

Informal Ed to Higher Ed (IE2HE): An NSF Workshop on Digital Micro-credentials

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Abstract: The *Informal Ed to Higher Ed* (IE2HE) NSF-supported workshop was held at Carnegie Mellon University in December 2019. This workshop built on an earlier one convened two years prior at University of Michigan, which started the conversation around how digital badges and micro-credentials earned in informal educational experiences could be used in college admissions. The goal of the IE2HE convening was to engage participants from informal programs, secondary and higher education, and badge issuing organizations in collaboratively developing projects that move the needle on using micro-credentials to support STEM college and career pathways for underrepresented youth. This report describes the convening and presents an overview of work that participants are planning (or aspiring) to do as a result of the ideas generated and connections made at this workshop.

Introduction

Current college admission processes privilege wealthy families because they favor applicants who come from the most well-resourced high schools and they place a high value on the kinds of skills (music, sports, arts, standardized test taking) that generally cost money and time to develop (Carnevale & Strohl, 2013). These choices about what to value in a college application have led to gross disparities in opportunity, resulting in only nine percent of students in the lowest 25% income bracket earning degrees from four-year colleges, while 77% of students from the top 25% income bracket do (Cahalan, Perna, Yamashita, Ruiz, & Franklin, 2016). One way to address this inequality is to provide low-income youth with learning experiences that enable them to gain valuable skills and knowledge. However, the only way those efforts will lead to change is also to provide youth with the tools to communicate the value of their experiences, and for admissions offices to recognize and accept those credentials in college applications.

A National Science Foundation (NSF)-funded workshop held at the University of Michigan in 2017 started a conversation among informal program developers, higher education admissions officers and assessment experts about how digital micro-credentials could fit into the college application process (Fishman, Teasley & Cederquist, 2019). One of the informal programs that was featured in that workshop was Mouse, a national nonprofit that provides both formal and informal creative technology programs, curriculum, and digital badges for middle and high school-age youth. Representatives from that organization described their partnership with Parsons School of Design to co-create a set of badges that youth could earn in an informal digital design program. These badges were “endorsed” by Parsons, which enhanced their value as credentials in applications to Parsons and potentially other art and design colleges. Building on that workshop, Mouse, Parsons, and their research partner Education Development Center (EDC) received NSF funding for the Informal Ed to Higher

Ed (IE2HE) workshop, which was held in December, 2019 at Carnegie Mellon University in Pittsburgh, PA.

The goal of the convening was to generate ideas and establish partnerships for projects that focus on making digital micro-credentials, particularly those issued through STEM experiences occurring outside of school, valued by higher education gatekeepers. This could mean creating concrete guidelines for endorsing micro-credentials, developing action plans for piloting this process with teams of informal educators and higher education faculty and admissions, and planning research projects that would look at innovative ways of communicating the value of micro-credentials. To achieve this goal the convening focused a set of overarching research questions to frame discussions:

- What type of information do higher education faculty and admissions need for informal learning experiences to be valued in admissions on par with other credentials currently accepted in admissions?
- What type of information do informal STEM program providers need in order to learn how to design and deliver programs that prepare underserved youth for successful college applications?
- What can we learn from existing digital micro-credential initiatives that are already partnering with universities?

Workshop attendees

This convening gathered relevant stakeholders in the alternative credentialing enterprise who can actually make necessary changes happen. The convening included 22 participants representing four groups: faculty from two- and four-year institutions, providers of informal learning experiences for youth, micro-credential developers and issuers, and educators with experience implementing micro-credentials. Part of the goal of the convening was to establish a shared vocabulary and set of concrete guidelines for endorsing credentials issued through STEM experiences occurring outside of school. Every participant was invited with the intention that they could generate ideas for moving the field forward by working together on innovative and interconnected projects.

