these findings highlight how financial, structural, and cultural barriers intersect to restrict non-programmatic FGLI students' access to support and opportunity.

Recommendations

Based on insights from the four interviews, four key categories of recommendations have emerged for campus stakeholders—including administrators, academic advisors, student affairs professionals, and instructors. These preliminary suggestions aim to enhance support for non-programmatic FGLI students. As data analysis progresses, these recommendations will be refined and expanded to reflect emerging themes and student experiences.

Strengthen and Promote Accessible Institutional Support Systems

Rather than specialized FGLI programs, ~~both~~all students found meaningful support through broader university programs, such as College Life Coaching, the Honors Program, and the Undergraduate Research Program during their first-year experience. These existing services can expand their outreach by specifically targeting FGLI student populations during orientation, course registration, and advising sessions that take place during the transitional period and early in the first year.

Normalize and Facilitate Peer-to-Peer Support Opportunities

Peer support, especially from other first-generation students, was highlighted as both beneficial and difficult to occur organically. University-wide FGLI peer mentoring initiatives can help connect incoming students with slightly older students who have navigated similar challenges. Also, students who hold peer leader and ambassador roles can be trained to recognize and support FGLI students through shared lived experiences and near-peer mentorship, which involves connecting individuals with similar educational backgrounds or career stages to exchange guidance, support, and insights (Trujillo et al., 2015)

Address Institutional Culture and Perceptions of Belonging

Perceptions of exclusivity due to legacy culture and lack of inherited institutional knowledge contributed to feelings of isolation across participants. The university can continue to create visibility campaigns that center on FGLI stories and success across campus (e.g., social media, panels, posters, newsletters). First-generation identity can be integrated into existing programming so that students understand varying levels of social capital and access. Doing so promotes an understanding of intersectionality, highlighting how social identity shapes experience based on levels of privilege and oppression.

Mitigate Financial and Social Barriers to High-Impact Involvement

Social and professional extracurriculars, like Greek Life and competitive business organizations, were perceived as exclusionary due to financial and cultural barriers. Alternative pathways to build community and professional networks that don't rely on legacy-based or financially exclusive groups need to be further highlighted and supported. In addition, structural barriers like transportation challenges and inaccessible information systems compounded students' difficulty engaging with campus life. The university can subsidize or create alternative leadership and social programs that are low-cost or free and intentionally inclusive of FGLI students.

Conclusion

The experiences of non-programmatic first-generation and low-income (FGLI) students highlight critical gaps in institutional support and illuminate the resilience these students draw upon to navigate their first year of college. While formal support programs can be impactful, this study underscores that not all students have access to or choose to engage with them—leaving many to rely on informal networks, personal resourcefulness, and chance encounters with supportive individuals. Their voices reveal both the barriers they face, and the opportunities institutions have to build more inclusive, accessible systems of support that do not depend solely on program participation. By centering the lived experiences of non-programmatic FGLI students, this research calls for institutional practices that are proactive rather than program-dependent and urges future studies to further explore scalable, equity-focused strategies to enhance transition and retention for all underrepresented students.

References

Bassett, B. S. (2021). Big enough to bother them? When low-income, first-generation students seek help from support programs. *Journal of College Student Development*, *62*(1), 19–36. https://doi.org/10.1353/csd.2021.0002

Bettencourt, G. M., Mansour, K. E., Hedayet, M., Feraud-King, P. T., Stephens, K. J., Tejada, M. M., & Kimball, E. (2020). Is First-Gen an Identity? How First-Generation College Students Make Meaning of Institutional and Familial Constructions of Self. Journal of College Student Retention, 24(2), 271-289. https://doi.org/10.1177/1521025120913302

Bir, B., & Myrick, M. (2015). Summer Bridge's Effects on College Student Success. *Journal of Developmental Education*, *39*(1), 22–30. http://www.jstor.org/stable/24613999

Chapter 3 "Framing Research," pp. 44-64 in Biddix, J.P. (2018). *Research methods and applications for student affairs.* Jossey-Bass.

Charmaz, K. (2014). *Constructing Grounded Theory* (2nd ed.). Sage

Conefrey, T. (2018). Supporting First-Generation Students' Adjustment to College With High-Impact Practices. Journal of College Student Retention, 23(1), 139-160. https://doi-org.proxy.kennesaw.edu/10.1177/1521025118807402

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.

Dika, S. L., & D'Amico, M. M. (2016). Early experiences and integration in the persistence of first-generation college students in STEM and non-STEM majors. *Journal of Research in Science Teaching*, *53*(3), 368-383. https://doi.org/https://doi.org/10.1002/tea.21301

Engle, J., & Tinto, V. (2008). *Moving beyond access: College success for low-income, first-generation students*. The Pell Institute. https://files.eric.ed.gov/fulltext/ED504448.pdf

Federal Student Aid. *Federal Pell Grants: Who is Eligible.* (n.d.). https://studentaid.gov/understand-aid/types/grants/pell

Fernandes, A., Ford, A., Rayner, G., & Pretorius, L. (2017). Building a sense of belonging among tertiary commuter students: The Monash Non-Residential Colleges program. *Student Success, 8*(2), 31-42. https://doi.org/10.5204/ssj.v8i2.380

Gallagher, P. (2021). *Learning where they live: First-generation college students in the residence halls*. In R. Longwell-Grice & H. Longwell-Grice (Eds.), *At the Intersection: Understanding and Supporting First-Generation Students* (pp. 225-237) (1st ed.). Routledge. https://doi.org/10.4324/9781003443131

Garvey, J.C., Ballysingh, T.A., Dow, L.B., Howard, B.L., Ingram, A.N., & Carlson, M. (2020). Where I Sleep: The Relationship with Residential Environments and First-Generation Belongingness. *College Student Affairs Journal 38*(1), 16-33. https://dx.doi.org/10.1353/csj.2020.0001.

