Chicagoland Summit on STEMM Equity and Excellence

Hosted by MSI Chicago
August 5, 2023 | 1:00 pm - 5:00 pm

Workshop Summary and Readout

The STEMM Opportunity Alliance and its host the Chicago Museum of Science and Industry convened a group of STEMM leaders and community members from educational institutions, non-profits, and government for a summit focused on advancing equity and excellence in the American STEMM ecosystem. Participants heard from cross-sector stakeholders during the Chicagoland Summit, including representatives from local education systems and institutions, industry leaders, and the American Association for the Advancement of Science (AAAS). Furthermore, participants engaged in four concurrent breakout sessions to connect with one another and advise on key sub-issues to inform SOA's forthcoming National Strategy for STEMM Equity and Excellence.

Plenary Session 1:
Participants heard from leaders from the Museum of Science and Industry and AAAS who are driving STEMM equity and excellence, as well as from key leaders in education and industry who are spearheading local efforts to advance change. This session also featured a panel discussion which underlined the value of partnerships in efforts to seek equity in STEMM fields.

Welcome and Opening Remarks
- *Chevy Humphrey, President and CEO, Museum of Science and Industry, Chicago:* Humphrey noted that the Chicagoland Summit embodied the spirit of collaboration. She touted the importance of ensuring students have the opportunity to learn science not only within the classroom, but also in museums and through community outreach. Humphrey encouraged participants to "go inspire a young person," and pledged that the museum will combine innovation, collaboration, and engagement to break down barriers to STEMM equity.

- *Shirley Malcom, Senior Advisor to the CEO and Director of SEA Change, AAAS:* Dr. Malcom noted that AAAS has a long history of seeking diversity, equity, and inclusion in

the STEMM ecosystem. She shared her personal story growing up in segregated schools in the Jim Crow South and then attending a predominantly white university, describing the loneliness she felt as the singular Black individual in many courses. Dr. Malcom underscored the importance of transforming institutions in the STEMM ecosystem so that all children – regardless of background – will have a place to belong within STEMM.

Equity and Excellence through the Lens of Partnership
Candice Smith, Executive Director of Engineering Excellence for Boeing, moderated a panel on achieving equity and excellence through partnerships in the STEMM ecosystem. Panelists included the following:

- *Myetie Hamilton, CEO of Leadership Greater Chicago; President, the Chicago Park District:* Hamilton described quality instruction, early exposure, and support from family as key starting points for STEMM education. She underscored the need for collaboration in a multi-sector effect tackling barriers all the way from early childhood to long-term careers. Of ensuring children can see themselves in STEMM pathways, Hamilton said: "Our children can be what they see."

- *Yani Mason, CEO of Girls Inc. of Chicago:* Mason noted that following the murder of George Floyd, there has not been much change despite many platitudes. She emphasized the importance of instilling a sense of belonging in STEMM in women of color, noting that only 6 percent of the STEMM workforce is composed of women of color. Furthermore, she highlighted the need to break stereotypes to prevent girls from continuing to internalize gender inequity early in childhood and education.

- *Marcoiya Fair, Formerly Sr. Talent Acquisition Sourcer, Uber:* Fair mentioned the need for increasing exposure opportunities for girls to introduce them to STEMM pathways, including programs such as bootcamps and apprenticeships. She also reminded participants that supporting girls in developing soft skills including communication, networking, and mentorship is also critical.

- *Sherry Eagle, Executive Director of the Institute for Collaboration, Aurora University:* Eagle described the need to develop a cohesive system in which PreK-12 and higher education seamlessly work together to engage students. She envisioned a system in which educators, nonprofits, and industry all feel compelled to engage and support students' pathways into STEMM.

Breakout Sessions

During the breakout sessions, participants gathered to discuss cross-cutting issues to achieve equity in STEMM by 2050. In discussions, conversations included developing short-, medium-,

and long-term goals and key steps around a cross-sector topic. Beyond100K, an SOA partner, also facilitated a breakout conversation exploring how to address K-12 STEMM teacher shortages and increase educator diversity. Key themes and relevant ideas from each breakout session are detailed below.

Breakout Session 1: Inclusive STEMM Pedagogy and Learning Experiences

In this session, conversation centered around how to develop inclusive STEMM teaching practices and learning experiences. Participants set goals around ensuring teachers are supported in fostering inclusive learning practices and developed high-level actions for better improving the experience of both teachers and students in the STEMM ecosystem.

Key Goals:
- Professional development for teachers should be framed in a manner that prioritizes research based instructional practices and establishing safe learning environments that encourage critical thinking rather than repetition and recitation.
- Students should be introduced to STEMM science opportunities at an early age. This may set them up to be more confident in their STEMM abilities and receptive to pursuing education and careers in STEMM fields.
- Both national and state level assessment systems should be overhauled and shifted to focus on applied learning within natural and social science concepts.

