28-31 March 2023
Hosted by Midwest Hub
Kansas City, Missouri USA

TAPDINTO-STEM:

Increasing the number of STEM graduates with disabilities: 31 colleges and universities in 16 states, Washington D.C., and the Mariana Islands.

Convening Proceedings: *Some Assembly Required

The NSF Eddie Bernice Johnson INCLUDES Initiative: TAPDINTO-STEM Alliance convening, *Some Assembly Required, was the alliance's first in-person convening held from 29 March – 31 March at the University of Missouri-Kansas City. The convening brought together 71 alliance members, including students, faculty mentors, project investigators, and leadership, that represented 22 of the 31 alliance institutions and a diverse range of majors, roles, and disciplines.

Organized with support from the National Science Foundation, *Some Assembly Required focused on collective impact and collaboration through sharing ideas, knowledge, and strategies that empower and support students with disabilities, broaden pathways to success, overcome obstacles, promote inclusivity, and strengthen community. Sessions featured a range of topics including accessibility of learning environments; advancing equity diversity, and inclusion in post-secondary institutions; understanding student-professor communication; storytelling; managing stress and anxiety; and transitioning into the workforce.

Topics

Related to the goals of the TAPDINTO-STEM Alliance, convening topics included:

- Building empowerment pathways for our students, institutions, and partners
- Supporting success and inclusion for students with disabilities at each juncture of their STEM journey from college to career
- Building our social capital to create lasting and productive changes
- Sharing strategies for offering inclusive academic and student affairs programming

Individual Goals and Learning Outcomes

As a result of engaging in the convening, student participants are able to:

- Identify what empowers them to succeed in STEM.
- Provide and promote peer support and exchange of ideas.
- Understand STEM careers in global, national, and regional contexts.
- Practice networking in academic and professional contexts.

As a result of engaging in the convening, faculty and senior personnel participants are able to:

- Design and implement programs in higher education that empower students with disabilities to succeed in STEM disciplines and careers.
- Explain supports for inclusive hiring of individuals with disabilities in STEM careers.
- Review strategies to strengthen inclusive instruction in STEM classrooms.
- Identify and establish practices to disrupt the marginalization of individuals with disabilities in STEM and beyond.
- Understand the boundary-spanner role in creating change.
- Develop national change resources related to disability in STEM.
- Apply insights and strategies from convening to other faculty roles such as teaching, advising, mentoring, leadership and colleagueship.

Team Goals and Learning Outcomes

As a result of engaging in the convening, campus and hub teams are able to:

- Build hub and local institutional action plans.
- Learn about change leadership.
- Explore connections with campus change entities and initiatives.
- Build community.
- Network during the convening with peers from your institution and other Alliance institutions.
- Continue to receive support in your effort after the convening through ongoing professional development.

Plenary Speeches

NSF's Eddie Bernice Johnson INCLUDES Initiative | Dr. Christopher Atchison

Program officer for TAPDINTO-STEM, Christopher Atchison, discussed NSF's Eddie Bernice Johnson INCLUDES Initiative, provided an overview of collective impact, and detailed the potential of the TAPDINTO-STEM Alliance for systemic change.

The INCLUDES Initiative is a national network focused on broadening participation and expanding opportunities in STEM education. The initiative has five design elements - shared vision, partnerships, goals and metrics, leadership and communication, and expansion, sustainability, and scale - with a goal to bring on more partners and students, broaden participation in STEM, and ultimately change the system. TAPDINTO-STEM is the only alliance funded by the INCLUDES Initiative that is focused on disability, putting pressure to lead nationally in promoting disability inclusion.

For TAPDINTO-STEM, the mission is to measure the persistence and success of students with disabilities (SWD) in postsecondary STEM education, increase graduation rates, and help facilitate the transition to the STEM workforce. To accomplish these goals and compel systemic change, Dr. Atchison recommends the focus should be on policy revision, instructional practices, overall accessibility, and opportunities for SWD. He offered the following perspectives:

- Empowerment and hearing the voices of students are crucial for the success of the project. Students are the future and their voices are essential for driving positive change.
- Accessibility of campus living, buildings, and classrooms are important factors that need improvement.
- Faculty knowledge and attitudes towards disability should be addressed.
- The process of requesting and receiving accommodations can and should be improved. And resources should be provided to non-provisional students who may be unaware of available support.

View the PowerPoint presentation for the opening plenary session here.

Navigating the Working World as a Disabled Person | Alexandra Dixon

Keynote speaker Alexandra Dixon is a social service professional and health and disability activist. As an exemplar, Ms. Dixon spoke to the systemic challenges and implications working as a disabled person and ways they can be overcome by individuals and society. Alexandra was born with spina bifida in Colombia, South America. She experienced tremendous discrimination, exclusion, and limitations throughout her childhood, but her mother refused to hide her physical and learning disabilities and advocated for appropriate education. The Americans with Disabilities Act (ADA) had a positive impact on Ms. Dixon because as a child

she was discriminated against in educational settings. Without the passing of the ADA, it is likely she would not have had the same education or opportunities.

The ADA has had a significant impact on the lives of PWD, however, Dixon explains that more work is needed to further improve circumstances in discrimination. Along with divorcing the definition of disability from ability and reducing attitudinal barriers that still persist, Alexandra emphasized the ongoing work required to fulfill the promise of the ADA and calls for collective action to create a more inclusive world for PWD. The speech concluded with the following recommendations and calls to action for both individual and executive action that can foster systemic change for PWD.

Individuals:

- Don't hesitate to request accommodations. Disclosure of disability in the workplace is a personal decision with both advantages and disadvantages, and a request for accommodations does not require that disclosure.
- Share personal stories to challenge stereotypes and advocate for inclusion.
- Document instances of harassment or discrimination to hold those responsible, accountable.
- Call your congressional representatives, go to town halls, raise your voice and advocate for change.

Governmental:

- Require private schools to comply with the ADA.
- Increase income limits and guarantee insurance benefits regardless of income.
- Eliminate the marriage penalty/spousal income limitation.

Higher Education:

- Streamline the process of obtaining accommodations by reducing paperwork and minimizing systemic barriers.
- Address the ableism in higher education. There can be an underlying assumption that people with disabilities may be lying about their condition or situation.
- Avoid putting up unnecessary barriers.

Highlights from Q&A

How does it feel to be on the forefront of intersectional identities of being Latina and being disabled?

Alexandra acknowledged that being on the cutting edge of history can be challenging and lonely, but finds support and guidance from the independent living movement and intergenerational friendships. She mentioned her light-skinned privilege as a light-skinned Latina and recognizes that her experiences may differ from those who face racism and disability intersecting. Alexandra emphasized the importance of not speaking for all individuals with intersecting identities and acknowledged that the needs and experiences of different individuals within marginalized communities vary.

Sometimes in this area and field, we like to focus on what our struggles are. So I'm wondering, is there an area that you think things are going well … though room for improvement?

Alexandra shared a story about the complicated relationship PWD have with help. She recounted an incident where she sprained her foot and her boss insisted she use a wheelchair for liability reasons. Her coworkers observed her independently handling her work and realized that she was capable. This experience highlighted the importance of being comfortable asking for help when needed and having others respect personal boundaries. Alexandra emphasized the need for genuine assistance and the empowerment that comes from being recognized as capable. She mentioned her fondness for a job where her boundaries were respected and expressed sadness when she had to leave.

Student Panel | Tamara Massey-Garrett and students Rachel Dunleavy, Ibiada Harry, Jenny Yoon, Manie Castagneto, and Jessica Kupfer

Project Manager for the TAPDINTO-STEM Alliance Tamara Massey-Garrett facilitated a diverse panel of students with disabilities from the Southeast Hub. The students discussed navigating the intricacies and realities of being a SWD in postsecondary education and shared their journeys and insights, shedding light on their successes and challenges in their educational paths. They also delved into the academic supports and services they value the most, such as accommodations, faculty office hours, tutoring, counseling services, and more. The speakers explained how they advocate for themselves in school, touching on issues such as access, stigma, and discrimination.

For this panel, the students responded to predetermined questions, followed by questions from the audience. Key perspectives and responses to those queries are as follows:

What successes or challenges have you faced as a student with a disability in postsecondary education?

- Difficulties in managing health issues and financial challenges due to medical bills alongside the demands of college life.
- Grades are commonly looked at as a reflection of intelligence, which can be a hindrance to self-confidence and persistence.
- Finding a supportive group who understands and accepts PWD, especially in an industry that may be less accepting of women with disabilities.
- Success found in undergraduate research with a supportive professor.
- Acceptance of personal struggles and seeking support when needed.

