SENCER-ISE

SUMMATIVE EVALUATION

PARTNERSHIP CHAMPIONS: SENCER-ISE

Prepared for the
National Center for Science & Civic Engagement

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SUMMARY AND DISCUSSION

The National Center for Science & Civic Engagement (NCSCE) contracted RK&A, Inc. (RK&A) to conduct a summative evaluation of Partnership Champions: SENCER-ISE and Professional Development Through Mentoring to Enhance Learning Environments (*Partnership Champions*), an IMLS-funded project. *Partnership Champions* builds on NCSCE's SENCER-ISE initiative, which supports 10 cross-sector partnerships between museums and higher education institutions. With the funding of *Partnership Champions*, five past SENCER-ISE partners became mentors to a new group of SENCER-ISE partners.

The following summary identifies key findings across partnerships and discusses trends that emerged from our interviews with Partners (mentees), eMentors, and Other Participants (individuals involved in the projects who are not Partners/Mentees/CO-PIs). We hope the information contained herein will help NCSCE in its decision making regarding the future of *Partnership Champions*.

> **The findings presented here are among the most salient. Please read the body of the report for a more comprehensive presentation of findings.**

PARTNERSHIP SUCCESSES

On the whole, *Partnership Champions* was a positive experience for Partners, though it was not without challenges (see below). Despite variations across projects, Partners identified a few common factors that positively influenced their partnerships overall. Ideological alignment among Partners emerged as an important factor. Partners said alignment created a natural working situation, which helped when developing project outcomes and during decision making. Flexible scheduling and openness to each other's ideas also emerged as an important factor. A third influential factor came from Other Participants, who described the importance of strong alignment between the projects and their organizations' missions. Given the variety of organization types, range of participants' knowledge and experiences, and variability of projects, this positive reaction is encouraging.

PARTNERSHIP CHALLENGES

Results indicate partnerships experienced a number of challenges. Some challenges were specific to project administration, and other times they represented broad challenges relating to the overall project structure. One common challenge was prioritizing projects alongside other job responsibilities. For instance, a few Partners and Other Participants said the differences in higher education (HE) and informal science education (ISE) institutions' schedules proved

challenging. Further, a few eMentors explained that while they had the best of intentions, they found it difficult to devote adequate time to the eMentorship.

Related to this, communication was challenging for a few partnerships. For the most part, these issues were relatively minor and included differing expectations about the frequency of communication as well as differences in the vocabulary used to communicate ideas. However, one partnership experienced a significant conflict arising from personality differences, which impeded project progress and left one Partner and another participant from the same organization feeling undervalued. Of course, NCSCE is limited in its ability to mitigate difficult personalities; still, this finding speaks to the difficulty of enacting complex projects with a partner when there is no pre-existing relationship, as well as the importance of being open to new perspectives if strong, successful collaborations are to flourish.

Another challenge that surfaced was associated with how the NCSCE office administered the grant, which seemed overly complex considering the modest size of the projects. For example, a few Partners said there were too many reporting requirements, and they were frustrated by SENCER's role, as the "middle man," administering grant funds. A few Other Participants had difficulty understanding the overall project structure since there were so many people and organizations involved. In light of this, NCSCE might consider ways to reduce the complexity of the reporting requirements and project management to ease the strain Partners felt and to allow them to focus on their project work.

Partners also discussed challenges associated with the eMentorship, which are discussed in detail below (see eMentorship Experience).

VALUE OF CROSS-SECTOR PARTNERSHIPS

Results suggest Partners and eMentors see high value in cross-sector partnerships. As evidence, we first look to their motivations for participating in *Partnership Champions*. Partners were extremely motivated by the promise of forging or enhancing relationships with their HE or ISE counterpart, and eMentors were similarly excited to give back and share their experiences with SENCER-ISE to support cross-sector partnerships. Further, both Partners and eMentors, whether HE or ISE professionals, identified strong similarities between the HE and ISE approaches to facilitating civic engagement in STEM—mainly, that both sectors take a "hands-on" and "process-based" approach to facilitating civic engagement over a theory-based approach, and both are committed to increasing science literacy. Any differences they identified between sectors were logistical rather than philosophical (e.g., HE efforts are subject to the academic calendar while ISE is not), suggesting that on the whole, they perceive more similarities than differences between sectors.

More explicitly, almost all Partners and eMentors said they value cross-sector collaborations because they provide "great ways to share knowledge." They said their *Partnership Champions* experience strengthened this belief, and they would recommend that others participate in the future. For participants in more challenging partnerships, their *Partnership Champions* experience

also brought to light the complexities of collaboration between two very different organizations. On the whole, however, all participants appreciated the opportunity to gain insight into another sector and organization.

ORGANIZATIONAL SUPPORT

Despite initial institutional approval for staff to participate in *Partnership Champions*, results suggest that the projects' programmatic success did not reverberate through their organizations, in part because the projects were small (financially and otherwise) and short-lived and also because program staff might not have realized these larger aspirations, and given their positions, might not have known how to create an impression on their organization. Partners, for the most part, described managing the partnerships on their own, with little to no support from their organizations (whether HE or ISE). However, they did not view lack of direct support as an obstacle or a challenge since they were "intrinsically motivated" to work on their projects and they believed their projects were successful. And, as stated earlier, most Other Participants saw strong alignment with their organizations' mission—which could be why the project moved forward—and also viewed their projects as successful. The majority of both Partners and Other Participants also said they thought their organizations would approve future participation in *Partnership Champions*.

The misalignment between how participants perceive the project's success and the concept of organizational impact may point to a difference in how participants define success and NCSCE defines success. When discussing success, Other Participants (and Partners) primarily discussed it in the context of the intended outcomes they articulated in the beginning of the projects, which focus on program audiences, not their organization. If NCSCE hopes these projects will change organizations in some way, it might consider ways to prompt participants to integrate this as a possible project outcome. It might also require participation from people at the assistant director level, as those individuals recognize what might need to be done to initiate organizational change. Perhaps most important, NCSCE could also think critically about *why* it wants to see organizational change among participating organizations, clearly define what it is they hope to see, identify actions steps they would like to see taken, and share this information with all project participants.

EMENTORSHIP EXPERIENCE

The eMentorship was a new component to the SENCER-ISE grants this year, and overall, Participants' experiences with eMentorship varied. The eMentorship seems to have been most useful for Partners and most rewarding for eMentors towards the beginning of the projects, when Partners needed clarity on SENCER's vision and help articulating intended outcomes for their projects. eMentors felt equipped to help Partners with these tasks because of their past SENCER-ISE experiences, and several Partners were grateful for their eMentors help at this stage of the partnerships. Overall, almost all Partners said their eMentors were supportive of and enthusiastic about their projects. Likewise, most eMentors said Partners were "open" to hearing their advice, which they appreciated.