Workshop structure

The convening lasted two days. To provide a framework for discussions, on the first day of the convening Davin Sweeney, Director of College Counseling at CollegeWise presented an overview of the state of college admissions. Davin's presentation centered on the challenges faced by families and colleges and where colleges and universities fail to meet the needs of traditionally underrepresented students. Following this orientation, representatives from Mouse, Parsons, and DreamYard (a youth development organization in the South Bronx that runs a school as well as informal programming, including Mouse's Design League program) presented their NSF-funded digital micro-credential initiative. This partnership among Mouse, Parsons, and DreamYard provided convening participants with a model for the type of informal ed and higher ed partnership that groups could consider replicating or use to inform their own efforts.

After the presentations, the whole group came together to work on a set of shared priorities for the convening. To organize the group around key themes, Professors Barry Fishman (virtually) and Stephanie Teasley of the University of Michigan, presented their findings from their Digital Micro-Credentials workshop. Following this review, participants used Fishman, Teasley, and Cederquist's (2019) six themes: *Equity, Lifelong Learning, Validity and Endorsement, Agency and Authenticity, Scalability, and Infrastructure* to focus their

thinking about possible areas of exploration. Workshop organizers encouraged participants to think about each theme and describe how that theme related to their work.

After discussing shared priorities, Daniel Hickey of Indiana University presented research that he conducted on projects using digital badges that were funded by the MacArthur Foundation's Digital Media and Learning initiative. Professor Hickey described four different types of badge systems: *Competency-based*, *Inquiry-based*, *Participation-based*, and *Hybrid*. The overview highlighted the most successful of these badge systems: participation-based. As Hickey and Shenke (2019) point out, "badges work better where learning, recognition, and assessment practices are primarily sociocultural." Finally, Alec Barron, of Competency X presented on an assessment practice for workforce-informed performance tasks that is currently being used at Del Lago Academy in Escondido, California. Funded by the Bill and Melinda Gates Foundation and Hewlett Foundation, this project was created to broaden access to college credit and paid internships for high school students using a competency-based articulation approach. All of these presentations provided an overview of what the digital micro-credentialing community has learned and how those experiences should be factored into guidelines and action agendas for future work and teams. The last part of Day One focused on groups coming together around topics of interest. Small groups formed around three topics: *Endorsement Partnership*, *Guidelines/Advocacy*, and *Participatory Endorsement*.

Day Two of the workshop began with an overview of the tasks that groups would complete. After this, participants participated in a "World Cafe" activity to think through questions that are important to digital micro-credentialing work. The four questions were:

- Who are the stakeholders that have to be involved to reassess how various kinds of credentials in applications/portfolios are valued by undergraduate institutions?
- How can stakeholders overcome the technical and administrative obstacles that perpetuate inequalities that currently exist in the process of high school to higher education admissions and transitions?
- How can endorsed badges be used to connect prospective students to faculty early in the application process, and to other opportunities offered by an institution, such as summer camps or research?
- How can this work be communicated to the informal STEM and higher ed admissions fields?

Finally, small groups gathered to continue the work started on Day One to further expand on their potential collaborative projects. Three groups eventually became four by the middle of Day Two: *New York Region*, *Pennsylvania Region*, *Social Network Analysis*, and *Participatory Endorsement*. We concluded the convening with a share-out of the proposed work each group would continue over the next two months. The key outcomes of the convening and follow-up work is summarized below.

Takeaways and collaborative projects

Working group members had one month to expand on and finalize ideas that began at the convening. The groups formed primarily based on interest and expertise, but location was also a factor in how groups came together. Convening organizers met with each group to discuss progress since the convening and what work they planned to do moving forward. This included work that had already occurred, projects that could happen in the short term, and aspirational ideas that could be possible with additional funding.

New York Region Group

The NY Region Group consisted of convening participants who work with youth in the Northeast. This group included the following:

Anne Gaines Parsons School of Design	Hillary Kolos The DreamYard Project
Amon Millner Olin College of Engineering	Maggie Muldoon Mouse
Davin Sweeney Collegewise Metro NYC	Jessica Walker Parsons School of Design
Elizabeth Waters Cooper Union	Catherine Lewis Hostos Community College – City University of New York

This group aimed to work together to extend the current NYC-based efforts, happening with Mouse, Parsons, and DreamYard to additional higher education sites and college admissions. Below is a description of the work.

