

Bridging the Gap: Mentorship and Career Support for Neurodivergent STEM Scholars

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The increasing recognition of neurodiversity (ND) within science, technology, engineering and mathematics (STEM) fields has led to a growing demand for inclusive educational practices that support neurodivergent scholars. This paper explores the impact of mentorship, career counseling, and the use of strengths-based assessments, such as the Birkman® assessment, on the career readiness of neurodivergent students at Landmark College's S-STEM program. Using social cognitive career theory (SCCT) as a framework, we analyze longitudinal data from program participants, highlighting an increase in internship participation and career confidence. Interviews with recent graduates reveal key challenges in the post-graduation transition period, the role of professional networks, and the importance of near-peer mentoring in career persistence. The study underscores the critical need for structured post-graduate support and proposes a near-peer mentorship model to facilitate career integration for neurodivergent STEM graduates. Findings contribute to the growing literature on ND inclusion in STEM and offer actionable insights for higher education institutions.

Keywords: neurodiversity, STEM, scholars, near-peer mentoring, career persistence

Introduction & Literature Review

The brain is the most complex organ on earth. Neurodiversity (ND) is the recognition of the biologic fact that all brains are wired differently. In creating systems that can serve neurodivergent students we are creating systems that benefit all neurotypes. Along with this, we believe Autism, Attention Deficit Disorder (ADHD), learning disabilities, and other neurodivergent brain archetypes are valuable forms of perception that have enormous potential to enrich the science, technology, engineering and mathematics (STEM) fields. We seek to afford them and their respective fields of interest this opportunity through inclusive best practices, such as mentorship. We are in the process of developing the best practices for supporting neurodivergent students in college to prepare them for work into their desired field, through the transition period, and into an integrated state with continued support where they can fully express their potential - all of which we will discuss in this paper. Recently, the American Association for the Advancement of Science Scholarships in Science, Technology, Engineering, and Mathematics Resource and Evaluation Center (AAAS S-STEM REC) published guidance surrounding scholars' pathways to STEM careers. (AAAS S-STEM REC, 2024). The report highlighted how practical training through internships can significantly improve a scholar's ability to be hired (Groot & De Brink, 2000). The S-STEM program at Landmark College exclusively serves neurodivergent (ND)

scholars who financially qualify for the scholarship program. In 2020, the program evolved with a Track 2 S-STEM grant and the addition of a cohort-based course and use of the Birkman® assessment for all mentors and scholars (Sullivan et al., 2024). After three years, the program has seen an increase in scholar participation in internships from 52% (11/21) pre-intervention to 87% (13/15) from data collected during year 3 of the grant cycle (Monroe et al., In Press). This increase can also be attributed to directly pairing scholars with career counselors that are trained in working with ND individuals, which has been shown to increase the use of career services for STEM scholars (Joyner-Matos & Islam-Zwart, 2023). In addition to improving technical skills, internships have also been shown to improve STEM scholar sense of belonging (Council et al., 2012). Byars-Winston and Lund Dahlber (2019) highlight that it is important for scholars to have exposure to STEM professionals who represent their identities in some way. However, it can be a challenge to identify neurodivergent individuals in STEM, as disclosure is still a complex process. STEM students incorporate many intersecting elements of their identities when pursuing careers (AAAS S-STEM REC, 2024) and many GenZ students lack confidence in their skills post-graduation (Sawyer, 2021). Our program goes beyond supporting scholars in technical skills and works to develop both STEM identities (Matte & Monroe, 2024) and reframing neurodivergent stereotypes ("neurotypes") in professional language through

the implementation of the Birkman® assessment (Monroe & Matte, 2024). The application of Social Cognitive Career Theory (SCCT) to program considerations has been shown to successfully support STEM scholars with disabilities (da Silva Cardoso et al., 2013). This includes the introduction of near-peer mentoring which has been shown to be valuable for both parties in their career confidence and persistence in STEM (Anderson et al., 2019). Insights about students with disabilities entering the workforce are extremely valuable. Even though 10% of the U. S. workforce is made up of individuals with disabilities, this population only represents 3% of the STEM workforce (National Center for Science and Engineering Statistics, 2023). While this is an increase from 2% in 2011 (Moon, 2012), the disparity remains a concern.