What kinds of accommodations do you see and which of these have you found most helpful?

- Extra time on tests. This accommodation helps manage the pressure of test-anxiety and ensures there is enough time to double-check work.
- Receive copies of lecture materials and the ability to record lectures. This allows the opportunity to revisit the information at an individual pace, which aids in understanding and note-taking.
- Establishing open communication and a personal connection with professors. This opens the possibility to negotiate deadlines due to health issues, for example.
- Generally, utilizing the office of accessibility and accommodations allows understanding personal limitations and ability to overcome academic challenges.

What advice would you give faculty members?

- Educate themselves about the wide variety of disabilities and invisible illnesses that exist. The lack of research and understanding from faculty about these issues creates
- Consider their teaching methods. For instance, monotone lectures without body language cues are difficult to engage with and learn from. Frustration with SWD.
- Offer one-on-one meetings or tutoring with students to better understand their individual needs and accommodations. This can dispel fears, increase understanding, and allow faculty to better assist students with specific assignments or comprehension issues, as well as put emphasis on disability as a different form of normalcy. This can also benefit SWD understanding and self-confidence.

How do you self-advocate for your success?

- Knowing one's self-worth and limitations. Self-understanding of one’s abilities and disabilities prevents others from using these aspects against them.
- Take a strong stance against belittling or derogatory comments, stressing that voicing facts and standing up for oneself can deter such behavior in the future.
- Talking about personal experiences. Everyone has unique experiences, limitations, and challenges, and others may not understand what someone may be dealing with unless they’re open about it.
- Believe in one’s ability to accomplish what they set their mind to, even if it takes a bit longer.

What knowledge, skills, and abilities are necessary for STEM students?

- Determination and the realization that it's not about the time it takes to reach a goal, but about reaching it.
- Creating a solid foundation of self-assurance, having clear personal motivations, knowing one's self-worth, and confidence in one's abilities.
- Openness about one's disabilities, the ability to discuss their disabilities, and seeking and utilizing available support and resources.

What can the program do or do differently to increase positive experience for participants?

- Increased communication and information sharing through different channels/platforms and by providing access to more resources like PowerPoint slides, Canvas modules, and/or meetings to provide information and training to the participants.
- Establish relationships on campus by appointing someone like a graduate assistant to provide assistance or direction to the right resources or individuals when needed and inviting guest speakers from different offices, like the Office of Diversity or the Office of Accessibility, to provide a point of contact can make it easier for participants to reach out for assistance.
- Exposure of diversity amongst different people from various parts of the world. Promoting diversity and creating opportunities for students to interact with individuals from different backgrounds is essential for their personal growth and development and broadening knowledge.

What ideas do you have to make a positive impact on more students?

- Creating a sense of community for SWD by developing an office or safe space on campus where students can gather, study, and access resources, offering regular tutoring sessions in this space to encourage open discussion, and encouraging club activities.
- Broadening TAPDINTO-STEM’s exposure across participating campuses, informing more students about the program and the positive impacts it has had on participants' lives. This could help other SWD in STEM majors find the support they need.

In review, some of the common themes we learned from these students’ experiences and perspectives are:

- It's okay not to be okay sometimes. Be comfortable in finding a support system and utilizing available resources.
- Embrace being different as it is a strength, it's important to know your self-worth and leverage that in overcoming challenges.
- Don’t be afraid to reach out when you need help or when your rights are violated.

Storytelling | Laura Packer

Professional storyteller Laura Packer hosted two practical and interactive explorative sessions on storytelling - *How to Craft and Tell a Story with Impact* and *Organizational Storytelling*. Through both sessions, Laura emphasized the importance of storytelling and how stories are a fundamental part of being human and can be shared in various aspects of life or professions, and provided a theoretical toolkit that participants utilized during the session to practice crafting and telling a story, in a safe and supported environment.

The toolkit includes the effectiveness of storytelling, theories on how storytelling works, the power of listening when crafting a story, creating effective stories tailored to an audience, types of stories, suitable platforms for storytelling, practical applications, and ways to practice storytelling. It is designed to build upon existing skills, with the aim of making storytelling a more formal and intentional practice.

Storytelling is an interactive and effective mode of communication, deeply personal, and fundamental to being human. When stories are shared, information is both given and received, a process rooted in the historical function of storytelling for gaining knowledge. The word "storytelling" originates from the word "storia," which means "finding out." Sharing stories enables both the sharing and discovery of information within a contextual framework.

Neuroscience suggests that humans are inherently storytelling creatures. Storytelling involves both hemispheres of the brain, leading to whole brain engagement, aiding memory, and creating

a sense of connection. It can also increase levels of hormones associated with empathy and relationship building. Research conducted in the '90s and early 2000s, indicated that storytelling is more effective than writing or videos in helping people absorb and retain information. When we hear or tell stories, our brains engage in a process called neural coupling, which simulates the experiences within the story. This is also accompanied by a phenomenon called brain mirroring, where the listener's and teller's brains show similar patterns of activity.

How to Craft and Tell a Story

The first step for effective storytelling is learning to listen. Especially in a culture with a listening deficit, listening intently and not listening to respond can evoke personal stories, help us understand what others need, and deepen the relationships you have. The following are more tips from Ms. Packer for effective storytelling:

- Authenticity: The story must be authentic and should reflect something meaningful to you.
- Audience Appropriateness: The story should be appropriate for your audience, meaning it should be delivered in a language and style that your listeners can understand and relate to.
- Confidentiality: Stories shared should be held in confidence, respecting the personal nature of the shared experiences.
- Allow for Silence: If you run out of things to say, give yourself a moment to reflect and gather your thoughts. Silence can provide an opportunity for self-reflection and deeper thinking.
- Emotion is Okay: Allow for the expression of emotions during storytelling. It's okay to feel and express emotions while sharing personal experiences. This adds depth and authenticity to the storytelling process.
- Equal Opportunity: Ensure everyone gets a chance to share their story. This promotes inclusivity and ensures that everyone's experiences and perspectives are valued.
- Practice: Like any other skill, storytelling requires practice. Be patient with yourself and give yourself grace as you improve over time.

View the PowerPoint presentation here.

Organizational Storytelling

Organizational storytelling utilizes our storytelling nature for effective communication within an organization. When organizations recognize the power of storytelling to build trust, community, and connection, create change, and effectively and authentically communicate, they become better places to work, more effective in their mission and vision, and help build a better world. This could manifest through marketing or leadership and use techniques such as persuasion and education.

Organizational stories are told in and about an organization, created by everyone involved in the organization, including those who use its products or services. The way these stories are told

and to whom can have a significant impact. Below are five ways that storytelling can positively impact organizations:

- Persuasion: A combination of data and personal stories can make arguments more persuasive and compelling. Stories can humanize data, making it more relatable and emotionally engaging, which can lead to action.
- Building Relationships: Deep listening and storytelling can help in understanding others better, fostering empathy, and deepening relationships. This increased understanding can lead to improved teamwork and collaboration.
- Effective Communication and Leadership: Storytelling aids in effective communication and can contribute to better leadership. It can help to explain complex ideas in a simple, understandable way, making it an important tool for leaders.
- Engagement and Connection: Telling personal stories can increase engagement and build connections among team members. It can help in creating a sense of belonging and community in the organization.
- Self-Expression and Reflection: Storytelling allows individuals to express themselves and reflect on their experiences, which can lead to personal growth and development.

View the PowerPoint presentation here.

Open Mic Storytelling

On the final day of the convening, alliance members had the opportunity to utilize their newly learned knowledge to share a story with the group in a supportive environment. With many volunteers, stories touched upon themes such as resilience in overcoming challenges, finding hope and inspiration, and experiencing love and acceptance despite disabilities and hardships. The stories and personal experiences shared are celebrated and appreciated for their ability to inspire, bring people together, and create positive change.

Transitioning to the Workforce | Darla Wilkerson, CEO for Center for Disability Inclusion, and Kelly O'Connor, Recruiter at Garmin International

Darla Wilkerson has been with the Center for Disability Inclusion (CDI) for nine years and has over 37 years of experience in promoting employment for people with disabilities. Headquartered in Kansas City, Missouri, CDI is a national company that works primarily with businesses to shape their disability-inclusive practices and incorporate them into their diversity, equity, and inclusion strategies in both the workplace and marketplace. This is achieved through various means, including consultation, training, conferences, and a deep dive into the policies and practices of companies. The center also cultivates relationships with community organizations and educational entities to connect those represented by these organizations with business partners. The ultimate goal is to elevate disability inclusion, making the partnering employers the top choice for people with disabilities. Darla identifies as a person with a disability, having acquired a brain injury in 2006, which led to secondary conditions of anxiety and PTSD.