However, results also show that at the end of *Partnership Champions,* the majority of Partners and eMentors questioned the added value of the eMentorship, even if they had positive experiences overall. Two issues rose to the top: 1) the eMentor's role was loosely defined, so expectations for the eMentorship were not clear, and 2) it is an online mentorship, without explicit and guaranteed opportunities for face-to-face interactions. A few Partners, for instance, explained that the eMentor's role was "vague" and "innocuous," and they were unsure how to use the eMentor after articulating their outcomes at the beginning of the projects. eMentors similarly said their Partners (mentees) were generally very capable, so they struggled to find ways to give helpful advice after project startup. Perhaps more importantly, almost all eMentors said the lack of face-to-face meetings made it difficult to build rapport with Partners and made them feel "distant" from the projects. Further, the data show that the eMentorship did not reach beyond the Partners – the majority of Other Participants said they did not communicate with the eMentor, and a few were completely unaware of them. In light of all of this, perhaps NCSCE could clarify the eMentor's role, especially how the eMentor might be of use in the latter half of the projects. NCSCE should also consider providing opportunities for face-to-face meetings between eMentors and Partners to build rapport; perhaps, by providing funds for eMentors and Partners' to attend the SENCER Summer Institute *at the start* of the project.

CONCLUSION

In light of these findings, there appears to be an opportunity for NCSCE. eMentors were not sure exactly how to support their Partners after helping them plan their program, as they were capable programming people, and some Other Participants were unaware of eMentors, some of whom are quite experienced professionals. Thus, it seems that after the programs are underway, a second tier of work can begin between the administrations of the two partnering organizations so they can map out how ISE and HE could further their missions in ways that permeate their organizations. Creating and implementing a successful program is one thing; infusing cross-sector collaboration into an organization's DNA is another—one that takes considerable time, effort, and careful relentless planning.

STUDY BACKGROUND

The National Center for Science & Civic Engagement (NCSCE) contracted RK&A, Inc. (RK&A) to conduct a summative evaluation of Partnership Champions: SENCER-ISE and Professional Development Through Mentoring to Enhance Learning Environments (*Partnership Champions*), an IMLS-funded project. *Partnership Champions* builds upon NCSCE's SENCER-ISE initiative, which supports ten cross-sector partnerships between museums and higher education institutions. With the addition of *Partnership Champions*, five past SENCER-ISE partners take on the role of mentors to a new group of partners. In Fall 2016, RK&A administered a pre-questionnaire to new partners (Higher Education [HE] and Informal Science Education [ISE] professionals) who were awarded funding for their SENCER-ISE project to serve as baseline information for the summative evaluation. The summative evaluation explores lessons learned from project partnerships to help inform SENCER's support of the *Partnership Champions* project moving forward. RK&A collected data from partners, mentors, and other staff involved in the project using in-depth interviews and additional data from partners using an online standardized questionnaire.

Specifically, the summative evaluation explores:

- Qualities that may have contributed to the partnerships' successes and challenges encountered;

- The influence of the eMentorship on the partnerships and what factors influenced these effects;

- Whether participants increased their understanding of each other's' fields (either HE or ISE), including whether they appreciate the value of cross-sector partnerships;

- The degree of organizational support for and level of participation in the partnerships beyond the Partners (CO-PIs); and

- Key trends that emerge across partnerships (including eMentorships) that provide insight for future iterations.

METHODOLOGY

The 5 *Partnership Champions* projects studied are listed below:

PARTNERSHIP CHAMPIONS: SENCER-ISE			
PROJECT	HE PARTNER	ISE PARTNER	MENTOR
Engaging Children & Families in Authentic STEM Activities: A Cross-Sector Partnership to Promote Equity in Informal Science Education	Eastern Michigan University	Ann Arbor Hands-on Museum	Wildlife Conservation Society (ISE)
Science, Human Geography, and Environmental History: Recognizing Humans as Part of Nature	Lincoln Memorial University	Abraham Lincoln Library & Museum	Sue and Frank Mayborn Natural Science and Cultural History Museum Complex, Baylor University (HE)
SENCER-ISE K-12 Partnership Explorations	Rider University	Stony Brook Millstone Watershed Association	Sciencenter (ISE)
Teaching Environmental Awareness in Baltimore	Towson University	National Aquarium	Montclair State University (HE)
A Citizen Science and College Student Partnership to Assess Stream Health in the Charles River Watershed	Wheelock College	Charles River Watershed Association	NJ Audobon (ISE)

RK&A used a mixed-methods approach to explore the evaluation objectives – in-depth interviews and standardized questionnaires. The value of using a mixed-methods approach is that different data collection strategies offer different vantage points and levels in which to understand participants' experiences.

IN-DEPTH INTERVIEWS

In-depth, qualitative interviews are open-ended and encourage interviewees to express their opinions, understandings, and meanings they construct. They are valuable because they allow participants to express themselves using language and words of their choosing (as opposed to the language of the evaluator or researcher). Additionally, the interviewer is able to ask probing or clarifying questions to better understand participants experiences.

RK&A conducted in-depth interviews with individuals representing three groups of *Partnership Champions* project participants – partners, mentors, and other staff involved in the project ("other participants").

RK&A conducted 9 interviews with project partners (1 partner was unavailable); 5 interviews with project mentors; and 8 interviews with other staff involved in four of the five projects ("other participants" from one project were unavailable). SENCER provided RK&A with a list of project partners, mentors, and "other participants" and their contact information. RK&A emailed each partner individually and scheduled telephone interviews. Participants were asked a series of questions about their experiences with the *Partnership Champions* project. All interviews were audio-recorded and transcribed to facilitate analysis.

STANDARDIZED QUESTIONNAIRE

Questionnaires are useful because they collect standardized information from respondents. The questionnaire included multiple-choice and rating-scale questions about Partners' experiences with *Partnership Champions* as well as their perceptions of the best environments in which to learn science. Each HE and ISE professional who received funding for a SENCER-ISE *Partnership Champions* project was invited to complete the survey (10 individuals). RK&A used the online survey software Survey Monkey® (www.surveymonkey.com) to administer the questionnaire. RK&A emailed an online survey link to all project partners and reminder e-mails were sent subsequently to secure a higher completion rate; partners completed the questionnaire before (pre-questionnaire) and towards the end of their *Partnership Champions* experience (post-questionnaire).

DATA ANALYSIS AND REPORTING

IN-DEPTH INTERVIEWS

Interviews produce descriptive data that are analyzed qualitatively. For this study, the evaluator analyzed data for patterns and trends and, as patterns and trends emerged, grouped similar responses. Interview findings are presented in three sections by *Partnership Champions* role (partners, mentors, and other participants) and provide insight into major topics of interest according to the study objectives. Where possible, participants' verbatim language (edited for clarity) illustrate participants' thoughts and ideas as fully as possible; interviewer's questions appear in italics.