Expansion of Offerings at Landmark College

Landmark College, a college that exclusively serves neurodivergent students, is in a phase of rapid expansion, of inclusion of bachelors' degrees in STEM (and beyond). The computer science BS degree was established in 2010, and the biology (formerly life science) BS degree was established in 2020. As the college transitions from solely granting AS degrees to granting BS degrees, the career supports for students also need to evolve. Since 2021, the LC AIE-STEMPLOS program has a graduation rate of 73% (16/22) for scholars completing AS or BS degrees in Biology, Life Science, or Computer Science. Of the participants who have moved on from our program, nine transferred to other colleges 8 of which were to other STEM programs. Seven scholars have entered the STEM workforce post graduation, and one is known to not currently work in a STEM career; five paths are unknown (two of which graduated within the last year). For this publication, we have engaged several recent graduates of LC, all who are named as co-authors on this publication and who have completed STEM-based internships while participating in the S-STEM program at LC. We sought to determine the impact the program had on their career trajectory, any struggle they may have experienced post graduation, if and how they might benefit from additional mentoring support, and whether they would have an interest in supporting the program as a near peer mentor.

Methodology & Evaluation

In order to determine the impact of participating in the S-STEM program, also known as AIE-STEMPLOS (Access to Innovative Education in

Science, Technology, Engineering, and Mathematics-Providing Learning Opportunities and Scholarship), we interviewed five former scholars. Seven scholars were contacted based upon their length of participation and commitment to the program and five responded to the request to be interviewed. In the interviews with program alumni, we explored their post-graduation experiences, focusing on their professional connections and job search journeys. We asked if they maintained contact with Landmark professionals or peers, particularly those in the AIE-STEMPLOS Cohort, and how these relationships influenced their sense of community. Alumni shared their comfort levels in reaching out to peers, interest in a connection community for AIE-STEM graduates, and their success in securing STEM-related jobs. We delved into their use of Birkman language, perceived barriers to working in STEM, and challenges faced during their job search or transition to professional roles. Additionally, we inquired about desired supports or initiatives, the importance of mentor contact, and advice for recent graduates. Alumni also discussed their interest in near-peer mentoring, preferences for mentoring, and the impact of neurodiversity initiatives on their success. This comprehensive set of questions aimed to capture the multifaceted experiences of our graduates and identify areas for future support and improvement. All interviewed alumni signed consent forms to be interviewed in alignment with IRB approval (IRB #2020-106) and are also co-authors on this manuscript. Transcripts from four interviews and written responses from one scholar were compiled into one document. The document was uploaded into Microsoft Co-pilot and the AI-platform was asked to identify common themes, notable quotes, and how often scholars' answers aligned with one another. Data from these interviews will be summarized in this manuscript and will be used to improve the LC S-STEM program to provide supplementary support for program alumni.

Results

Based upon the AI coded results the identified themes included: 1) post-graduation contact and support, 2) peer connections and cohort experiences, 3) job search challenges and strategies, 4) use of Birkman® language, and 5) the importance of networking, mentorship and alumni engagement. Of the themes that arose, the most prevalent theme was the transition period after graduation. Each theme is discussed below.

Theme 1: Post-Graduation Contact and Support

This theme was identified as a significantly vulnerable time period for program alumni which is why it is considered to be an important area

of focus for the longevity of LC S-STEM alumni in STEM. It is well documented that ND students struggle with transitions (Clouder, 2020). Several graduates identified the time between graduation and obtaining a job to be a significant hurdle to overcome.

“I realized that it’s very rare to immediately get a job right after graduation, particularly... in your desired field.”