Kelly O'Connor is a university relations recruiter at Garmin International and also contributes to the company's diversity, equity, and inclusion initiatives and STEM outreach in the higher education space. Garmin, also headquartered in Kansas City, primarily operates as an engineering company with five business segments: aviation, marine, fitness, outdoor, and automotive. In Kelly's role as a recruiter, she works to recruit in the STEM field, particularly helping engineers secure internships and positions after graduation. Kelly also identifies as someone with a disability, specifically achondroplasia dwarfism.

Darla and Kelly provided a comprehensive guide on career exploration and preparation, offering crucial advice for those seeking employment, especially new graduates. They highlighted necessary steps in the job search process, emphasized the importance of self-awareness and utilizing one's interests and skills, and discussed different approaches to disclosing one's disability and requesting accommodations.

When starting career exploration, identify and understand your skills, attributes, and interests. Recognizing what excites you can guide you towards a fulfilling career. This may change over time, but It's important to understand what you want in a job versus what you need. Talking to professionals in roles one may be interested in can help explore different fields and job types to find the right fit. Though salary is often considered a primary need, other factors like work environment, job roles, and type of supervision can also significantly impact job satisfaction. Practical aspects of a job such as transportation, the people, and the work environment are also important when considering a career choice.

Networking is crucial in the exploration stage and during your career. Your network, including colleagues, faculty, career advisors, or even high school supporters, can help in finding job opportunities. And communicating your career aspirations clearly with your network can help

them understand what kind of job you're looking for and how they can assist. Maintaining this support network can provide assistance throughout your career journey.

Building a solid résumé, maintaining professionalism, preparing for the interview, and being truthful in all stages of the job-seeking process can play a critical role in securing a job. Some tips on building a solid résumé include:

- Be detailed, yet concise, showcasing research experience, personal projects, club involvement, certifications, and relevant details.
- Ensure accuracy in all provided information.
- Use a clean format, avoid typos, and save it as a PDF.

When ready to start the search, target businesses that offer the kind of work you want to do. Two recommended resources include www.mynextmove.org, a user-friendly site for exploring career options and job titles based on one's interests and location and provides information like average pay and job responsibilities, and www.careeronestop.org, which provides further exploration options including detailed job descriptions, educational requirements, average pay, and short videos about different careers. And remember that you do not need to meet all preferred qualifications listed in a job posting, just the basic ones. Once you've applied and are called for an interview, prepare adequately, including researching the company, constructing a personal pitch, and formulating thoughtful questions. Another important piece of advice is to send a thank-you note post-interview as a personal touch and to show solid interest.

Employers are striving to create inclusive cultures and are interested in diversifying their workforce, including hiring individuals with disabilities. It is important to research a company's diversity, equity, and inclusion statements to understand their stance on disability inclusivity. Instead of focusing on the label of one's disability, it is beneficial to discuss the specific support or accommodations needed to function optimally in the workplace.

Disclosing disabilities and seeking accommodations in the workplace is a personal decision with no universally correct approach. It is a complex topic with pros and cons. Pros include eliminating the stress of nondisclosure, ensuring necessary accommodations are in place, and a shift in conversation from disability to one's skill sets and qualifications. Cons may include potential discrimination or undue emphasis on the disability over ability, and changes in the behavior of others once they're aware of the disability.

When deciding to disclose a disability, timing is an important consideration and can vary based on individual circumstances and needs. It can be done during the application process if an accommodation is needed, during the interview if assistance is required, or after a job offer if an accommodation is needed for the job. Thinking about what to say in advance can help make one feel more comfortable discussing their needs. Writing a script is often helpful for practicing what to say and how to say it. Being specific in communication will allow focus on what support is needed to work effectively rather than the nature of the disability itself.

Despite the potential challenges and complexities, individuals have the right to request reasonable accommodations and businesses are obligated to consider these requests without causing undue hardship to the business. Reasonable accommodations may include accessible materials, assistive technology, making the workspace accessible, job restructuring, and job coaching. Unreasonable accommodations include removing essential functions of the job, lowering production standards, and the employer supplying personal use items that would be used off the job.

In conclusion, by understanding ourselves, leveraging our network, and preparing diligently for the workforce, we can embark on a successful career journey. By recognizing the importance of inclusive cultures and considering the best approach to disclosing disabilities and seeking accommodations, we can strive for a workplace that values our abilities and promotes our success. With these principles in mind, we can pursue fulfilling and meaningful careers that align with our passions and aspirations.

Sustaining Inclusive Pathways for Entry Level Talent | Dr. Marge Sendze, Senior Technology Manager, and Austin Jenkins, Software Engineer, Federal Reserve Bank of Kansas City

Dr. Marge Sendze is an organizational psychologist, a DEI coach, an avid advocate for underrepresented people in STEM pathways, and a senior technology manager at the Federal Reserve Bank of Kansas City. The Federal Reserve (Fed) is the central bank for the United States and functions to promote the effective operation of the U.S. economy. And because our banking system relies heavily on technology, the Fed realized they were facing a talent crisis for diverse and skilled talent due to competition with tech companies, heavy reliance on senior-level developers, and a lack of a sustainable pathway to bring in entry-level talent.

Dr. Sendze emphasized the importance of a diverse workforce and the demand for STEM professionals. The following workforce statistics highlight the persistent gap in meeting the demand for STEM talent and the need for creative approaches to attract, develop, and retain such talent.

- STEM is the fastest growing job sector in the United States with projections that indicate STEM occupations are expected to grow by 8% by 2029, compared to a 3.7% growth for all occupations.
- The demand for STEM professionals is projected to increase by 2.7% more than before the COVID-19 pandemic, which exceeds the industry's capacity to bridge the gap.
- Teams with diverse talent realize a 41% return in investment, higher productivity, and a more significant bottom line than those that do not have diverse teams.

The Fed recognized the need for inclusive and innovative approaches to bridge the talent gap in the industry and align their business needs with social responsibility. To position themselves to attract, develop, and retain a skilled and diverse STEM workforce, they went beyond traditional recruitment methods, and instead were intentional in seeking out diverse talent. One of the strategies they adopted was to actively search for talent and meet them where they are -

investing in university partnerships and engaging with community organizations and participating in code-a-thons to identify potential candidates. They also implemented a new program called TechEdge, which provides structured rotations and mentorship programs for new hires to develop technical and professional expertise.

This approach created an inclusive and supportive environment for the diverse talent they recruited, ensuring everyone had an equal starting point and opportunities for growth, and resulted in mutually beneficial outcomes for both the employees and the organization. In fact, the TechEdge program has been running for about nine years which has increased their retention rate to 87%.

One area of diversity that cannot be overlooked for talent within STEM is individuals with disabilities (IWD). Austin Jenkins, a software engineer at the Federal Reserve Bank of Kansas City, joined Dr. Sendze to share his experiences through college and in the professional workforce as an IWD. Deaf since the age of two, Austin developed a passion for accessibility and advocacy based on overcoming challenges as a Deaf person in a hearing world.

When Austin decided to go to college, he was attracted to Southwest Baptist University, a university known for its computer science program and guaranteed 100% job placement. Hesitant SBU would negotiate his accommodation requests, Austin did his research so he was knowledgeable of his rights and prepared for what could come. While the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973 protects students with disabilities from discrimination and mandates reasonable accommodations, he found that religious entities are exempt from the mandate. However, Section 504 also states that any university that accepts federal funding must abide by the legislation and is not exempt.

Once the time came to discuss accommodations, the negotiations came too. With alternative accommodations for note-taking, a cartographer, and others offered, Austin consistently stated his need for an ASL interpreter rather than settling and underscored the importance of being clear and assertive about the specific accommodations required for success. He got an interpreter, but realized SBU was only willing to do the bare minimum as required by the federal law. After four years, Austin was prepared to advocate for himself while transitioning into the workforce.

Austin faced fears of rejection and imposter syndrome while applying for jobs and during interviews, but emphasized his unique skills and work ethic, and projected calm, collected, and confident attitudes. During a career fair, this confidence led to an onsite interview with the Federal Reserve Bank, where he was recruited by Dr. Sendze for a second interview. With the same tactics, Austin was hired and went into the TechEdge program. When it came to requesting accommodations, Austin had a much different experience than with SBU. The Fed asked what he needed, accepted his request for an interpreter, stayed in constant communication, and even offered additional services if needed. After several development rotations in TechEdge, Austin found a passion for software development and has been working on his current project for three years, with continuous opportunities to learn and grow as a software engineer.