STANDARDIZED QUESTIONNAIRE

Questionnaire data are quantitative and were analyzed using SPSS 20 for Windows, a statistical package for personal computers. The analyses include descriptive and inferential methods. RK&A compared the two groups, and there were no differences between responses from one group (ISE) compared to those from the other group (HE). Data are reported in tables with explanatory text; *n* values are reported instead of percentages owing to the small sample size.

From December 2017—January 2018, RK&A conducted telephone interviews with nine individuals (HE and ISE professionals) who were awarded funding for and carried out SENCER-ISE *Partnership Champions* projects.[1]

MOTIVATION TO PARTICIPATE

Partners named a few reasons why they applied for a SENCER-ISE *Partnership Champions* grant:

- **Opportunity to forge or enhance relationships:** Almost all described relationship-building as a key motivation for applying for a *Partnership Champions* grant, whether to develop new relationships or continue existing collaborations between their organization and other partners.

- **Civic engagement:** Two said they applied in part because the grant aligned with their own work or goals around civic engagement. A few others did not mention this explicitly but spoke of a past relationship with, or knowledge of, SENCER.

- **Appeal of eMentorship:** One partner said having an eMentor to provide outside perspective and keep partners on track was appealing since their project involved many players from different organizations, in addition to the two Co-PIs.

ALIGNMENT WITH CIVIC ENGAGEMENT GOALS

"The grant opportunity seemed to fit pretty well what we were trying to achieve, and that is work with some informal science educator partners and some K through 12 teachers to create an example set of curriculum materials that use civic engagement to integrate engineering design into their curriculum. The e-mentor was someone who could provide some outside perspective and keep us on track and keep in mind the important reasons we're doing this. So it was a good match for the work we wanted to do."

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[1] There were 10 total project partners (two per partnership) but one did not respond to interview requests from RK&A and NCSCE.

PERCEPTIONS OF HE-ISE APPROACHES TO STEM

Based on their experience in *Partnership Champions,* partners were asked to described what, if any, similarities exist between how formal and informal educators facilitate civic engagement in science, as well as perceived differences in how the two sectors approach this topic.

SIMILARITIES

Partners identified strong similarities between HE and ISE approaches to facilitating civic engagement in science:

♦ **Hands-on, process-based:** A few (HE and ISE professionals) said both HE and ISE often take a process-based approach to teaching science and civic engagement which emphasizes "hands-on" experiences in the field.

♦ **Constructivist approach:** A few (mostly HE professionals) said that in their experience, professionals in both sectors seek to stimulate lifelong learning and curiosity in students by finding ways to make science content relevant using students' prior knowledge and experiences as a starting point.

♦ **Science literacy:** Two spoke more generally, explaining that both sectors share a goal of engaging the public in science and developing science literacy.

DIFFERENCES

Partners described a few differences between HE and ISE approaches to facilitating civic engagement in science:

♦ **Structured v. unstructured:** Several spoke of structural or systemic differences in HE and ISE that affect their approach to facilitating civic engagement in science. A few, for instance, said HE professionals are often forced to move through content much faster than ISE because of curricular constraints and the academic calendar, whereas ISE organizations have the freedom to slow down and engage in a more "relaxed" style of teaching without the pressure of documenting students' learning.

♦ **Embracing or avoiding risk:** More generally, a few said ISE organizations are less risk averse and thus more "adaptable" to audiences' needs, while HE organizations are more "rigid" in their approach to engaging students.

PROJECT COLLABORATIONS

Partners discussed working with their HE or ISE project partner to implement their *Partnership Champions* projects, including successes and challenges.

SUCCESSFUL ASPECTS

Partners shared several elements they felt made their project collaborations successful:

- ♦ **Shared goals and mindsets:** A few said working with their partners to establish shared goals early on allowed for a successful partnership. One added that having a partner forced her organization to work throughout the year on clarifying goals, something they normally struggle to do in a program's offseason.

- ♦ **Availability and flexibility:** A few said having partners who were approachable, flexible, and whose schedules aligned with their own made it easy to work together.

- ♦ **Relationship-building:** Two (from the same partnership) said having a positive, pre-existing relationship with their partner laid a foundation for success in this project. Two others (also from the same partnership) said while their partnership was challenging, they were grateful for the opportunity to forge new relationships in a wider local network.

CHALLENGES

Partners shared several challenges encountered in collaborating with their HE or ISE project partner, some within and some outside of SENCER's control:

- ♦ **Communication difficulties:** A few said their different communication styles and expectations put a strain on the partnership. Communication issues included differing expectations about the frequency of communication, lack of responsiveness, and differences in the vocabulary used between partners to communicate ideas.

- ♦ **Schedules:** A few spoke about the differences in academic and informal science institutions' schedules as a challenge, but one that could be overcome with flexibility. For instance, one ISE partner described reserving backup dates for project activities to accommodate college students' changing class schedules.

- ♦ **Lack of defined responsibilities:** Two partners, from the same project, discussed challenges posed by not having clearly defined roles at the outset of the project for key players involved (e.g., student interns). Similarly, two others (also from the same project) wished they had more clearly and evenly divided up the workload.

- ♦ **Not feeling valued:** Two partners, from the same project, described a contentious relationship due to differing communication styles and expectations.

- ♦ **Grant administration:** One partner said working with SENCER "as a middle person" (as opposed to directly with the university) made it difficult to understand the necessary steps to administer grant funds.

EMENTORSHIP EXPERIENCE

Partners discussed working with their eMentor to implement their *Partnership Champions* projects, including frequency of communication, successes, and challenges. Overall, several spoke positively about their eMentorship experience, while a few had more challenging experiences.

COMMUNICATION

Partners discussed communication with their eMentors, including frequency, successes, and challenges:

♦ **Frequency:** The frequency of partners' communication with eMentors varied. A few reported having regular, monthly calls with their eMentor (usually via telephone, not video) and also communicating via email. A few others communicated with their eMentor more sporadically—telephone calls once every few months, plus occasional check-in emails. One pair, however, said they hardly spoke to the eMentor because their eMentor's expectations and areas of expertise were misaligned with the eMentor's.

♦ **Communication successes:** Several spoke positively about the fact that the eMentorship was conducted long-distance and primarily through online communication. They liked: 1) not having to travel to in-person meetings, 2) flexible schedules, 3) minimal time commitment, and 4) having time to reflect and provide thoughtful feedback in writing through email communication.