While this fact is made clear in the literature, it is difficult for new grads to experience it in actuality, and they found reassurance in talking about it in interviews. All of the interviewed scholars continued communication with Landmark College faculty and/or staff during this transition period, primarily for job references and guidance. Landmark College faculty and staff included career counselors, faculty, and other mentors. Interviewees expressed the importance of having a support system post-graduation, especially for navigating the job market and understanding professional environments. When reflecting about ongoing contact with Landmark mentors and classmates post graduation, one student offered *“It let me keep one hand on shore”* in reference to the sense of understanding and safety found at Landmark as graduates go from a community of people that understands them into a job market where the advocacy work is all their own. One way to potentially ease this extraordinarily testy transitional period in life with continuing support may be through participation as near peer mentors for current scholars.

Theme 2: Peer Connections and Cohort Experience

The program excels at cultivating connections and creating a strong sense of belonging for scholars (Monroe et al., n.d). The congenial lighthearted environment that is academically manageable, engaging, is an environment of STEM inspired individuals that celebrates our differences through a common experience of taking the Birkman® assessment that then develops the language to express the excellence and challenges of yourself, along with group activities, both in and outside the classroom (Sullivan, 2024). An element of the program identified early on is the importance of its “multigenerational” or tiered design. This brings together novice and advanced scholars for regular collaboration. An example is the regular practice of the more advanced scholars returning from their internships and presenting their experiences to the cohort. This provides inspiration and guidance to novice scholars. In addition, advanced scholars have the option to participate in conferences including the S-STEM AAAS annual conference. The demographics of the cohort span scholars at all points in their journey at Landmark College. More senior students naturally become peer mentors for the incoming students. Prompts from the grant leads help exhibit the learning and

expertise of veteran scholars with questions or by tasking senior scholars to direct activities. After having these shared experiences, alumni of the program report feeling more connected to peers from the AIE-STEMPLOS cohort when compared to other communities they were involved with at Landmark College. The value of creating a strong sense of belonging is well documented for S-STEM scholars (AAAS S-STEM REC, 2024). The cohort experience fostered a sense of community and mutual support, which was beneficial for both academic and professional growth.

Theme 3: Job Search Challenges and Strategies

Common challenges in job searches included long gaps between graduation and securing a job, competitive job markets, and the need for advanced degrees in STEM fields.

“I had to very quickly stop thinking, ‘Oh, I’m going to immediately get my dream job with some big corporation and a six-figure salary.’”

Support during this period of transition is crucial to persist in the pursuit of STEM careers. Recognizing the value of the cohort experience for scholars at LC, one possibility is to create a more formal network of near-peer mentors, that can both support each other during the highs and lows of job searches, but also the current scholars. This will likely allow them to more easily take on emotionally challenging moments. It is also an excellent opportunity for near peer mentors to prepare the students who will soon graduate. It will provide opportunities for metacognitive reflection to recount the lessons they are learning while, ideally, mitigating some of the emotional turbulence they face on the job market. During the interview process, alumni highlighted importance for themselves in maintaining a growth mindset, aiming for continuous learning and earning certifications to stay competitive in their fields as one of their key insights. One student demonstrated to us that the process can be motivating stating:

“Receiving interviews really kept me motivated—it showed my applications were being noticed.”

Other topics that former scholars mentioned as strategies for success included setting daily application goals, leveraging networking opportunities, and adjusting expectations to pursue smaller, more accessible roles initially. All interviewed alumni expressed strong interest in the possibility of serving as near peer mentors.

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"I think a near-peer mentoring group would be incredibly valuable... It would help maintain deliberate connections with the cohort and support current students."

Theme 4: Birkman® Assessment Language

The Birkman® assessment is a strengths-based tool that scholars are encouraged to use to identify their work and communication styles and to reframe their neurotypes. Specifically, scholars discover personal traits that they may perceive negatively or as deficits can be reframed as work and communications styles. Moreover, these traits can be seen and reported as professional strengths in certain environments (Monroe & Matte, 2024). Scholars are encouraged to revisit these descriptors and strengths perspectives over the course of their time in the cohort, which allows scholars to assimilate the perspective which allows them to identify preferred work environments and more accurately represent their strengths to future employers. The Birkman® assessment provides a way to streamline their thoughts and present their strengths effectively during job searches (Sullivan et al., 2024). Several alumni reported that the insights and language gleaned from the Birkman® was instrumental in their communication with their employers and peers.