In conclusion, the key takeaways we can learn from the Fed's inclusive hiring practices and Austin's personal experiences include:

- Be knowledgeable about your rights and accommodations. Knowing your rights will help you advocate for the specific accommodations you need for your success.
- Be clear and assertive about your needs. It's important to be assertive and advocate for yourself to ensure you have the necessary support to thrive in your academic or professional environment, and don't settle for alternatives that may not be as effective.
- Emphasize your unique skills and work ethic. Focus on what makes you valuable and how you can contribute to a company or organization.
- Seek out inclusive and supportive environments. Look for organizations or companies that prioritize DEI, and research their track record in supporting IWD's, providing accommodations, and fostering an inclusive work culture. This can greatly enhance your job satisfaction and opportunities for growth.

Importance of Shared Measures and Evaluation for Collective Impact | Dr. Linda Thurston

Collective Impact is a strategic and systematic approach to solving complex societal problems, first introduced in 2011 by John Kania and Mark Kramer in the Stanford Social Innovation Review. This method goes beyond the capacity of any single organization, requiring the commitment of a group of important actors from different sectors to a common agenda for solving a specific social problem.

In the realm of social challenges, whether it's improving community health, education, or reducing unemployment, the issues are multifaceted and deeply interconnected. These problems aren't easily solved by one organization or sector acting alone. Collective Impact brings together different sectors (nonprofit, government, business, and the public) to work together towards a shared goal. The framework consists of five conditions: a common agenda, shared measurement systems, mutually reinforcing activities, continuous communication, and backbone support organizations.

A shared measurement system is one of the necessary elements in collective impact initiatives. It involves the collection of data and measuring results consistently across all the participants. This allows efforts to be aligned and holds participating organizations accountable to the same standards. This data-driven decision making serves as the heartbeat of the collective impact effort.

The use of shared measures provides several benefits. Firstly, it ensures alignment and focus towards the common goal. By clearly defining the outcomes, all partners can align their efforts and work towards the same ends. Secondly, it facilitates mutual accountability. Shared measures create a clear, objective method for assessing progress and allows stakeholders to hold each other accountable.

Thirdly, shared measures foster continuous learning and improvement. Through consistent monitoring and evaluation, shared measures help identify what is working and what is not, enabling stakeholders to make necessary adjustments. This dynamic process promotes an environment of continuous improvement and innovation. Lastly, shared measures can also help to motivate and maintain momentum among stakeholders. Visible, measurable progress towards the common goal can inspire and galvanize collective action, maintaining the momentum necessary for long-term success.

However, developing and implementing shared measures is not without its challenges. It requires cooperation and agreement among diverse stakeholders, often with differing perspectives and priorities. It involves building the necessary systems and infrastructure for data collection, analysis, and reporting. It also requires a commitment to transparency and the willingness to share not just successes, but also failures and lessons learned.

In conclusion, collective impact is a powerful approach to address complex social issues that no single organization or sector can solve on its own. Shared measures are a crucial component of this approach, enabling alignment, accountability, continuous learning, and maintaining momentum towards the shared goal. Despite the challenges, the potential benefits of shared measures in collective impact initiatives make them an indispensable tool for creating meaningful and sustainable social change.

View the PowerPoint presentation here.

Concurrent Student Sessions

Accessibility Reviews of STEM Learning Environments | Scott Bellman

In this interactive and on-the-go session, students utilized a draft publication called “Equal Access: Universal Design of Science and Engineering Labs” to conduct an accessibility review of a STEM laboratory. Using Flarsheim labs as a practical example and the *Checklist for Making Science Labs Accessible to Students with Disabilities*, the team of students noted existing features as well as some items that could be implemented for a more accessible lab and building. The group then discussed their ideas for presenting the information in a professional and effective manner to administrators of the unit and worked to co-develop improvements for the publication for future use by all alliance members.

Following the convening, in a collaborative effort under the direction of Mr. Bellman, students drafted a letter of recommendation to Dr. Fengpeng Sun, associate professor in the School of Science and Engineering at UMKC. The letter thanked Dr. Sun for his Tornado Lab

demonstration and allowing them to review one of his lab spaces, and identified areas of success and improvement based on their review. Dr. Sun plans to contact his department director and the building facility team for their consideration in implementing the suggestions for making a more accessible environment.

One of the resources shared in correlation with this presentation is a comprehensive list of Disability Resources for Students from the University of Washington.

Tornado Lab | Dr. Fengpeng Sun

Tornados are some of the most powerful and destructive forces of nature. In this interactive demonstration, Dr. Fengpeng Sun, associate professor in the Division of Natural and Built Environment of the School of Science and Engineering at UMKC and UMKC Campus Lead for TAPDINTO-STEM, used a tornado simulator to demonstrate and explain the formation, structure, rating, and distribution of the tornadoes.

The simulator creates a vortex by circulating the air inside and uses a combination of boiling water and dry ice to create a dense white vapor, making the already-present vortex circulation far more visible. In this demonstration, a student was selected to place the dry ice into the simulator. This visual display allows the students to conceptualize funnel clouds, the vortex, the spinning pattern, and the tornados development, and allows for evaluation of tornados' impacts and potential changes in a warming climate.

Because Kansas City is on the edge of Tornado Alley, the topic was engaging and relatable for both those that live in the Midwest and those who have not familiar with this destructive force. Many excellent questions were asked during and after the presentation, so unfortunately time did not allow for discussion about topical issues such as climate change and anthropogenic carbon emissions, which are possible causes for an increase in the number of tornados and

their severity. Overall, the demonstration was a huge success and Dr. Sun was given the nickname "Dr. Tornado"!

Based on feedback, the students loved the live and interactive sessions. Future tornado demonstrations will allow more time and be pivoted to a hands-on 'tornado in a bottle science experiment' with glass bottles in which the participants can be separated into small groups, each overseeing their own experiment versus the instructors. For future convenings, other hands-on STEM experiences that are unique to the hosting Hub's region should be highlighted to engage participants, and time allocated to allow the students to interact with the instructors and their peers.

View the PowerPoint presentation here.

STEM Industry Round Tables | Kelly O'Connor, Garmin International; Janie Failor, Burns & McDonnell; Keaten Olson, Burns & McDonnell; and Wendell Cole, Blue Cross Blue Shield of Kansas City

Students got the opportunity to ask questions, converse, and network with recruiters from STEM industry businesses both one-on-one and in small groups. The recruiters also offered mock interviews and a resume review to prepare students for the transition into the STEM workforce.

This session was one of the most impactful for the students as they gained inside knowledge and confidence for transitioning into the workforce. Many of them left positive comments directly related to this session in the post-convening survey; see their feedback in the Outcomes section.

Concurrent Faculty Sessions

Diversity, Intersectionality, and Disabilities: Making Visible the Invisible | Dr. Daniela Marghitu

In this campfire session, Dr. Marghitu discussed the most acute challenges to successfully including students with disabilities in STEM postsecondary education and the importance of identity amongst the intersectionality of people with disabilities in underrepresented groups.

Research studies indicate the most acute challenges to successfully including students with disabilities in STEM postsecondary education are underpreparedness, lack of understanding and cooperation, unavailability of adaptive aids, knowledge and skills of faculty and staff about disability, recruiting, and obtaining student data related to disabilities at the institution level.

When we forget to include access needs in our Diversity and Inclusion discussions, we exclude many of the people we are striving to include.

View the PowerPoint presentation here. An extended version with more comprehensive facts and figures is also available.

NSF Convergence Accelerator Project: MABLE (Mapping for Accessible Built Environments) | Dr. Nils Hakansson

This presentation provided an overview of the National Science Foundation Convergence Accelerator program and a description of the funded Phase 1 project entitled MABLE (Mapping for Accessible Built Environments).

View the PowerPoint presentation here.

The Approach, The Conversation, The Outcomes: Advancing Equity and Access Through Administration | Dr. Carl Pettis

During this campfire session, TAPDINTO-STEM co-PI and Provost of Alabama State University, Dr. Carl Pettis, shared insight on working with administration at your college or university.