Action Planning:
- The youth perspective should be taken into consideration when developing curriculum. By incorporating subjects and topics that are important to students, there may be an increase in the excitement and engagement with which they approach STEMM education.
- Both qualitative and quantitative methods should be used to assess the success of students. Teachers should be fully equipped and encouraged to paint a fuller picture about students' educational achievements.
- A free database should be created that compiles national and local resources into a single, accessible space. The database should be available at public institutions.

Breakout Session 2: Ecosystems to Support Youth Engagement and Persistence in STEMM

This session focused on developing strong ecosystems to support youth engagement and persistence in STEMM fields. Participants set goals around improving access to high quality STEMM education and increasing opportunities for children to explore their interests in STEMM careers. During the session, participants also discussed high-level actions for developing the processes and systems needed to ensure young learners feel a sense of belonging in STEMM and have the support they need to stay engaged in STEMM fields over the course of their lives.

Key Goals:
- The field should develop structures that proactively create exposure to STEMM in early education (K-5) to set students up for success in STEMM courses during middle and high school.
- Funding should be sustainable and focused on long-term objectives. If funding must be renewed between projects then there is a risk that there may be a dip in productivity and the slowing of momentum.
- Parents, specifically parents of first generation students, should be informed about the various resources and pathways available to their children. Their understanding of processes may enable them to better support their children's progress and growth.

Action Planning:
- Models that have been proven to yield positive results should be amplified. These models will likely be ones that break the current mold thus prompting innovation and unique ways of approaching education.
- Partnerships should be encouraged to be centered around power sharing. In instances where partnerships involve organizations of different sizes or capacities, the specific expertise and unique value add of each partner should be emphasized – including in particular community level connections and knowledge.
- Models should incorporate a family-based learning approach both inside and outside of a school setting. Parents should be equipped with the knowledge and tools needed to encourage their children's continued learning at home.

Breakout Session 3: Urban Education and Workforce Development

This session explored how to enhance STEMM urban education and workforce development. Participants set goals around how to support STEMM educators and workers in urban contexts and developed high-level actions for addressing issues such as truancy, technology gaps, and biases in education and the workforce.

Key Goals:
- The K-12 STEMM teacher shortage must be resolved. Teachers need to be viewed as professionals and classes must be taught in culturally relevant ways.
- Urban schools need to receive additional public and private funding and other resources to support greater equity between schools.
- Investment in education must be viewed as a tool for promoting economic and community development more broadly, in service of other key local and national goals.
- Education and industry partners should seek opportunities to break down silos or blur lines between their sectors, to build stronger pathways into STEMM.

Action Planning:
- Addressing truancy and other issues within communities has the potential to improve the lives and outcomes for thousands of students. Attempting to rectify these issues by doing targeted outreach and collaboration with trusted community figures may help to lend a sense of legitimacy to efforts aimed at promoting equity.
- Introducing technology to communities can bring innovation and improve outcomes for students, but they should be accompanied by appropriate skill building classes, broadband expansion, and any other tools and scalable programs necessary to ensure support.
- Teachers must be properly trained – and this must include bias and trauma training. This will better equip them to support students handling issues that may impact their educational pursuits.

Breakout Session 4: Addressing K-12 STEMM Teacher Diversity and Shortages

This session, which focused on increasing educator diversity and addressing teacher shortages in STEMM, was facilitated by Beyond100K, an SOA partner. Beyond 100K led participants through a discussion of key themes and challenges facing K-12 STEMM educators and key causes for current teacher shortages, and participants explored potential solutions for addressing these challenges.

Key Themes:
- Teacher recruitment should be conducted with intentionality. Teachers who reflect the various identities and backgrounds of the students whom they would teach should be targeted and given the tools needed to effectively reach students.
- Teachers should be encouraged and supported in advocating for themselves. Teachers are important pillars of their communities and their needs and voices should be heard and taken seriously.
- In order to encourage teacher retention, teachers should receive higher pay and be afforded opportunities to conduct relevant and innovative research. Moreover, they should have access to robust leadership and professional development opportunities and workshops.
- The mental, emotional, and physical health of teachers should be considered a priority on local, state, and national levels. By ensuring that teachers are well cared for, they may be better equipped to effectively educate and inspire students.

Plenary Session 2:

Following the breakout sessions, participants heard from keynote speaker Raj Echambadi, the president of the Illinois Institute of Technology.

Keynote Address

- *Raj Echambadi, President of Illinois Institute of Technology:* Dr. Echambadi shared a vision for a system that builds opportunity and enables accessibility, and embraces different backgrounds, motivations, life circumstances, and interests. Of the need for generating more equitable opportunities in the STEMM ecosystem, Dr. Echambadi said: "Talent is equally distributed, but opportunities are not." He noted that universities are a place to improve human capacity, but also emphasized that experiential education outside of the classroom is important to fostering holistic learning and critical thinking.