"I did use Birkman language in my job search. I was able to streamline my thoughts as well as present myself in the best light possible."

Theme 5: Networking, Mentorship and Alumni Engagement

Alumni talked about leveraging LinkedIn, alumni connections, and professional networks during their job searches.

"The big reason I got the CAI job was because my resume was shared through networking after one of the neurodiversity-at-work panels."

They also expressed interest in creating networking communities for AIE-STEM alumni. The creation of a shared community space for our alumni to connect with each other may be a best practice for ND STEM scholars. It has the potential to serve as a source of continued connection to the STEM community, as both a peer and near-peer networking community.

"Networking is key. Reaching out to people on LinkedIn with shared connections... can make a huge difference."

Alumni emphasized the value of mentorship and

the need for structured programs to maintain engagement post-graduation.

"Alumni relations tend to drop off after about a year or so because their focus shifts to more recent graduates."

Again, as mentioned, more formalized near-peer mentoring was suggested as a way to provide consistent, meaningful interactions between alumni and current students.

Conclusions

The insights gained from the Landmark College S-STEM program underscore the transformative power of intentional mentorship, inclusive practices, and a strengths-based approach to supporting neurodivergent STEM scholars. By leveraging tools like the Birkman® assessment and fostering a strong sense of belonging within the cohort model, the program has demonstrated measurable success in improving outcomes such as internship participation, STEM identity development, and post-graduation transitions. However, the transition period following graduation remains a critical area for continued focus. Establishing robust near-peer mentoring networks and alumni engagement initiatives can provide ongoing support to alumni as they navigate the challenges of the job market and professional environments. These structures not only benefit recent graduates but also strengthen the program's sense of community, ensuring that the lessons of mentorship and connection extend beyond the academic experience. As institutions continue to expand their offerings for neurodivergent scholars, the Landmark College model serves as a blueprint for integrating mentorship, career preparation, and inclusive language into academic and professional development programs. By prioritizing these elements, colleges and universities can better equip neurodivergent students to overcome barriers, thrive in STEM careers, and contribute their unique perspectives to the scientific community.

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About the Authors

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Katherine Hoder, a graduate of Landmark College, was a co-designer of team that developed and a virtual reality (VR) game intended to increase access to and broaden participation in STEM learning. Hoder was an intern with Landmark College, a post-secondary institute for learners with ADHD, autism, dyslexia, and other learning differences, have been immersed in an intensive co-design process.

Rebecca Whittaker Matte, M.S., is an Associate Professor of Education at Landmark College, specializing in the transitions to college and career. With nearly 30 years of experience, she champions strengths-based approaches, holding certifications in the Birkman Method, Gallup Clifton Strengths, and ICF coaching. Rebecca’s holistic teaching supports

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students in identifying their strengths and linking classroom practices to success. As a co-PI on a NSF S-STEM grant, she develops and directs mentorship programs for neurodivergent, low-income STEM scholars. She is deeply passionate about her work.

Christin Monroe, Ph.D., is an Assistant Professor of Chemistry at Landmark College, a leading institution for neurodivergent students. Her research focuses on inclusive STEM education, addressing executive function challenges, and supporting low-income and neurodivergent scholars through mentoring, professional development, and course-based research. Dr. Monroe is also the Principal Investigator for an NSF-funded project exploring the intersection of neurodiversity and economic disadvantage in STEM (NSF DUE S-STEM Award #2129912).

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Dylan Sullivan, a Landmark College alumnus and former AIE-STEMPLOS scholarship recipient, served as a campus ambassador and student representative speaker at campus events. He is now the Neurodiversity Liaison and Student Success Specialist at the University of Maine at Augusta, working for neuro-inclusivity. Dylan is on the Young Adult Leadership Council for the National Center for Learning Disability and represents individuals with disabilities on the Maine State Rehabilitation Council. He is dyslexic and on the autism spectrum.

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