Neurodiverse Edusystems: Proactively Accommodating Variability to Advance Campus Climate | Dr. Andrew Buck, Karen Krainz Edison, and students Tori Kaufman, Hunter Mastin, and Carly Schafer

Autistic & Neurodivergent STEM students from Ohio State University gathered as a panel to explore the diversity of learning styles and communication strategies utilized by TAPDINTO-STEM participants. Facilitated by Northeast Hub Lead Dr. Andrew Buck and OSU STEM Faculty member Karen Krainz Edison, students discussed important strategies to support neurodivergent student variability.

One area of focus in the discussion was on ways to make course materials accessible and engaging for students. For example, classes that use traditional slide and lecture presentations can be hard to follow, especially for students with ADHD. They require a high cognitive load on working memory and processing speed in order to listen to the professor, take notes, figure out how the ideas fit together, avoid distractions, and continue to stay engaged throughout the whole lecture. A recommendation was given that PowerPoint slides should have appropriate color contrast between text and backgrounds to make the information clear and easy to see. The students then discussed helpful strategies, such as incorporating narrative flow or concept maps into slides and lectures to make explicit connections between concepts and describe how smaller details fit within the overall lesson.

Faculty should also consider disability conditions and characteristics in how they develop rubrics and grade work. For instance, a student showed a rubric for oral presentations that required

excellent use of volume in delivery, good eye contact and audience engagement, including at least three questions from the audience, to receive more points and a higher grade. However, a key characteristic of Autism Spectrum Disorder is deficits in social communication and social interaction, which may affect delivery of the presentation and engagement with the audience.

Students also stressed the need for faculty to express respect and presumed competence towards their students, rather than assuming that accommodations are requested to cheat or receive an unfair advantage over other students. Generally, it was agreed that cultural competency is needed in STEM to better understand and appreciate unique issues and needs of individuals marginalized by intersectional identities across different disabilities, races, genders and sexual orientations. In addition, the importance of building community in the classroom and on-campus was also discussed with recommendations including encouraging teamwork during lectures, facilitating cooperation during group projects, and sharing opportunities for out-of-class engagement.

After the presentation, audience members thanked the students for sharing their perspectives and strategies for supporting neurodiverse students in the classroom and advancing a positive campus culture and climate. One audience member reinforced the students' presentation by telling them that their own TAPDINTO-STEM group had expressed similar issues and ideas, which could lead to collaboration and student-led training and professional development efforts for STEM faculty. View the PowerPoint presentation here.

Understanding Student-Professor (mis)Communication | Dr. Jade Metzger

Establishing a good rapport with professors is key for academic and professional success, but many students with disabilities say that speaking to professors is challenging (or down right anxiety inducing!). In this presentation, Dr. Jade Metzger, a neuroatypical specialist in interpersonal and online communication, introduced the audience to communication strategies that students could use to avoid or resolve miscommunication with faculty.

To foster a groundwork for understanding between students and faculty the presenter provided contextual information on the characteristics of STEM instructors at universities and colleges in the US. Then the presenter provided language templates students could use to resolve common communication challenges, such as turning in an assignment late, having a medical emergency, and establishing good relations with peers. Each example included an explanation of the metacommunicative processes involved in the construction of the message, thus providing clarity on the why and how of effective communication in academic environments.

This topic is important for many students and faculty in the Alliance because difficulties navigating social situations and communicating with others is a key challenge faced by students with disabilities, particularly for students with invisible disabilities. While the topic was presented just to faculty and administrators, a handful of students requested the presentation slides after

viewing the topic in the program guide. The slides have now been loaded to the TAPDINTO-STEM student Discord server for easy access.

The faculty and administrators in attendance were particularly surprised by demographic statistics of STEM instructors. According to Inside Higher Ed and Lifescied.org, more than half of the graduates in Electrical Engineering, Mechanical Engineering, and Computer Science are foreign born – and thus may have little to no experience with disabilities in the U.S. cultural milieu. This lack of familiarity may be contributed to communication difficulties between professors and students. Going forward, components of intercultural communication could be introduced in both our efforts to recruit STEM faculty and in our efforts to support STEM students with disabilities.

View the PowerPoint presentation here.

The Team Approach: How Collaborating with your Campus Disability Office can Maximize Student Learning | Tamara Massey-Garrett and Dr. Jeff Traiger

Through case studies, participant questions, and discussion, participants learned what accommodations and support schools are required to provide, what students with disabilities are told about their accommodations by their disability/access office staff, and how they can best support students in and outside of the classroom.

Tamara Massey-Garrett, alliance Project Manager, led the presentation that combined a list of best practices with what student disability/access service offices are required to provide students in and out of the classroom. Tamara discussed how they support students in documenting and approving accommodation needs and help institutional faculty and staff negotiate appropriate academic and living accommodations with students. While Tamara presented cases studies of her experiences directing the disability/access office for Auburn University-Montgomery, Jeff Traiger, Midwest Hub Lead, co-presented examples of how student affairs administrators on the UMKC campus collaborated with faculty and student support staff to accommodate students in class, with assignments, in living situations, traveling campus, and receiving alternative food menu options to name a few. Jeff also discussed cases where student conduct rules intersected with needs for understanding behavioral accommodations and the additional issue of effectively communicating unforeseen budget overages from providing expensive accommodations to campus leadership.

Participants asked several questions related to both Tamera's and Jeff's case study examples as well as made comments about the presentation slides that highlighted faculty responsibilities and how to communicate with students about request accommodations that are not required. The questions that participants had related to these slides took up a significant amount of time and suggested that an entire presentation could be dedicated to facilitating a discussion using case studies from different areas of student campus engagement. For example, a rich conversation could include problem-solving examples about accommodation related to

classroom seating and locations, coursework and assignment equivalence, student behavior/conduct in and outside of the classroom, room and board assignments, and student access to extracurricular social activities.

Even though many of the participants were both interested and experienced in helping students with disabilities on campus, an additional session about how they can help their colleagues provide support would be welcome as well as how some Universal Design strategies could help provide all students with a more engaging and accessible classroom and campus experience.

View the PowerPoint presentation here.

Navigating and Using the SOAR Data Portal | Dr. Yugyung Lee and Dr. Ye Wang

One of the core elements to achieving Collective Impact for any group is utilizing a shared measurement system. To support the TAPDINTO-STEM Alliance, Drs. Lee and Wang, with a team of doctoral students from UMKC's Computer Sciences department, developed the SOAR Portal - Surmounting Obstacles for Academic Resilience.

During this two-part presentation, the process and strategy of developing this data warehouse, its function and purpose in data collection, and its current and future applications was shared. The session presented the challenges facing a data-solution in educational settings, and how the team designed and implemented the solutions, including a non-relational database solution with flexible schema design to address the data integration problem. A three-pronged approach to channeling the communication with multiple stakeholders and the technical team was also introduced, as well as the design of data visualization to support decision-making.

Then in a hands-on segment, the team demonstrated how AI and machine learning can present the relationships between different variables in dynamic reporting. Showcasing a focus group data collection app that employs text-to-speech and speech-to-text functions called WeListen, participants used mobile tablets to simulate a focus group to provide feedback, showing how AI can immediately prepare and present data insights.

Feedback from participants showed great interest in the technological innovations that supported the information and data collection and management of the entire project. It also included suggestions on improving the management of the system and the frontend interface. The participants mentioned duplication of questions between forms and adaptability of the interface to certain browsers.

Looking ahead, the team will continuously improve the usability and management of the system and invest on innovative data visualizations to support decision-making and data storytelling.

View the PowerPoint presentation here.

Managing Stress and Anxiety | Dr. Maya Matheis

Emotional health is an important element of success. Aimed to equip faculty mentors, particularly those in STEM programs, with evidence-based strategies to effectively support student emotional well-being, Dr. Matheis presented an array of easy-to-implement strategies for managing stress and anxiety, accompanied by hands-on practice.

Faculty members actively engaged in practicing these strategies, fostering a deeper understanding of their effectiveness and applicability. Through interactive discussions active participation, participants explored various techniques, such as mindfulness exercises, stress management tools, and self-care practices.

A significant emphasis was placed on the role of faculty mentors in directly discussing mental health with students. Participants recognized the importance of initiating conversations about mental well-being and creating a safe space where students feel comfortable seeking support. They explored approaches for effectively addressing mental health concerns, including active listening, empathy, and appropriate referral processes. The workshop underscored the vital role that faculty mentors play in supporting the overall well-being of students. Discussions centered around creating a culture of care, where faculty members actively prioritize and integrate strategies for supporting student well-being into their mentoring relationships.