Partnerships. Leveraging the relationships fostered at the convening, one of the outcomes from this group was a partnership with Cooper Union and Mouse. The organizations announced that they would work together to run two Design League summer program workshops at Cooper Union. Over the next few months, there will be conversations between the two organizations to refine the Mouse curriculum and make decisions about which digital micro-credentials are the best fit for Cooper Union youth. Along similar lines, Mouse will be looking for funding opportunities to run a Design League program at Parsons' Pre-College Academy.

Last year Hostos, a community college in the South Bronx (near DreamYard) that offers Digital Design and Animation, Digital Music, and Game Design degrees, entered into discussions with the Mouse/Parson/DreamYard team about granting college credit from Hostos for digital micro-credentials earned in the Design League program. Parsons and Hostos are now working on an articulation agreement for all credits from Hostos to be accepted into Parsons' Integrated Design major, enabling Hostos students to earn a Parsons degree. This would reduce both the time and resources required for Hostos students to move into courses at Parsons while still taking courses at Hostos. A 4-year model emerged as an idea for how to ensure Hostos students receive the required foundations for Parsons courses while being eased into the Parsons community. That would create a pathway for Design League alumni to earn a Parsons degree for a much lower cost and with the supportive structure that a small local college can offer. There is a draft of this plan in place to present to the respective college boards over the coming weeks. A longer-term goal is to secure funding for an inaugural cohort of Design League youth to go through the process.

Micro-credentials for Internships and Work Experiences. DreamYard reported on their current summer internship model, called Design One in which high school-aged youth are

paid through the NYC Summer Youth Employment Program. There is potential to use Design League in Design One this year, with returning Design League youth participating as mentors. Mouse is also interested in finding additional funding or partner organizations to run an internship program that is more aligned with youth interest and real future jobs.

DreamYard discussed the possibility of providing micro-credentials for the experiences their youth have through internships. They currently use a digital portfolio to capture and display those experiences, but Design League micro-credentials could be used instead. Cooper Union is also interested in micro-credentialing the skills students learn in their summer programs.

These credentials could be used to provide information that would help Cooper Union hire some of the same young people who participated in the summer program to become teaching assistants for the program in the next two years, or to work in the Cooper Union Maker Space. This creation of a mentor/teaching assistant micro-credential would be relevant to Parsons for hiring students to be mentors in their high school programs.

Pennsylvania Region Group

Similar in thinking to the NY Region group, the PA Region Group wanted to coalesce around local partners and figure out ways that they could work together. The group saw an opportunity to connect youth from various programs to other programs that each PA Group partner ran, was affiliated with, or thought might be a good fit. The group discussed several possible strands of work to pursue. This group included the following members:

Alaine M. Allen University of Pittsburgh	David Boone University of Pittsburgh
LaTrenda Leonard Sherrill Remake Learning	Kristin Morgan Carnegie Library of Pittsburgh
Tyler Samstag Allegheny Intermediate Unit	Andrew Stutzman Drexel University
Ashley Williams Patton Carnegie Mellon University	

Root Cause Analysis. Part of the group is interested in looking at barriers and challenges to getting more minority youth into their programs. This group has started a series of online facilitated brainstorming discussions on how to fully leverage the experiences of minority youth in pre-college programs in the admissions pathway. This root cause analysis will result in a driver diagram for a nationwide networked community of pre-college programs.

Drexel & CMU Pathways Resource Development. To gain a better understanding of available informal ed opportunities and how they might interrelate for scaffolded learning, CMU (Ashley Patton) and Drexel (Andy Stutzman) will collaboratively supervise and direct an intern tasked with developing a web-based shared resource tool that gathers and organizes pre-college CS access programming for members of the IE2HE workshop group. This project will ideally make it easier for student-facing program managers to refer students to additional opportunities. The resource will be free, digital and open to all member organizations and

will clarify educational pathways for learners across states and disciplines, organized by badge or micro-credential.