♦ **Communication challenges:** A few described typical challenges associated with long-distance collaboration. Two, for instance, wished they could have spoken to their eMentors face-to-face but were unable to do so because their mentors did not have video-conferencing capabilities. Another said calls were sometimes low-quality, so they had to find alternative conference lines to use for meetings.

SUCCESSFUL ASPECTS

When asked what was successful about working with their eMentor over the course of the project, partners said:

♦ **Developing outcomes:** A few said their eMentors were most useful in helping them develop, clarify, and prioritize their project outcomes and/or evaluation plans at the beginning stages of the project (usually because the eMentors' background and/or previous SENCER project experience was similar to their own).

♦ **Flexibility:** A few generally said their eMentors were "gracious, supportive, and available," and that they were appreciative of the eMentors' flexibility and willingness to listen to partners' needs and respond to questions "on the fly."

♦ **Nothing:** Two did not describe any successful aspects of working with their eMentor.

CHALLENGES

When asked what was challenging about working with their eMentor over the course of the project, partners said:

- ♦ **Limited value added to project:** A few, from different projects, said they didn't face particular challenges with their eMentor, but saw little added value from the relationship. For example, one said the eMentor's role felt "vague" and "innocuous," and another was unsure whether having an eMentor was necessary after partners established their project outcomes/evaluation plans.

- ♦ **Nothing:** A few said nothing about working with their eMentor was challenging.

- ♦ **Scheduling:** Two said they had difficulties scheduling meetings with their eMentors, especially at the beginning of the grant, which led to only "sporadic" communication throughout the project. One partner said this forced them to work more closely with their partner, which they viewed positively.

- ♦ **Misalignment of project and eMentor's experience:** Two partners, from the same project, described a tense relationship with their eMentor, which they attributed in part to misalignment of project goals with the eMentor's experience. Both said they did not find the eMentor's advice helpful. Despite this, one also said they enjoyed talking with the eMentor about ISE issues relevant to their work outside this project.

HELP WITH PROJECT STARTUP

"It was super nice that [our eMentor's] project that [they] had worked on with SENCER and [their] academic partner was very similar to the project that we had. Since neither [my partner] nor I had any experience with assessment or developing survey instruments or trying to figure out outcomes, [they were] extremely helpful with that, and I think because of [their] experience in going through all of that could guide us. [They] let us see what outcomes [they] had developed for [their] project and then also helped us revise our outcomes."

LIMITED VALUE ADDED

"That's a tricky one. [Our eMentor] was very gracious with their time, and supportive. [But] I'm not sure how much we really gained from working with them. I'm not sure. Maybe we didn't need an eMentor, because we were pretty far along in what we were doing. So the whole eMentor piece was kind of a question mark for me. I really didn't get it. I don't really know what it was supposed to do. That's nothing about [our eMentor] as a person, they were fine. [But] I wasn't quite understanding the role was supposed to solve, what problem the eMentor was there to help us solve."

ORGANIZATONAL SUPPORT

Partners discussed whether their organizations value mentoring and the level of support their organizations lent to their *Partnership Champions* projects. ISE professionals did not name any formal mentorship opportunities open to them through their organizations. HE professionals said their universities do not provide formal mentorship, but also do not discourage it; a few explained that veteran faculty sometimes mentor new faculty, but this is highly dependent on individuals. Partners described support received from their organization for their *Partnership Champions* projects as follows:

- ♦ **Enthusiastic, but no direct support:** A few described positive, but hands-off support from their organizations—their organizations were aware they were participating in *Partnership Champions* but lent no direct support to project administration. Most partners did not view this lack of support as an obstacle because they were "intrinsically motivated."

- ♦ **Minimal direct support:** Two said their organizations helped them process and administer grant funds, but otherwise they received no project support.

- ♦ **Lots of direct support:** Two said they received lots of direct support from their organizations, such as help training university students, matching project funds, and participating in project meetings.

PERSPECTIVES ON CROSS-SECTOR COLLLABORATIONS

Partners were asked to discuss how, if at all, their perspective on cross-sector collaborations has changed or evolved after participating in *Partnership Champions*:

- ♦ **Strengthened appreciation:** All said they already valued cross-sector collaborations because they are "great ways to share knowledge" and that their experience in *Partnership Champions* strengthened this notion. For instance, two HE professionals said this experience reinforced the importance of exposing students to informal science, so students understand that "there's more to education than just K-12 schools." Similarly, another HE professional, whose project involved facilitating collaborations between school teachers and ISE professionals, said the experience helped both parties learn about one another's approaches and constraints when working towards the same overall civic-engagement goal. And, one ISE professional said this experience made it easier for their organization to see where their goals overlap with other organizations and motivated them to pursue more cross-sector collaborations so they can be "more effective."

- ♦ **Complexities of collaborations:** At the same time, two partners (from the same project), said while they have always been "fans" of cross-sector collaborations, the challenges they experienced brought to light the complexities inherent in bringing together two very different organizations and the importance of having the "right people at the table" for partnerships to succeed.

FUTURE PARTICIPATION

Finally, partners discussed their thoughts on future participation in *Partnership Champions*:

♦ **All said they would recommend being a partner (mentee) to others**. The reasons given echoed their thoughts on cross-sector collaborations in general—several described the value of interdisciplinary work, for themselves and for students. One ISE professional also called SENCER an "untapped resource" for informal science professionals since they are "philosophically aligned."

♦ **All said their organizations would be supportive of others from their organization becoming partners (mentees)**. One-half gave vague reasons, but the other one-half said their organization would do so because of the focus on community engagement and the positive impacts for students.

♦ **Many said they would consider becoming an eMentor.** They saw value in sharing their experiences and helping other grant participants. A few, however, were unsure or named caveats to participation, such as concerns about advising mentees, the importance of matching the experience and expertise of mentors and mentees, and how online mentorship limits mentors' ability to see project activities in person for context.

INTERVIEW **FINDINGS: E-MENTORS**

From December 2017—January 2018, RK&A conducted telephone interviews with five individuals (HE and ISE professionals) who served as eMentors to partners who carried out SENCER-ISE *Partnership Champions* projects. Each eMentor was assigned to one *Partnership Champions* project, meaning they mentored two partners. All eMentors are former SENCER-ISE grant participants.

MOTIVATION TO PARTICIPATE

eMentors said they decided to become a mentor for *Partnership Champions* for two reasons:

♦ **Desire to give back:** Most said they had positive experiences participating in their own SENCER-ISE grant and that they became eMentors to "give back" and share those experiences with others (whether they volunteered to be eMentors or whether SENCER asked them to become eMentors).

♦ **Personal growth:** Two were motivated by a desire for personal growth. One said they found their SENCER-ISE project extremely "intellectually stimulating" and wanted to continue working on similarly challenging projects as an eMentor.