The outcome of the workshop was twofold: faculty members left with a toolbox of evidence-based strategies and practical ideas for incorporating them into their mentoring practices. They were encouraged to develop personalized approaches tailored to their students' needs while fostering an open and inclusive environment that nurtures emotional well-being.

Looking ahead, participants recognized the importance of ongoing professional development and support in this area. They highlighted the need for continued training, resources, and opportunities to share best practices. The workshop sparked discussions about the potential for institutional initiatives to promote student well-being and mental health, including collaboration between faculty, counseling services, and student support programs.

View the PowerPoint presentation here.

Dynamic Experiences

Demonstration of Developing Technologies in AI | Dr. Yugyung Lee, Duy Ho, and Ahmed Alanazi

In this interactive session, Dr. Yugi Lee, Professor and Research Mentor in the School of Science and Engineering at UMKC, first discussed developing technologies in Artificial Intelligence (AI) and robotics from her research lab. Topics included the process in development of these technologies, how they are being applied to persons with disabilities, and the potential for online and educational collaboration.

Following the presentation, two doctoral students from Dr. Lee's research team, Duy Ho and Ahmed Alanazi, led a demonstration that showcased how AI, augmented and virtual reality (AR/VR), and robotics can dramatically improve the lives of people with disabilities. They specifically used NVIDIA's JetBot and UFACTORY Lite Robot Arm to highlight two key uses: helping wheelchair users navigate their surroundings and supporting people with mobility issues in their everyday tasks.

Studying the impact of the program, it was clear that blending AI with AR/VR can greatly boost the independence of individuals with disabilities. This goes beyond simply enhancing safety—it also fosters self-reliance. By using deep learning models to detect obstacles and find paths, they showed the real-world uses of these groundbreaking technologies. The presentation also revealed how AI-powered robotic arms can assist with day-to-day tasks. Whether it's simple things like picking up objects or complex activities like playing chess or working out, the possibilities are wide-ranging. By merging these robotic solutions with AR/VR, they created an immersive experience that showcases the future of assistive tech.

These developments have major implications. As our society grows more interconnected with technology, AI, AR/VR, and robotics will reshape how we think about disability and mobility assistance. They suggest a future where assistive devices do more than just basic tasks—they blend into our daily lives.

Feedback from participants underscored the transformative potential of these technologies. These advancements uniquely link the real world and virtual domains through AR/VR, and they connect robotics with real-world applications through AI. This demonstration clearly exhibited how these state-of-the-art technologies can directly improve the lives of individuals with disabilities. Participants departed with a refreshed comprehension of the societal significance of AI, AR/VR, and robotics, realizing that their value extends beyond pure technological allure.

Looking ahead, the positive reactions from participants suggest a bright future for disability assistance. These innovative technologies don't just offer a new way to look at disability—they promise a more inclusive and better quality of life for individuals with disabilities. As we move toward this exciting future, programs like ours are crucial for inspiring young minds to see the potential of technology as a powerful tool for societal change.

View the PowerPoint presentation here.

Class of COVID-19: A Documentary Film | Dr. Donna Davis, Producer and Jon Brick, Director

Class of COVID-19 explores the challenges facing educators, students, and families during the coronavirus pandemic in the United States. In this documentary produced by UMKC's Dr. Donna Davis and directed by Jon Brick, students, teachers, media experts, and parents share their stories and offer a look into the ever-changing world of education during a time of great crisis. Issues such as the inequities of school resources, student activism during the pandemic to support the Black Lives Matter movement, the lack of social services, and the increase of invisible disabilities come to light in this award winning film. Ultimately, this is a story of great challenge and great courage.

Following the screening, the audience joined Dr. Davis and Mr. Brick for discussion, where they were able to ask questions, give feedback, and offer perspective.

Reflection

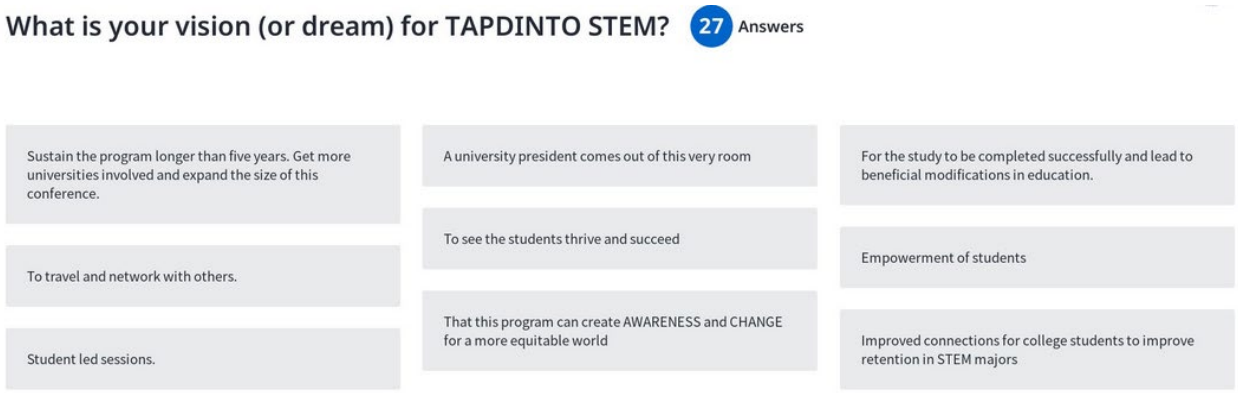
*Some Assembly Required built in time for group reflection at multiple junctures. Reflection is a cognitive process that involves taking some time to think about, analyze, and learn from our experiences. This introspective practice can help us gain insights and understandings, promote personal growth, and make more informed decisions in the future. In an educational setting, reflection helps students integrate their learning experiences, enabling them to connect theory with practice, and recognize their personal growth and areas that need improvement. This process often leads to deeper learning, improved problem-solving skills, and the development of critical thinking abilities. In a professional context, reflection is also critical. It allows individuals and teams to assess their performance, consider the impact of their actions, and strategize for future improvement. Reflection encourages learning from both successes and failures, which can lead to continuous improvement and innovation in the workplace.

A reflection guide was offered at the end of each convening day, that gave a variety of reflection techniques and reflection questions. During the final hour of the convening, the group engaged in a reflection session using Mentimeter with Dr. Ronda Jenson and Dr. Alexis Petri. The following questions shaped the reflection:

- Let's dream together. What is your vision (or dreams) for TAPDINTO-STEM?
- We are stronger together. What can we do to enhance and grow the TAPDINTO-STEM community?
- We are committed to making a difference. We will know TAPDINTO-STEM is making a difference when…
- We are all leaders in TAPDINTO-STEM. As leaders, how can we improve the visibility of TAPDINTO-STEM to benefit more students?
- Sustainability is about being sticky. What can we do to make TAPDINTO-STEM stick?

Each question directly related to one of the five elements of collective impact: shared vision; partnerships; goals and metrics; leadership and communication; expansion, sustainability, and scale. Each participant used their cell phone or computer to enter in answers to the questions. The questions appeared anonymously as thought bubbles on the screen. Facilitators invited everyone in the room to participate, and about 60% participated consistently for each question.

View the live results here.



Shared vision reflection

Three things matter to the TAPDINTO-STEM community of students, faculty, and personnel: student success (and empowerment) in college and in transition to the STEM workforce, creating change at the college/university level that makes a difference for students with disabilities, and sustaining the program beyond the grant years.

- "To be ubiquitous across the nation as an organization disabled students can use for social, professional, and academic advancement."
- "Bring new and unique talent to the STEM enterprise."
- "Our students no longer have horror stories about inaccessible classrooms"

Partnerships reflection

This question had the greatest number of responses (n=52) with a variety of recommendations. The top five most common reflections were: increase opportunities for student involvement; increase awareness/promotion of the alliance at each college/university and also more broadly to include the surrounding communities; have more events like the convening, perhaps at the hub-level also; tell our stories; expand the alliance.

- “Seek out and emphasize student ideas in TIS at all levels; have student voices lead the growth of TIS.”
- “Communication and show students that they are not alone.”
- “Increase visibility and awareness on our campuses, with students and faculty.”