Change from Within. Part of the group is looking to influence change within their own institutions. Part of this work will include opening up conversations with the admissions department at Drexel University about digital micro-credentials.

DIY Digital Micro-Credentials. The Carnegie Library of Pittsburgh and other partners are working on a resource that connects high school youth to pre-college and afterschool programs. The micro-credentials received at each of these programs would be followed by a document with other relevant programs. They are also looking at how to continue to foster connections for youth to the library.

Social Network Analysis Group

This group originally came together around the idea of providing an overview of the state of badging and to visualize the connections between badge communities. This group included the following members:

Kerri Lemoie Open Works Group	Pat Leonard Credly
Marc Lesser National Academy Foundation, formerly of Mouse	Catherine Lewis Hostos Community College (CUNY)
Stephanie Teasley University of Michigan	

Data gathering, analysis and mapping. The group set out to gather information about what is going on in the digital credentialing community and create a resource that would be used by programs and policy makers to understand how micro-credentials can benefit youth in college and career readiness. In the hopes of making things more efficient, the group would look at organizations that are using micro-credentials to do innovative assessment and programming and then tell the story. The group recognized that K-12 and informal education has lessons to learn from those in workforce development, higher education and others who issue micro-credentials. To complete the next steps of the work, the group planned to query credential engines about different micro-credential issuers and to review IMS Global's efforts to standardize the micro-credential infrastructure. Aspects of their code could be used to search and categorize micro-credentials. The next step would be to seek funding to conduct a Social Network Analysis (SNA) to create a map of the micro-credential landscape. This Social Network Analysis map would allow programs to find micro-credentials that are similar, provide an opportunity for the community to look for outcomes, and identify gaps in what we know.

Since the convening, the SNA group moved this piece of work forward. The group decided to focus on Out-of-School Time (OST) high school programs. The focus comes with several caveats that need to be considered. When working in the K-12 space, because of various regulations, programs need to be especially mindful of the privacy protections and

permissions needed for gathering and maintaining data from youth under eighteen. One piece of work this group would like to move forward is the development of a Checklist/Standards document that provides guidance on the operational side for OST programs interested in micro-credentials. For example, this toolkit could include guidance on questions like: Who can create a micro-credential? Who can issue micro-credentials? Who can see the micro-credentials? How do you scale? The group also discussed organizations that would be interested in this: National Association of Secondary School Principals (NASSP), National Academy Foundation (NAF), and the Center for Advancement of Informal Science Education (CAISE). As a part of the long term work, this group will look to acquire funding to further the work of producing a Social Network Analysis visualization, similar to what Digital Promise did with their Research Map of Learning Sciences Research: <https://researchmap.digitalpromise.org/views/network/>.

Participatory Endorsement Group

This group came together based on their interest in using endorsements from micro-credential earners and partner organizations as a way to add value to digital credentialing systems. The group members included the following:

Alec Barron Competency X	Katie Davis University of Washington
Daniel Hickey Indiana University	

Open recognition. The original idea revolved around the notion that the new technical specifications for digital micro-credentials, Endorsement 2.0, allows for endorsements of what the micro-credentials represent from outside organizations and people. This structure would allow programs that issue micro-credentials to design their system to, for example, include open recognition of situated learning within internships, or to establish Research Practice Partnerships that include open recognition of micro-credentials across partner organizations. Work related to this idea would include the creation of guidelines and normative practices for participatory endorsement, and eventually a proposal for future funding to develop the socio-technical infrastructure needed to facilitate efficient participatory endorsement.

Since the convening, the participatory endorsement group refined their ideas about what pieces of work to move forward. Alec Barron from Competency X shared positive findings of their micro-credential research work. One component of their project involved issuing micro-credentials as well as grades to high school students in a life science course that prepared students to take a particular exam. In prior years, only students who received an A or B in the course were eligible to take the exam. Last year, students that received a micro-credential were also eligible. Competency X looked at exam results for high school students at the end of the year, comparing students who received micro-credentials to those who received an A or a B in the course. The findings show that students who earned a micro-credential got equivalent scores on the exam as those who received A's or B's. This was especially important for underrepresented students, who were less likely to receive a qualifying grade, but who did earn micro-credentials. One potential next step in the research is to look more deeply at the content of the micro-credential earned and how that relates to student performance on the exam. This work could strengthen the case for micro-credentials as an

alternative method for youth to demonstrate their competence and preparation for college and careers.