DESIRE TO GIVE BACK TO SENCER-ISE

"I was involved in the SENCER-ISE project a few years [ago] and I found that to be a really strong partnership. I wanted to give back and hopefully share the experiences that I had, both positive and negative, with another organization."

PERCEPTIONS OF HE-ISE APPROACHES TO STEM

Based on their experience as a past SENCER-ISE partner and as a eMentor in *Partnership Champions,* eMentors were asked to describe what, if any, similarities exist between how formal and informal educators facilitate civic engagement in science, as well as perceived differences in how the two sectors approach this topic.

SIMILARITIES

eMentors identified a few similarities between HE and ISE approaches to facilitating civic engagement in science:

♦ **Hands-on, process-based:** A few said both HE and ISE emphasize the importance of "first-hand" or "hands-on" learning, as opposed to "theoretical learning," to successfully engage people in science and civic engagement issues.

♦ **Increasing science literacy and access:** One said the two sectors share a commitment to increasing public trust in science and the scientific process, and to "leveling the playing field" by engaging a variety of audiences in science.

DIFFERENCES

eMentors identified a few differences between HE and ISE approaches to facilitating civic engagement in science. They named the same differences as Partners, including:

♦ **Structural/logistical differences:** Especially, funding structures and schedules (e.g., HE institutions are constrained by the academic calendar while ISE institutions are not).

♦ **Audience:** In particular, that ISE audiences have "mixed" exposure to science so require ISE professionals to be more adaptable and flexible, whereas in HE, students follow prescribed paths.

♦ **Instructor-led v. participant-led:** In particular, that ISE is more about free-choice learning on the part of participants, whereas HE is more structured and instructor-led.

EMENTORSHIP EXPERIENCE

eMentors discussed mentoring their HE and ISE mentees (partners) throughout their *Partnership Champions* projects, including communication, successes, and challenges.

COMMUNICATION

eMentors discussed communicating with their mentees electronically, including frequency, successes, and challenges:

♦ **Frequency:** Like Partners (mentees), eMentors reported varied levels of communication throughout the projects, ranging from monthly to bi-monthly (mostly towards the beginning of the project) to every few months.

♦ **Communication successes:** When probed, all named things they liked about "e"-mentorship. Like Partners, they liked that online mentorship allows for flexibility, that it is low-cost, and that it is not limited by proximity/distance when matching mentee-mentor pairs.

♦ **Communication challenges:** All named challenges associated with online mentorship:

   ▪ **Lack of in-person meetings:** Most wished the mentorship had allowed for at least one in-person meeting with mentees at the beginning of the grant. eMentors discussed the value of in-person meetings for creating rapport and explained that conducting the mentorship exclusively online made them feel "distant" from the projects. Most eMentors also pointed out they did not have video-conferencing capabilities at their workplaces.

   ▪ **Scheduling:** A few said even with the theoretical flexibility of online mentorship, coordinating schedules was challenging in practice. One said their mentees were not proactive about contacting them, so they had to request all meetings. Another said they did not feel well-integrated into their mentees' project schedule.

LACK OF IN-PERSON MEETINGS

"I think it's invaluable for the mentees and the mentor to meet once, because you gain a lot from that in-person meeting. Just from the body language—you can't get it over the phone or by email or in a video chat. I don't think it should be entirely an eMentor position. I've built so many partnerships with [other] organizations. I always start with an in-person meeting if at all possible, and it makes a huge difference."

SUCCESSFUL ASPECTS

When asked what worked well about working with their mentees over the course of the project, eMentors said:

- **Relevant past experience:** A few described how their past professional experiences (including their experiences as SENCER-ISE partners) positioned them to give useful advice to their mentees. For example, one shared their experiences dealing with board members.

- **Openness to advice:** Two said having mentees who were willing to listen to their ideas made them feel comfortable making suggestions.

- **Regular check-in calls:** Two said scheduling the next call at the end of each call seemed to help mentees stay in touch with one another as well as with the mentor; it also established clear deadlines.

CHALLENGES

When asked what was challenging about working with their mentees over the course of the project, eMentors said:

- **Limited value added to project:** Like Partners, most questioned the added value of the eMentor. Two said their mentees were already competent, experienced, and "functional" at enacting their projects, so they struggled to determine what useful information they could provide that mentees did not already know. Two others said the eMentors' role was "abstract" and the expectations were unclear.

- **Prioritizing the eMentorship:** One said it was difficult to prioritize their role as an eMentor over other professional obligations as a senior executive in their institution.

- **Lack of orientation to SENCER goals:** One explained that their mentees struggled most when defining goals and outcomes in the initial phase of the project because they lacked understanding of "how SENCER sees the world."

OPENNESS TO ADVICE

"The openness with which [my mentees] accepted any of my ideas made it very easy for me to make suggestions. Some of it was around the sustainaiblity of their program and some of that was around marketing—who the stakeholders are and who they could potentially reach out to. So I gave them a lot of suggestions about different individuals to reach out to within their organizations."

LIMITED VALUE ADDED

"The challenge for me was trying to figure out how to give them something that was value added that they didn't already have. Because they were so functional already that they just didn't need much. And so it was 'what else could I offer them?' I [thought] about that often."

VALUE OF CROSS-SECTOR COLLABORATIONS

eMentors were asked to discuss how, if at all, their perspective on cross-sector collaborations has changed or evolved after participating in *Partnership Champions*. All explained or alluded to the fact that, as science professionals and past SENCER-ISE grant participants, they already valued cross-sector collaborations. Additional insights and comments shared include:

- ♦ **Greater appreciation for complexities of collaborations:** A few said their experience as eMentors helped them better appreciate the challenges and complexities of enacting cross-sector partnerships, especially after reflecting on their own SENCER-ISE grant experiences. One, for example, said their experience as an eMentor reinforced the importance of setting clear expectations and goals at the start of a partnership.

- ♦ **Strengthened appreciation:** One said cross-sector collaborations are "very valuable" since they help promote broader understanding of civic issues, and that seeing another project through the eMentorship strengthened this notion.

- ♦ **Limited scalability:** One acknowledged that cross-sector collaborations offer great potential in theory, but said their effectiveness is limited in practice because participating partner organizations often struggle to think about creating models for civic engagement that can be effective outside of their own organizations and localities.

FUTURE PARTICIPATION

Finally, eMentors discussed whether they would want to serve as an eMentor again:

- ♦ **Willing, no caveats:** Two said they would serve as an eMentor again, mostly because of the personal benefits of mentorship. For instance, one said they like being a mentor in general because it forces you to be "more reflective about your own practice."

- ♦ **Willing, with caveats:** Two others said they would serve as an eMentor again because they saw value in continuing to share their experiences to help other grant participants; but, they named caveats to participation, such as an initial face-to-face meeting to gain context and build rapport with mentees, and reduced reporting requirements.