Goals and metrics

To better understand participant thinking at the conclusion of the convening, we asked the question “We are committed to making a difference. We will know TAPDINTO-STEM is making a difference when....” The answers to this prompt were bold - the type of bold that is great to see emerge from a national alliance convening. Here are the top ten ways we will know TAPDINTO-STEM is making a difference:

1. “It already has. Look at those of us here. We’re changed.”
2. “All students here graduate.”
3. “We are helping the majority of disabled students in higher education and not just the ones we give stipends to.”
4. “We see articles of our findings highlighted on the NSF website.”
5. “We see current participants succeed in internships, job placement & present at college research events.”
6. “Our success is our students' success. The difference is being made.”
7. “We hear more of OUR students stories and their impact.”
8. “We have data that show we have met our goal.”
9. “Students are completing programs with a strong sense of success and confidently enter and sustain positions in their industry.”
10. “Everyone comes out stronger than they came in.”

Leadership and communication reflection

Participants gave a lot of recommendations in response to this prompt. The top three recommendations were: increase visibility through social media; build and strengthen the TAPDINTO-STEM community; be strategic about aligning with strategic plans at the individual college or university level.

- “Start and invest in a strong foundation in our relationships so we can invite others into it and provide them direction and guidance.”
- “Positive presence on socials and at student fairs.”

Expansion, sustainability, and scale

Reflecting on expansion, sustainability, and scale is not an easy ask, especially at the end of a convening. However, this group was not only up to the task, but shared actionable ideas. These ideas are the main recommendations from the convening.

- Build a process of sharing knowledge between cohorts of students; generations of faculty. (4)
- Create institutional centers/divisions and fund efforts. (4)
- Keep pushing the campuses to increase their access and opportunity goals to include persons with disability (4)
- Alumni club (3)
- Embed with other existing programs on campus. (3)
- Student organizations. (3)
- Actively create positive change, don't just talk about what should be happening. (3)
- Make sure we are meeting students where they are and check in often. (3)
- Align ourselves with the mission and strategic plans of our institutions and show them we are helping with THEIR OWN goals! (3)
- Connect online and sustain the online community. (3)
- Get into the ear of the professionals at the local universities who control/guide the "capital" investment budget. (2)
- Accountability to the goals. (2)

Creating an inclusive and accessible conference requires careful planning, understanding, and consideration of various types of disabilities, including invisible disabilities. Here are some strategies to ensure accessibility for all attendees:

1. **Venue Accessibility**: Choose a venue that complies with the guidelines of the Americans with Disabilities Act (ADA) or equivalent guidelines in your country. Ensure there are ramps, elevators, and accessible restrooms available. Also, make sure pathways are wide and clear of obstacles, and seating is flexible for people who may need to use mobility aids.
2. **Sign Language Interpreters/Captioning**: Provide sign language interpreters for attendees who are deaf or hard of hearing. For virtual conferences, use real-time captioning.
3. **Accessible Materials**: Provide conference materials in multiple formats including digital, large print, Braille, and audiobooks. Ensure that digital materials are compatible with screen readers for visually impaired attendees.
4. **Website and Online Accessibility**: Make sure your conference's online presence, including registration processes and digital materials, is accessible. Use high-contrast colors, readable fonts, and alt text for images. Ensure that all functions can be performed using a keyboard for those who cannot use a mouse.
5. **Invisible Disabilities**: Be mindful that not all disabilities are visible. This could include conditions like chronic illnesses, mental health conditions, or neurodivergent conditions

like autism. Provide quiet rooms or areas where attendees can retreat if they're feeling overwhelmed or need to manage symptoms. Additionally, try to minimize the use of flashing lights or loud noises that might be distressing for some attendees.

6. **Flexible Scheduling**: Not everyone can maintain the same pace, so provide plenty of breaks and consider offering a flexible schedule or recorded sessions that attendees can view at their own pace.
7. **Food Allergies and Dietary Requirements**: When serving food, cater to various dietary restrictions. Clearly label food with potential allergens.
8. **Staff Training**: Train staff and volunteers to understand different types of disabilities and how to provide assistance when needed. They should understand the basics of interacting respectfully with people with disabilities, such as not touching mobility aids without permission.
9. **Communication**: Clearly communicate accessibility information about the venue, schedule, and features on the conference website and materials.
10. **Feedback and Adaptation**: Finally, always ask for feedback about accessibility and be ready to make real-time adjustments as needed. You won't always anticipate every need, but showing a willingness to address issues and improve can go a long way in making attendees feel welcomed and valued.

Outcomes

Through feedback gathered throughout the convening and from responses in Dr. David Shannon's post-convening Qualtrics survey summary, we gained valuable insights on the impact of the convening and the TAPDINTO-STEM Alliance. Both students and faculty/personnel reported positive outcomes a result of participation in *Some Assembly Required.

Collective Responses

Using close-ended survey responses, some common themes emerged with a high mean (M<5).

	Student (N=12)	Faculty/other (N=18)
Deepened my commitment to TAPDINTO-STEM	4.83	4.72
Increased my desire to become more involved with TAPDINTO-STEM	4.75	4.72
Increased my confidence that TAPDINTO-STEM will be successful	4.67	4.61
Helped me connect with faculty and other STEM professionals	4.92	4.89

Learned more about the types of accommodations valued by students and the impact of faculty perceptions in supporting academic success	4.67	4.50

Student Responses

The common themes revolve around feedback and improvement, personal experiences and representation, connection and community, learning and skill development, and inspiration and motivation.

1. Feedback and suggestions for improvement: Several responses highlight the importance of providing feedback and hoping for changes or improvements in various aspects of the convening and the alliance.
2. Personal experiences and representation: Participants appreciate sessions that feature individuals with similar backgrounds or experiences, which they find helpful, informative, and valuable. Representation of diverse perspectives, especially from marginalized or underrepresented groups, is highlighted as an important aspect of these events.
3. Connection and community: The opportunity to connect with peers and like-minded individuals is seen as a valuable aspect of the events. Participants mention the sense of belonging, deepening connections, and learning from others as enriching experiences.
4. Learning and skill development: Several responses mention the importance of learning new skills, such as storytelling, communication, and problem-solving. Participants appreciate practical and effective approaches that they can apply in their lives and careers.
5. Inspiration and motivation: The conference sessions that provide inspiration, motivate attendees, and showcase successful stories are highly valued. These sessions serve as a source of encouragement and reinforce the belief in one's potential for success.

Feedback in the post-convening survey was very positive with all items averaging above the scale midpoint of 3 and 24 of the 27 items averaging above 4.0. Along with the shared responses to faculty as listed in the section above, students most strongly agreed that this

national convening improved their understanding of TAPDINTO-STEM goals (M=4.67) and increased their level of support from others (M=4.67).

	N	M	SD
Deepened my understanding of the goals of TAPDINTO-STEM	12	4.67	.492
Increased my level of support from my peers and others	12	4.67	.651

Many open-ended responses mention specific sessions or topics that were particularly valuable, including the student panel session, workforce representative presentations, and the storytelling sessions. These sessions provided valuable information, insights, and opportunities for self-expression. The following are direct quotes from students in the responses to the questions, “Please describe the most valuable aspects or sessions from this event” and “Please describe specific ways in which you benefited from your participation in this event.”

Storytelling session:

- “I learned how to effectively tell my story.”
- “I will be a more effective storyteller and communicator.”
- “I really liked the storytelling seminar for the students. I thought it was very important for us to learn how to effectively tell our stories to change hearts and minds.”
- “Storytelling is useful in teaching and communicating. I liked having a chance to practice my storytelling skills in a simple way that stuck with me. Very effective.”

Industry/Workforce sessions:

- “I gave two people my resume, got resume feedback, was offered to apply to a federal panel on database management.”
- “I got useful advice for my resume.”
- “I got HR professionals to give me feedback on my resume … got to practice professional skills like networking.”
- “I plan to apply the professional experience I got from this event to move forward in my career. I'm taking my newfound confidence into job interviews and I'm updating my resume with the tips I got from the HR professionals I spoke with.”
- “The resume feedback will be IMMENSELY helpful with securing jobs and internships in the future. Knowing there are more of us out there will also help me seek out aid and provide aid to those who might need it. That sense of hope is very important to my progress.”
- “The information we got on resumes is something I'll definitely carry with me in completing my degree and forward. “

- “Get advice from HR professionals in a judgment-free zone.”

Close-ended question responses related directly to this session are highly positive:

	N	M	SD
Broadened my understanding of STEM careers in global, national and regional contexts	12	4.25	.965
Increased my confidence to pursue a successful career in STEM	12	4.50	.905
Learned strategies to prepare for internships and jobs	12	4.00	1.044

Faculty, Administration, and Other Personnel Responses

The common themes include learning and gaining perspective, networking and community, personal growth and self-advocacy, inclusivity and accessibility, and storytelling and communication.