Jackson, A., Colson-Fearon, B., & Versey, H. S. (2022). Managing Intersectional Invisibility and Hypervisibility During the Transition to College Among First-Generation Women of Color. Psychology of Women Quarterly, 46(3), 354-371. https://doi.org/10.1177/03616843221106087

Layder, D. (1998). Sociological practice: Linking theory and research. Sage.

Kezar, A., & Kitchen, J. A. (2020). Supporting first-generation, low-income, and underrepresented students' transitions to college through comprehensive and integrated programs. *American Behavioral Scientist*, 64(3), 223–229. https://doi.org/10.1177/0002764219869397.

Kezar, A., Hypolite, L., & Kitchen, J. A. (2019). Career Self-Efficacy: A Mixed-Methods Study of an Underexplored Research Area for First-Generation, Low-Income, and Underrepresented College Students in a Comprehensive College Transition Program. American Behavioral Scientist, 64(3), 298-324. https://doi.org/10.1177/0002764219869409 (Original work published 2020)

Means, D. R., & Pyne, K. B. (2017). Finding My Way: Perceptions of Institutional Support and Belonging in Low-Income, First-Generation, First-Year College Students. *Journal of College Student Development*, *58*(6), 907–924. https://doi.org/10.1353/csd.2017.0071

McCallen, L. S., & Johnson, H. L. (2020). The role of institutional agents in promoting higher education success among first-generation college students at a public urban university. Journal of Diversity in Higher Education, 13(4), 320–332. https://doi.org/10.1037/dhe0000143

Museus, S. D., & Ravello, J. N. (2010). Characteristics of academic advising that contribute to racial and ethnic minority student success at predominantly White institutions. *NACADA Journal*, 30(1), 47–58. https://doi.org/10.12930/0271-9517-30.1.47

Nguyen, T.-H., & Nguyen, B. M. D. (2018). Is the "First-Generation Student" Term Useful for Understanding Inequality? The Role of Intersectionality in Illuminating the Implications of an Accepted—Yet Unchallenged—Term. *Review of Research in Education*, *42*(1), 146–176. https://doi.org/10.3102/0091732X18759280

Saldaña, J. M. (2021). *The coding manual for qualitative researchers* (4th ed.). SAGE Publications.

Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C. S., & Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology*, 102(6), 1178–1197. https://doi.org/10.1037/a0027143

Strauss, A.L. (1987). *Qualitative analysis for social scientists*. Cambridge University Press.

Strayhorn, T. L. (2012). *College students' sense of belonging: A key to educational success for all students*. New York, NY: Routledge.

Trujillo, G., Aguinaldo, P. G., Anderson, C., Bustamante, J., Gelsinger, D. R., Pastor, M. J., Wright, J., Márquez-Magaña, L., & Riggs, B. (2015). Near-peer STEM Mentoring Offers Unexpected Benefits for Mentors from Traditionally Underrepresented Backgrounds. *Perspectives on undergraduate research and mentoring* : PURM, 4(1), http://blogs.elon.edu/purm/files/2015/11/Riggs.GT-et-al-PURM-4.1.pdf

Appendix A
Interview Protocol: Non-Programmatic FGLI Students

Caring More for Our First-Year, First-Generation and Low-Income Students: Perceptions of Barriers and Transitional Success

Instructions for Interviewer: Please say your name and the date at the beginning of the recording. The questions are open-ended so some participants may talk more, and some

may talk less. We want as much detail as possible. It will be up to you to ask some probe questions to help build their story but try to let them drive the conversation.

Verbal consent of recording interview: This study involves an audio recording of your interview with me. Neither your name nor any other identifying information will be included with the audio recording or the transcript. Only I will be able to listen to the recordings. Do you agree with this?

Before starting your first year at the university, how did you feel about going to college?

- Follow-up: Thank you for sharing how you felt about coming to college. Were there any specific aspects of college that you thought would be challenging? Were there any aspects that you thought you would succeed with?

What were some of the programs or services at the university, or outside of the university, did you receive support in your transition to college from?

- Follow-up: Aside from programs or services, was there anyone that made you feel supported as a first-year college student?

During your first year at the university, did you ever feel a lack of support in your academic, personal, or professional goals?

- Follow-up: What were some of the specific ways that you did not feel supported in your academic, personal, or professional goals?

Do you think there are any barriers attached to being first-generation or low-income, that has impacted your transition to and first year in college?

- Follow-up: Is there anything else about your identities or background that has impacted your transition and first year in college?

Do you think there are any barriers at the university that limit how much support you have been able to receive as a first-year college student?

- Follow-up: Have you been able to identify those barriers and if so, what are they?

What is one goal that you would like to accomplish this upcoming academic year?

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