There are three key pieces of work that this group could take up with additional funding. One project discussed is the original idea that brought this group together--submitting a Research Practice Partnership (RPP) grant to develop open recognition of competencies in internships within informal spaces. Another piece of work is building off a project that Katie Davis from University of Washington has been doing with the Pacific Science Center in Seattle. They have developed and are currently implementing and evaluating a digital micro-credential system that recognizes and rewards the skills and achievements of a diverse group of high school students participating in a science-based afterschool program at the Science Center. The group thinks there is potential to micro-credential the relationships that students have with the Science Center staff and to explore the idea of having youth participants serve as endorsers as well as earners of micro-credentials. This model would flow in both directions, with instructors endorsing youth and youth endorsing instructors. The group sees value of giving youth the power to assess and provide feedback on the work of peers and program providers.

Conclusion

The IE2HE workshop was intended to bring together researchers and practitioners who are interested in issues of equity in higher education, and who have created programs or engaged in research that explores the potential of digital micro-credentials as a tool for addressing that challenge. Building on a prior workshop that surfaced many of the opportunities and challenges associated with using digital micro-credentials in higher education admissions (Fishman, Teasley & Cederquist; 2019), and research on the kinds of digital micro-credential systems that have proven to be sustainable (Hickey & Schenke; 2019) this workshop was organized to help this community reflect on what we have learned thus far and conceptualize next steps. The short-term goal of the workshop was to give community members the time and space to make connections, form partnerships, and plan collaborative work. The long-term goal is for the community to devise practical systems (digital, administrative and interpersonal) for informal education programs, high schools, and two-and four-year higher education institutions to work in partnership to support young people from diverse backgrounds on the many interconnected points of STEM career trajectories.

Acknowledgement

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References

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Appendices

Convening Participant List

Participant List - IE2HE Convening December 2019	
Participant Name	Institutional Affiliation
Alaine M. Allen, EdD	University of Pittsburgh
Alec Barron, EdD	Competency X, Escondido, CA
David Boone	University of Pittsburgh
Katie Davis, EdD*	University of Washington
Anne Gaines, MFA	Parsons School of Design
Jaime Gutierrez	EDC
Daniel Hickey, Ph.D	Indiana University
Hillary Kolos	The DreamYard Project
Kerri Lemoie	Open Works Group
Carlos Leon	Mouse
Pat Leonard	Credly
LaTrenda Leonard Sherrill	Remake Learning
Marc Lesser	National Academy Foundation
Catherine Lewis, MFA	Hostos Community College (CUNY)
Wendy Martin	EDC
Amon Millner, PhD	Olin College of Engineering
Kristin Morgan	Remake Learning, Carnegie Library of Pittsburgh
Maggie Muldoon	Mouse
Tyler Samstag	Allegheny Intermediate Unit
Andrew Stutzman, MS	Drexel University
Davin Sweeney	Collegewise Metro NYC
Stephanie Teasley	University of Michigan
Carrie Tzou*	University of Washington, Bothell
Jessica Walker*	Parsons School of Design
Elizabeth Waters, PhD	Cooper Union
Ashley Williams Patton	Carnegie Mellon University
<i>(*) denotes virtual participation</i>	

Convening Agenda

Informal Ed to Higher Ed (IE2HE) Convening



December 2-3, 2019

The Carnegie Mellon University
4902 Forbes Ave
4405 Gates-Hillman Centers
Pittsburgh, PA 15213

Agenda

DAY 1

9:00 - 10:00 am

Registration and Breakfast

Scavenger Hunt
Table Discussions

10:00 - 10:30 am

Opening Session:

Welcome & Roll Call

Wendy Martin (EDC)