1. Learning and gaining perspective: Participants value opportunities to interact with and learn from others, whether it's gaining insights into the operational methods of other hubs, sharing ideas and providing feedback on resources in development, or hearing directly from students. There is an emphasis on expanding knowledge and understanding through these interactions.
2. Networking and community: The importance of networking and building connections within and across hubs or organizations is highlighted. Participants appreciate the chance to meet and interact with like-minded individuals, fostering a sense of fellowship and support.
3. Personal growth and self-advocacy: Several responses mention sessions that contribute to personal growth, self-advocacy, and developing a positive outlook. Topics such as mental health, stress management, self-advocacy during studies, and navigating the working world as a disabled person are mentioned as valuable and informative sessions.

4. Inclusivity and accessibility: Participants appreciate sessions that focus on accessibility, equity, and understanding barriers to access. These sessions contribute to increasing awareness and understanding of the challenges faced by individuals with disabilities or marginalized groups.
5. Storytelling and communication: Storytelling emerges as a recurring theme, both in terms of organizational storytelling and personal storytelling skills. Participants find value

in learning effective storytelling techniques and sustaining inclusive pathways through storytelling.

Feedback in the post-convening survey was very positive with all items averaging above the scale midpoint of 3 and 21 of the 26 items averaging above 4.0. Along with the shared responses as students in the section above, respondents most strongly agreed that this national convening afforded them opportunities to exchange ideas with peers (M=4.89), helped them learn how to better support students with disabilities (M=4.67), and helped them be able to talk more in depth about the alliance (M=4.61).

	N	M	SD
Afforded me an opportunity to exchange ideas with peers	18	4.89	.323
Helped me learn about ways we can support students with disabilities in STEM	18	4.67	.485
Helped me be able to talk in more depth with others about the project	18	4.61	.698

Resources & Accommodations

ASL Connections - American Sign Language Interpretation - http://www.aslconnections.com/services.html

With over 40 years experience working with and within the Deaf community of Greater Kansas City, ASL Connections, LLC is uniquely positioned to provide high-quality interpreting services at competitive prices in an effort to bridge the linguistic and cultural gap between those who use ASL and those who do not. ASL Connections' commitment to stringent professional standards and conduct allow for quick integration into any environment seamlessly. Working in tandem with certified hearing interpreters, Certified Deaf Interpreters (CDIs) deliver smooth, consistent, accurate and effective communication, especially for the most complex of topics. ASL Connections is the only agency in town that has this CDI specialty.

For *Some Assembly Required, six interpreters rotated between events, providing service in student, faculty, and all-group sessions.

20/20 Captioning and Interpreting - Remote CART Provider - https://2020captioning.com/

Communication Access Realtime Translation (CART) provides access for deaf and hard of hearing viewers, those for whom English is not their primary language or other attendees who might have difficulty hearing by offering immediate, verbatim, streaming of voice-to-text translation at events, conferences, classes, public hearings and other events. 20/20 Captioning & Interpreting combines state-of-the-art technology, uncompromising commitment to quality and

extensive experience to provide the exceptional service our clients deserve. Proud to be a Nationally Recognized Leader in onsite and remote CART Captioning, our Nationally Board Certified realtime writers are dedicated to excellence.

For *Some Assembly Required, CART was provided for the all-group sessions. We used Zoom as the platform to stream live captions from the stenographers and record the sessions for future analysis.

Decompression room - a quiet room reserved away from the group offered a giant coloring poster that multiple people could work on at the same time. Asked people to sign it. We also included origami instructions and paper and fidgets.

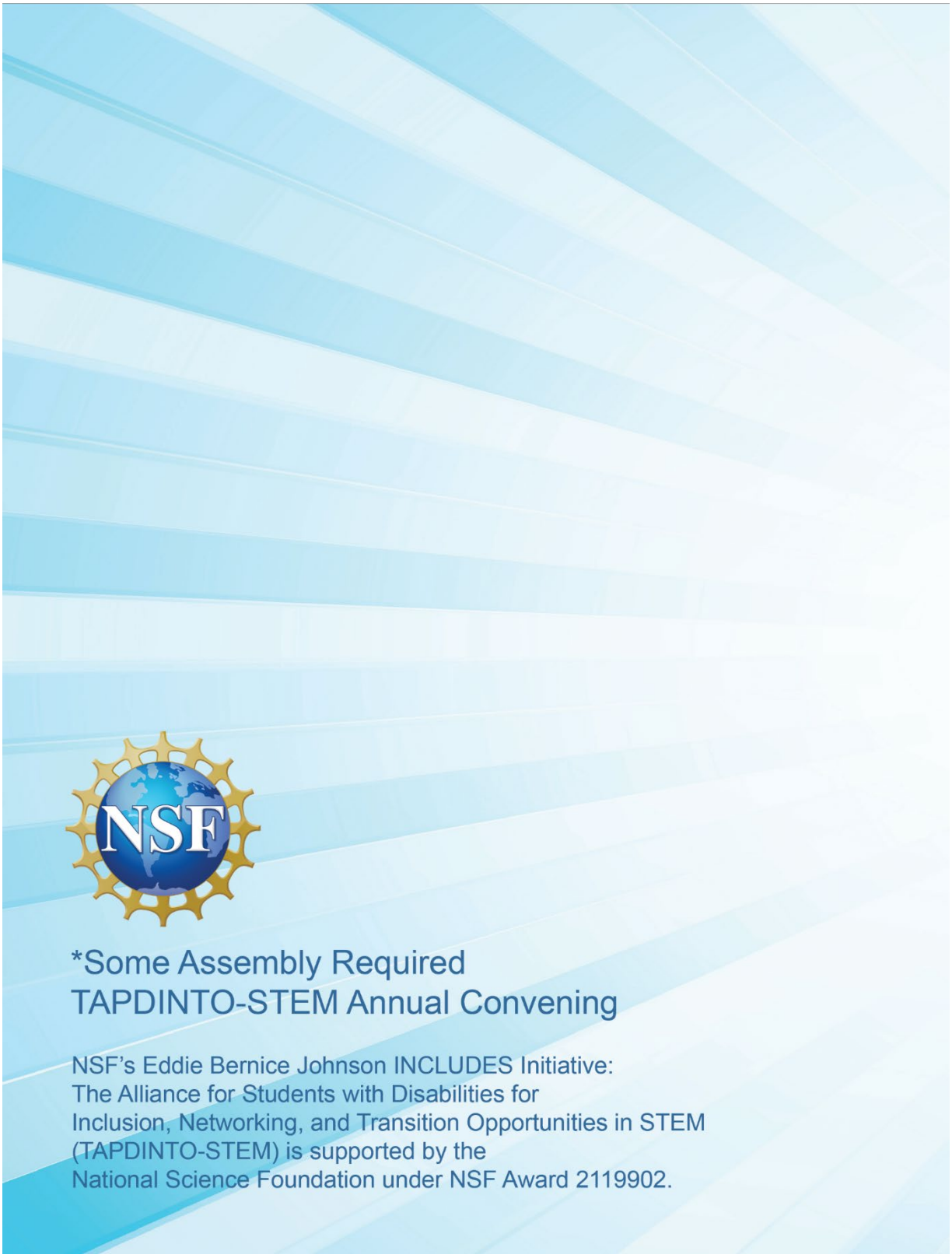
Google maps - a personalized, interactive map of the surrounding area for the convening participants included the following: locations where various elements of the convening are taking place, restaurants, things to do/places to see, and pharmacies and medical services.

Tabletops - each table had a caddy with the following items: markers, sticky notes, fidgets, peppermints, pens, and pencils. We are deducing the favorite fidgets are the ones that participants took with them (which was encouraged):

- SCIONE Fidget Spinners Sensory Hand Fidget Pack Bulk
- Fidget Spinners DIY Deformable Robot Fingertip Toys Transformable Chain Robot
- Glow Stretchy String Fidget Sensory Calming Noodle
- Push pop ball

**Photos courtesy of Genevieve Casey, Slowing Down to Look Photography (https://dot.cards/gcasey) and Nichole Stahly, TAPDINTO-STEM Backbone Associate.*

Eddie Bernice Johnson INCLUDES Initiative: The Alliance of Students with Disabilities for Inclusion, Networking, and Transition Opportunities in Science, Technology, Engineering, and Mathematics (TAPDINTO-STEM) is supported by the National Science Foundation under NSF Award 2119902. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect those of the National Science Foundation.


NSF
*Some Assembly Required
TAPDINTO-STEM Annual Convening
NSF's Eddie Bernice Johnson INCLUDES Initiative:
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