- ♦ **Unwilling:** One explained that although they strongly value SENCER's work, they does not want to be an eMentor again because of their busy schedule, and because they did not feel valued or needed by their mentees.

REFLECTIVE PRACTICE

" I really liked being an eMentor. I really like being a mentor period, but I do like being an eMentor because it makes you be more reflective about your own practice. Being a mentor means that you're saying to somebody else, ''Explain to me why you're doing it this way' and 'Have you thought about this?' You sort of have to step back a little bit from the work, and I think that's really helpful."

From December 2017—January 2018, RK&A conducted telephone interviews with eight individuals who were also involved with the SENCER-ISE *Partnership Champions* projects ("other participants"). All were involved in the projects but were not official project leaders (i.e., not Partners/Mentees/CO-PIs). The eight individuals interviewed represent four of the five *Partnership Champions* projects.[2] The majority are HE professionals; two are ISE professionals; and one is a high school teacher.

PROJECT AWARENESS AND PARTICIPATION

Other Participants discussed the nature of their involvement in the *Partnership Champions* projects.

PERSONAL INVOLVEMENT

Other Participants described their level of involvement in the projects as follows:

♦ **Highly involved:** Most (from three projects) described being highly involved in bringing the projects to life. For example, working with Partners to develop curriculum, managing students, and having weekly strategy meetings with Partners.

♦ **Medium involvement:** One HE professional was moderately involved in their project but said the Partners "took on the brunt of the work."

♦ **Low involvement:** Two were only tangentially involved. One was aware of the project but participated only through informal conversations with the Partner. The other supervised students but seemed less aware of the overall project structure.

INTERACTIONS WITH EMENTOR

When asked whether they worked with their project's eMentor, Other Participants said:

♦ **No interaction:** All but one said they did not interact with their project's eMentor. Two (from the same project) were unaware of the eMentor; another was confused by the eMentor's role and said it was difficult to keep track of the many players involved.

♦ **Some interaction:** One spoke with the eMentor a few times, alongside Partners. They said the eMentor helped them understand SENCER's goals and expectations.

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[2] RK&A interviewed two "other participants" per project. We attempted to interview 10 total (two per project); however, several "other participants" from one partnership did not respond to interview requests.

ORGANIZATIONAL INVOLVEMENT

Other Participants discussed the extent to which other people from their organization (beyond the project leaders) were involved in the *Partnership Champions* projects, as well as how the projects aligned with their organizations' mission.

ALIGNMENT WITH MISSION

When asked how, if at all, the *Partnership Champions* project aligns with their organization's mission and goals, Other Participants said:

- ♦ **Strong alignment:** Most saw strong alignment between the projects and their organization's mission, primarily because the projects connect their communities to STEM issues—for instance, by connecting university students to the scientific community through citizen science.

- ♦ **Does not align:** One ISE professional said in practice, their project did not ultimately support their organization's mission. They described a challenging project experience due to both personality and structural differences between ISE and HE institutions.

INVOLVEMENT BEYOND CORE TEAM

Other Participants were also asked to describe the extent to which additional people from their organization (beyond themselves and the Partners) were involved in their project. Other Participants said:

- ♦ **Highly involved:** A few, from different projects, said senior leaders in their organizations were highly involved in their projects. For example, one HE professional said dozens of administrative staff and faculty provided input as part of a needs assessment. And, the high school teacher said an additional teacher from their school was highly involved because they taught a course as part of the project.

- ♦ **Moderately involved:** A few, from different projects, described moderate involvement from others in their organizations. For instance, two said additional professors provided feedback on program content.

- ♦ **Not involved:** Two HE professionals (from the same project but different universities) said no one else from their organizations was involved.

OVERALL SUCCESS AND CHALLENGES

Other Participants discussed their perceptions of the *Partnership Champions* projects' success overall, as well as challenges experienced during project implementation.

OVERALL SUCCESS

When asked to discuss how successful the project was, from their perspective, Other Participants said:

- ♦ **Very successful:** The majority said, from their vantage point, the projects were very successful. While the nature of their projects differed, they mostly spoke about success in terms of student outcomes. For instance, one was impressed with students' dedication to solving water quality issues and said they saw a "maturity" in students who presented work to community stakeholders at the end of the project. Another said the project better connected their students to the local environmental science community.

- ♦ **Mixed feelings:** A few had mixed feelings, sharing both challenges encountered (see Challenges) and successful aspects of their projects. One HE professional, who had a low level of involvement in their organization's project, praised SENCER for financially supporting cross-sector collaborations but also said the project was logistically complicated. Two others said up to this point the project had encountered challenges and lacked clarity, however both were optimistic about the project's future.

CHALLENGES

Other Participants also discussed challenges and obstacles encountered working on their *Partnership Champions* projects.

- ♦ **Scheduling and related logistics:** A few said logistical issues proved to be the biggest challenge in enacting their projects, which they viewed as a normal obstacle associated with large-scale collaborations. For example, one HE professional said it was difficult to coordinate schedules between participating students and faculty for project activities.

- ♦ **Personality differences:** Two, from the same project but different organizations, said they experienced many communication issues which they primarily attributed to one Partner who they said has an "abrasive" style of communication that made many people involved in the project feel uncomfortable at best, and disrespected at worst.

- ♦ **Balance with existing responsibilities:** Two educators (one HE professional and one classroom teacher) said the biggest challenge was trying to integrate the project with their curriculum and other job responsibilities.

- ♦ **Content decisions:** One HE professional, whose main role in their project was preparing and delivering science presentations to participating students, said the biggest challenge was narrowing down content and focusing their presentation.

- ♦ **Grant structure:** One HE professional said they and others from their institution felt the project was overly complex because there were too many players and reporting requirements.

PROJECT INFLUENCE ON ORGANIZATIONS

Other Participants discussed the influence of the *Partnership Champions* projects on their organizations, and on themselves or their work.

ORGANIZATONAL INFLUENCE

When asked how the projects have influenced their organizations, Other Participants said:

- ♦ **Little to no influence:** A few said the project did not influence their organizations, but spoke about other ways the projects had a positive influence. One HE professional said the project was too small to have an effect on the university since there are "so many things going on at the university," but it positively affected *their* practice.

- ♦ **Continuing external partnerships:** A few spoke of continuing the partnerships (some of which existed before these projects) or enacting similar partnerships in the future. One ISE professional, for instance, said their organization was happy to enrich its partnership with a local high school through the project and continue that relationship.

- ♦ **Strengthened internal relationships:** One HE professional said the project strengthened ties between humanities and STEM departments at their university since it required them to collaborate on project activities.

- ♦ **Negative influence:** One (an ISE professional) said communication difficulties they experienced with the HE Partner gave others in her organization a "negative impression" of the university, which she fears will affect potential future collaborations.