Agenda Overview

Carlos Leon (Mouse)

Morning Make: Activity

Maggie Muldoon (Mouse)

10:30 am - 1:00 pm

Session 1: Big Picture

The State of Higher Ed Admissions

Davin Sweeney

Identifying Shared Priorities

Wendy Martin (EDC)

Story of Mouse & Endorsement Partnership Model

Jessica Walker (Parsons), Anne Gaines (Parsons), Maggie Muldoon (Mouse), Hillary Kolos (DreamYard), Marc Lesser (National Academy Foundation)

Stakeholder Small Groups - Making Change Happen

Carlos Leon (Mouse)

1:00 - 1:45 pm

Lunch

1:45 pm- 3:30 pm	<p>Session 2: Stakeholder Responses & Perspectives <i>Anne Gaines (Parsons) and Hillary Kolos (DreamYard)</i></p> <p>Activity <i>Maggie Muldoon (Mouse)</i></p> <p>What Can We Learn from the Research/Participant Experience? <i>Marc Lesser (National Academy Foundation)</i></p>
3:30 pm	<i>15 min break</i>
3:45 pm- 6:00 pm	<p>Mixed Stakeholder Groups - Lessons Learned & Next Steps <i>Carlos Leon (Mouse)</i></p> <p>Whole Group Discussion & Reminder of Goals <i>Wendy Martin (EDC)</i></p> <p>Small Group Work - Drafting Ideas to Move the Field Forward <i>Carlos Leon (Mouse)</i></p>
6:00 pm	<i>Break and Transition to Restaurant</i>
7:30 pm	<p><i>Dinner</i> <i>Alexander's Bistro</i> <i>5104 Liberty Ave.</i></p> <p><i>Hotel</i> <i>Marriott Courtyard Shadyside</i> <i>5308 Liberty Ave</i></p>

DAY 2

8:00 am

Breakfast

9:00 am - 11:00 am

Session 3: Reflection on Initial Plans

Carlos Leon (Mouse)

Activity

Maggie Muldoon (Mouse)

Whole Group Share out of Small Group Work

Carlos Leon (Mouse)

11:00 am- 12:30 pm

Session 4: Design Charrette to Plan for Projects

Julie Poncelet (Evaluator)

12:30 pm

Lunch

1:00 pm

Session 5: Drafting Team Action Plans

Wendy Martin (EDC)

2:30 pm

10 min break

2:40 pm

Group Reflection

Carlos Leon (Mouse)

3:30 pm

Closing Session

Wendy Martin (EDC)

Carlos Leon (Mouse)

Convening Evaluation Summary

Process Evaluation

JPC was hired by EDC to conduct a rapid process assessment of the convening. Its purpose is to identify what about the convening, from the perspective of participants, worked and did not work, and to document convening outcomes and opportunities for ongoing collaboration and further study. The memo summarizes the insights shared by the participants who completed a 12-question survey administered digitally one week after the event. A majority of the survey's questions are open-ended¹; the data summarized in the memo is the result of qualitative coding and thematic frequencies.

Twenty (20) participants – or 77% of the convening attendants - completed the survey in December 2019. JPC organized the survey's findings into four (4) sections: (1) Participant Expectations & IE2HE Highlights, (2) Convening Outcomes, (3) Realizing Convening Goals, and (4) Items for Consideration.

PARTICIPANT EXPECTATIONS & IE2HE HIGHLIGHTS

The participants expected of the IE2HE convening to (see Figure 2).

Figure 1: IE2HE Participant Expectations



The convening met participants' expectations (50%) or exceeded them (35%); IE2HE met expectations, but only a little for 15% of participants.

¹ Questions or statements that required a written response.

For many, the convening was galvanizing. Participants aspire for their efforts, during and after the conference, to move forward the field of alternative credentialing (74%) with college admissions and for youth in informal STEM programs. They seek to bolster their badging network with expertise across sectors and geography and to leverage attendees as expert resources to support their work (47%). Also, they strive to pursue with fellow participants new projects or funding opportunities (47%).

"I hope to see continued communication among project members but among the conveners overall as a group. I hope to realize opportunities to bring this issue into state and national college admissions conference presentations to further connect the matter with decision-makers and stakeholders in the college admissions realm. I hope to continue to be able to participate and to offer my expertise in the admissions space to the extent it may be of use!"

- IE2HE Participant

"I hope that engagement is tightened and individual contributors have had time to go away and come back realizing how this group can be useful and exciting. If the post-conv groups can contribute to ideas about what a next proposal for the field would look like it would be a win."

- IE2HE Participant

Participants valued the presentations (41%), Davin Sweeney's *The State of Higher Ed Admissions*, in particular. Small group discussions (41%), connecting with people from across the field in higher ed or non-profit (29%), and the opportunity to learn about badging/endorsement success stories and relevant projects (29%) were convening highlights. A small number of participants noted their appreciation for the flexible agenda, which encouraged substantive dialogue, the literature review, and group activities.

"First, it can be hard to build working relationships with peers at other institutions, so being in one place for two days, doing the icebreakers, and eating together feels like a jump start on this, which I appreciate."

- IE2HE Participant

"The state of college admissions opening was a highlight to let us all understand the landscape we are working with, where it has been, and where it might be going. Hearing success stories from San Diego to Michigan and from Pittsburgh to New York was also inspiring because it is important to fight the feeling of futility when trying to do anything to move the needle on a massive education system. Hearing from the Mouse alumnus was also an amazing perspective to hear."

- IE2HE Participant

The convening lacked clarity for a few attendees (18%), such as well-articulated conference outcomes. Also, some participants were less keen on the icebreakers (12%) or the facilitation style (plenaries and small-group discussions; 12%), while others judged additional time was needed to explore more deeply the breadth of topics expressed (12%).

"An area for improvement would be clearly communicating the anticipated outcomes and setting goals earlier in the convening. Without setting concrete goals and project outcomes it let conversation become a bit unfocused, but still very valuable and a needed experience to be able to have these conversations with colleagues."

- IE2HE Participant

CONVENING OUTCOMES

Out of IE2HE, participants gained colleagues (65%), perspectives that tested assumptions or fresh insights into digital badges or their endorsement (59%), and project ideas or new collaborations (35%).

"New knowledge from participants outside of the project was critical, and this convening shed important light on adjacent and overlapping projects elsewhere in the field that funders and stakeholders should be aware of and incentivizing to build better connections between."

- IE2HE Participant

"I am new to the notion of digital credentials, but I see it having real value as a communication device in college admissions, a fairly staid world of obscure policies and outdated assumptions that is ripe for change. I've been asked to join [...] team as a consultant to contribute to their work which I hope will inform real structural change towards improving STEM access in college by first-generation and minority collegians. Perhaps most valuable of all, I gained a new perspective on something that we all take absolutely for granted, and that is the idea of grades as the end-all/be-all method of explaining academic readiness for college. I am thrilled to be a part of something that could contribute to the constructive disruption of this notion." - IE2HE Participant

"Understanding the power of endorsement from the Open Badges 2.0 specification was really eye opening. I can really see endorsement as a way to sell this idea to university admissions offices. The understanding of how much a portfolio tool is key to showcasing badges and other evidence was also key. And, the lack of portfolio tools out there that can meet this criteria. In regards to value, it has recreated an interest on my part in developing a low-cost portfolio tool that could be easily used by informal learning programs and shared with universities." - IE2HE Participant

Convening organizers intended for participants to gain knowledge and increase access to resources. Less anticipated contributions worth noting include acquiring new facilitation skills (e.g., *"loved the icebreakers and team-building exercises, and I plan to implement these in my [...] facilitation"*); achieving greater subject-matter confidence (e.g., *"I feel much more an expert on the topic after the convening."*); and organizational change (e.g., *"Because of the nature of my organization, it can be difficult to enact change internally. The connections we made to other groups will help us work around the roadblocks we tend to encounter so that we can actually get work done."*).