PERSONAL INFLUENCE

When asked how the projects have influenced themselves or their work, Other Participants said:

- ♦ **New content knowledge:** Two said the project expanded their content knowledge. One, an ISE professional, also said working with classroom teachers throughout the project helped them become more familiar with state science standards.

- ♦ **Networking:** Two HE professionals said the projects helped expand their professional networks. One, who was new to their organization at the start of the project, said participating helped boost their institutional knowledge and helped them establish connections with other local organizations.

- ♦ **Pride and self-confidence:** Two said the project left them feeling proud of and confident in their work, for different reasons. One, a classroom teacher, said they gained confidence in their ability to manage a "big project" and that they were grateful to be pushed beyond their comfort zone. The other, an ISE professional, was left with a sense of pride after successfully advocating ISE values to a group of HE professionals.

- ♦ **New outreach strategies:** One HE professional spoke positively, but generally, and said the project opened their eyes to a "new type of outreach" that the university may try to replicate in the future.

- ♦ **No influence:** One HE professional (who had little direct involvement) said the project did not influence their work.

FUTURE PARTICIPATION

Finally, Other Participants discussed their thoughts on future participation in *Partnership Champions*:

♦ **Strongly support:** Most said they would like to see their organization continue collaborating with their partner organization on the current (or on a very similar) project.

♦ **Support, with caveats:** Two (from the same project) hoped their organizations would continue working together, with some caveats. Both praised the *Partnership Champions* project for opening doors between their organizations. However, one said they hoped to work with a different person from the partner organization because of personality differences with one Partner. The other said their specific project has a natural expiration date, but hoped for future collaborations.

QUESTIONNAIRE FINDINGS

Participants in the SENCER-ISE project completed a standardized questionnaire before participating in the project (pre-program) and toward the end of the project (post-program). Ten participants completed both the pre- and post-program questionnaires. Findings from this section of the report focus on the post-program questionnaire, however comparisons are made to the pre-program questionnaire where relevant. Both questionnaires were administered by RK&A using Survey Monkey® (www.surveymonkey.com).

DESCRIPTION OF RESPONDENTS

INSTITUTIONAL AFFLIATION

One-half of respondents are university or college professors (n=5), four are science museum/center staff members, and one works in another type of ISE organization.

Participant Institutional Affiliation

Affiliation (n=10)	n
University or college professor	5
Science museum/center staff	4
Other organization	1

PRIOR HE-ISE COLLABORATION EXPERIENCE

Most respondents (n=8) have previously collaborated with the other sector (e.g., higher education professionals collaborating with informal education professionals or vice versa).

Previous Collaboration with Different Sectors

Collaboration (n=10)	n
Yes, I have previously collaborated with the other sector	8
No, I have not previously collaborated with the other sector	2

PROFESSIONAL EXPERIENCE

One-half of respondents (*n*=5) have been working in their profession for less than 20 years while the other one-half have been in the profession for more than 20 years (*n*=5). The median number of years of professional experience is 19.

Years in Profession

Professional Experience (*n*=10)	*n*
Less than 10 years	3
10 – 19 years	2
20 – 29 years	3
30 years or more	2

PRIOR MENTORSHIP EXPERIENCE

Most respondents (*n*=7) have never had a mentor prior to the SENCER-ISE *Partnership Champions* program. These responses do not match the findings from the pre-program questionnaire conducted with the same cohort; the reason for the discrepancy is unclear, however it is possible that respondents misunderstood the question when responding to the post-program questionnaire.

Previous Experience with Mentors

	Pre-Program	Post-Program
Mentorship experience (*n*=10)	*n*	*n*
No, I have never had a mentor	9	7
Yes, I have previously had a mentor	1	3

PROFESSIONAL DEVELOPMENT

Respondents were asked about the options their organization offers for professional development. Most respondents (n=7) said their organization offers "time and funds to attend at least one conference annually." A few said their organization offers "time and funds to attend webinars" (n=4). For the "Other" category, respondents gave various explanations of their opportunities for professional development, including, "Office that provides faculty development" and "Time and funds to attend at least one workshop annually." Note: respondents could choose more than one response, so totals exceed the number of respondents.

Organizational Support for Professional Development

Types of support (*n*=10)	*n*
Time and funds to attend at least one conference annually	7
Time and funds to attend webinars	4
Dedicated line item in the budget for professional development	3
One-on-one coaching/mentorship options for staff	3
Time and funds for continuing education coursework (e.g., master's degree, PhD)	3
Other	5

COMMUNICATION METHODS

Respondents were asked which two methods of communication they used most often when working with Partners and eMentors during *Partnership Champions*. For comparison, responses to a similar question from the pre-program questionnaire are provided. In response to the post-program questionnaire, the majority of respondents identified "e-mail" (n=9) and "in-person meetings" (n=5) as the two communication methods they use most often. No respondents identified Facebook, LinkedIn, or project web sites as forms of communication used most often when collaborating with partners. Note: respondents were asked to choose more than one response, so totals exceed the number of respondents.

Communication Methods Most Frequently used by *Partnership Champions* participants

Communication used (*n*=10)	Pre-Program *n*	Post-Program *n*
E-mail	9	9
In-person meetings	8	5
Telephone conversations	3	4
GoToMeeting or similar platform	0	3
Other	1	0

HISTORY OF COLLABORATION

INSTITUTIONAL COLLABORATION HISTORY

Before *Partnership Champions,* a majority of respondents' institutions (*n*=7) had not previously partnered with their *Partnership Champions* partner organization. Two respondents reported that their organizations have a partnership history and that they have collaborated on one or eight projects in the past.

Previous Institutional Collaboration with SENCER Partner

Institutional collaboration (*n*=10)	*n*
No previous partnership	7
Previous partnership	3

Number of previous projects (*n*=2)	*n*
One project	1
Eight projects	1

PERSONAL COLLABORATION HISTORY

The majority of respondents (*n*=7) said they have not previously partnered with their CO-PI (*Partnership Champions* partner). Those who have a personal partnership history have collaborated on one or two projects in the past.

Previous Personal Collaboration with *Partnership Champions* CO-PI

Personal collaboration (*n*=10)	*n*
No previous partnership	7
Previously partnership	3

Number of previous projects (*n*=3)	*n*
One project	2
Two projects	1

PARTNERSHIP CHAMPIONS PROJECT LEARNING

LEARNING FROM PARTNERS

Respondents were asked what they had learned from the collaboration with their *Partnership Champions* partner. Respondents most often said they learned about managing the program or project as part of the collaboration ($n=6$). For example, respondents said they learned about collaboration, time management, and setting expectations. Respondents also said they gained an understanding of the importance of different perspectives by working with others outside of their discipline ($n=2$) and learned to value their personal expertise ($n=2$). Note: responses are open-ended, and some fit into multiple categories, therefore totals exceed the number of respondents.

What Participants Learned from Collaboration with their Partner

Areas of learning (*n*=10)	n
Managing the program	6
Importance of different perspectives	2
Value of personal expertise	2
Engage the public in science	2

Respondents were asked what they learned from their eMentor. One-half of respondents (*n*=5) said they received guidance from their eMentor regarding the project, such as helping to clarify the goals of the project. A few respondents (*n*=4) reported learning good work habits from their eMentor, such as managing workloads and meeting deadlines. Note: responses are open-ended, and some responses fit into multiple categories, therefore totals exceed the number of respondents.

What Participants Learned from their eMentor

Areas of learning (*n*=10)	*n*
Guidance related to the program	5
General good work habits	4
Nothing	2

RATINGS OF COMMUNICATION METHODS USED

Respondents rated seven methods of communication on a scale from 1, "Not effective," to 7, "Very effective," based on their usefulness for project collaboration. Respondents could select "not applicable" if they did not use a communication method during their last project collaboration. Overall, the three highest-rated methods of communication are those used most often when collaborating with partners on a project, which was also true for the pre-program questionnaire responses. "In-person meetings" received a mean rating of 6.6, "telephone conversations" received a mean rating of 6.0, and "e-mail" received a mean rating of 5.9. For the "Other" category, one respondent said Google Docs was an effective communication method for their partnership. None of the respondents reported using a project website, Facebook, or LinkedIn to communicate with each other in the post-program questionnaire.

Effectiveness of Communication Methods
Scale: 1 = Not effective / 7 = Very effective

Communication effectiveness	Pre-Program *n*	Pre-Program Mean Rating	Post-Program *n*	Post-Program Mean Rating
In-person meetings	10	6.8	9	6.6
Telephone conversations	10	5.5	9	6.0
E-mail	10	5.8	10	5.9
GoToMeeting or another similar platform	5	5.2	7	4.6
Project website	3	4.3	n/a	n/a
Facebook	3	4.0	n/a	n/a
LinkedIn	2	3.0	n/a	n/a
Other	2	7.0	1	7.0

PROJECT EVALUATION

Most respondents (*n*=8) said they or a third-party conducted an evaluation of their SENCER *Partnership Champions* project.

Evaluation of Partnership Champions Project

Program evaluation (*n*=10)	n
Yes, we conducted an evaluation	8
No, we did not conduct an evaluation	2

AWARENESS OF PARTNERSHIP CHAMPIONS SENCER-ISE PROJECT RESOURCES

Respondents indicated their awareness of three resources made available to project partners. Most responses indicated they were aware of all resources. Almost all said they were aware they had access to SENCER staff members ($n=9$) and most said they were aware they had access to SENCER-ISE project advisors ($n=8$). Several were aware they had access to SENCER-ISE project evaluators ($n=6$).

Awareness of Project Resources

Access to SENCER staff (*n*=9)	*n*
Aware	9
Not aware	0

Access to SENCER-ISE project advisors (*n*=10)	*n*
Aware	8
Not aware	2

Access to SENCER-ISE project evaluators (*n*=10)	*n*
Aware	6
Unaware	4

Respondents rated the effectiveness of the resources or services they used on the same 7-point scale from 1, "Not effective," to 7, "Very effective." Respondents could select "not applicable" if they did not use a resource or service. Respondents rated "communications with SENCER staff," "SENCER Summer Institute," and "email communications from SENCER staff" as most effective (mean ratings 5.8, 5.6, and 5.4, respectively). Respondents rated "communications with SENCER-ISE project evaluators" as least effective (mean rating 4.3).

Rating of Effectiveness of Project Resources/Services
Scale: 1 = Not effective / 7 = Very effective

Effectiveness of services	*n*	Mean Rating
Communications with SENCER staff	9	5.8
SENCER Summer Institute	10	5.6
Email communications from SENCER staff	10	5.4
Communications with SENCER-ISE project advisors	7	4.9
Evaluation webinar	9	4.6
Communications with SENCER-ISE project evaluators	7	4.3

PERCEPTIONS OF STEM LEARNING ENVIRONMENTS

On the pre- and post-program questionnaire, respondents rated a set of statements for learning science on a scale from 1, "Does not describe what I think," to 7, "Describes very well that I think." On both the pre- and post-program questionnaires, the highest rated statement was "I would like to see the public more curious about important civic-science issues of the day." On both the pre- and post-program questionnaires, the lowest rated statement was "The classroom is the best place for doing science." There was very little change in average ratings between the pre- and post-program questionnaires.

Perceptions of STEM Learning Environments
Scale: 1 = Does not describe what I think /
7 = Describes very well what I think

Science Learning Environments	Pre-Program *n*	Pre-Program Mean	Post-Program *n*	Post-Program Mean
I would like to see the public more curious about important civic-science issues of the day.	9	6.4	10	6.7
I would like to see the public more engaged in understanding and exploring unsolved civic issues.	9	6.4	10	6.6
Informal learning environments (e.g., media and web-based; place-based such as museums, parks, zoos) are best for offering families science-learning experiences.	9	5.6	10	5.1
Informal learning environments are best for offering adults science-learning experiences.	9	5.1	10	4.8
Informal learning environments are best for inspiring curiosity in school-aged children.	9	5.0	10	4.6
Informal learning environments are best for offering college students science-learning experiences.	9	4.8	9	4.6
Informal learning environments are best for offering school-aged children science-learning experiences.	9	4.6	10	4.3
The classroom is the best place for learning science.	9	2.3	10	2.5
The laboratory is the best place for doing science.	9	3.3	10	2.4
The classroom is the best place for doing science.	9	2.2	10	2.3

INTEREST IN FUTURE COLLABORATIONS

Respondents rated their interest in future collaborations with their SENCER partner, other partners in HE or ISE, and with mentors on a scale from 1, "Not interested," to 7, "Very interested." Respondents were most interested in collaborating with different partners on another project, continuing to collaborate with their SENCER partner on their current SENCER project, and collaborating with their SENCER partner on another project. Respondents were least interested in seeking a mentor on another SENCER project or seeking a mentor on another (non-SENCER) project.

Interest in Future Collaborations
Scale: 1 = Not interested / 7 = Very interested

Possible future collaborations (*n*=10)	Mean Rating
Collaborating with a different partner on another project.	6.0
Continuing to collaborate with my SENCER partner on this project.	5.9
Collaborating with my SENCER partner on another project.	5.4
Collaborating with a different partner on this project.	4.7
Seeking a mentor on another SENCER project.	4.0
Seeking a mentor on another (non-SENCER) project.	3.3