

CAISE YEAR NINE EVALUATION REPORT
Inverness Research
October 2016

INTRODUCTION

Inverness Research is the external evaluator for the Center for the Advancement of Informal Science Education (CAISE). Year nine evaluation tasks have included the following:

- Attending and documenting the PI meeting, and developing and administering a post-PI meeting survey¹ (which covered aspects of the PI meeting, but also perceptions/use of CAISE and its resources writ large).
- Monitoring continuing initiative efforts, including the development and distribution of the *Informal STEM Education: Resources for Outreach, Engagement and Broader Impacts* report, and efforts to overhaul the research pages of InformalScience.org.
- Convening an External Review Board (see below).

Our original year nine scope of work included tracking the dissemination and impact of the *Informal STEM Education: Resources for Outreach, Engagement and Broader Impacts* report and tracking audience reach and knowledge-building efforts through a survey of InformalScience.org users. These efforts were not undertaken by the evaluation as the report's completion was delayed, and because of re-prioritization of evaluation efforts toward facilitating and documenting an external review board to develop evaluation plans for a potential next phase of funding for the Center from the National Science Foundation (NSF).

In April of 2016, we prepared an interim evaluation report that shared the findings from the PI meeting survey (that progress report is attached as an appendix to this report). In July of 2016, we facilitated a meeting of the External Review Board for the next phase of funding. The board met for two days with CAISE PIs and staff to review and discuss plans for the next five years of work, and to brainstorm ideas for

¹ Inverness Research administered the survey to 206 attendees, of which 118 returned surveys, representing a return rate of 57%. Previous PI meeting surveys have had return rates ranging from 52%-57%. Respondents represented all sectors of informal science education work. Roughly one-quarter of respondents indicated that they worked in at least three different sectors, while another 21% noted they worked in at least two. Over half of the respondents (55%) have worked in the ISE field for 10 years or more, while 24% have worked in the field for 5-10 years, and the remainder have worked in the field for less than five years. The majority of respondents were PIs (48%), with another 27% representing co-PIs, 14% representing project staff, and 5% evaluators.

evaluation and data gathering. In August of 2016, we prepared a memo that shared the findings from the External Review Board meeting with CAISE leadership.

In this brief annual report, we share findings overall of CAISE's impact on the informal STEM education (ISE) field over time.

THE LONG-TERM INVESTMENT IN CAISE: CAISE'S IMPACT ON THE ISE FIELD

The mission of CAISE is to strengthen and advance informal STEM education. Over the past nine years, CAISE has become a strong center for the informal STEM education field. Through its online resources, convenings, PI meetings and connectivity to the broader world of STEM education, CAISE serves not only those in the Advancing Informal STEM Learning (AISL) program within NSF, but also those in that broader world of informal STEM education.

In the bullets below, we examine the key ways in which CAISE has added value to NSF investments in the informal STEM education field, and to increase the capacity of the field, through facilitating convenings and connections, characterizing the field, and communicating about informal STEM education within and across the field and to other stakeholders and audiences.

- **CAISE has helped to characterize the ISE field for the field, the AISL program, and for the broader STEM learning ecosystem**

Because the informal STEM education field is so diverse, an important role for CAISE is helping the broader field better understand the nature of the ISE field, as well as the nature of the investments of the NSF AISL program within that broader field. Prior to CAISE, there were few opportunities for AISL grantees to know and understand the breadth and depth of the portfolio of funded projects, and even fewer opportunities (beyond annual museum conferences) for the broader field.

CAISE has helped to characterize the field in several important ways. One is through the CAISE website, InformalScience.org. The website contains descriptions of NSF AISL funded projects, a curated knowledge-base of evidence of ISE impact and contributions, project posters from the biennial PI meetings, key research papers, and evaluation findings. The work in the field is highlighted and shared through monthly CAISE newsletters. The biennial PI meetings have provided opportunities for both PIs and NSF Program Officers to better understand the nature of the entire AISL portfolio of projects. And small convenings focused on key themes (networks, professional development, sustainability, research agendas, broader impacts, and research and practice, for example) have provided opportunities for PIs, evaluators, and Program Officers to dive deeply into the portfolio.

➤ **CAISE has helped members of the ISE field connect and network**

CAISE plays a unique and important role in helping to characterize and connect the ISE field, through the online repository of project information and evaluation and research reports on InformalScience.org, and through PI meetings and small convenings that gather members of this broad and diverse field.

CAISE's role as a connector and facilitator of networking has been an important one for the field. Again, because the ISE field is so diverse, CAISE's work facilitating both within-sector and cross-sector connections has been valuable to the field. CAISE has fostered this networking through several mechanisms -- through the small convenings which bring together representatives of many different sectors of work, through the AISL PI meetings it has held every two years since 2008, through the groups and forums functions on InformalScience.org, and through direct connection between members of the field and the CAISE PI and staff, who help direct people to resources and other people in the field on a daily basis. As one AISL PI meeting survey respondent noted:

I really do think CAISE is doing a good job. CAISE makes me realize that my work is ISE related in a much broader sense than I experience in my day-to-day work life.

➤ **CAISE has helped to share knowledge within and across the field, and has helped the ISE field connect with other fields**

One of CAISE's main contributions to the field has been to share the work of the ISE field, and to share knowledge, within and across the field. In addition, CAISE has helped to connect the ISE field with other fields and domains, such as the larger body of work in broadening participation in STEM, and the broader impacts work of universities and scientific researchers in sharing research with the public.

This knowledge sharing has happened through multiple mechanisms: through the CAISE newsletter, which has increased its membership over the years; through InformalScience.org and the wealth of resources in the repository and blog posts that highlight projects, resources, or areas of key interest; through small convenings and the PI meetings; through a presence and presentations at other conferences (such as AAAS, VSA, and numerous scientific professional societies, to name a few); and through strategic connections with key organizations, such as the National Alliance for Broader Impacts (NABI), where CAISE has been an active participant in annual meetings, helping to ensure that informal science education is represented and at the table.

As two PIs commented in their responses to the 2016 AISL PI Meeting Survey:

I think CAISE is a very useful organization... I think continued efforts to bring people from different sectors (researchers, educators, designers, program leaders) together is crucial.

I believe that CAISE is invaluable to the field of ISE as a vehicle for sharing resources and networking with like-minded professionals.

The recent report on broader impacts is a key example of CAISE's work in this arena. Through a large convening, as well as an advisory committee that helped guide the work and assist with research and writing, CAISE prepared the *Informal STEM Education: Resources for Outreach, Engagement and Broader Impacts* report which highlights examples of resources and infrastructure and the potential for informal STEM education, science communication and STEM research to work together in the service of public engagement and outreach goals. In addition to being disseminated through InformalScience.org and collaborator organizations and networks, the report, released in May 2016, has been picked up and shared through the Noyce Foundation-funded STEM Next website at the University of San Diego; through the Journal of Science Communication, and the Network of STEM Educators Centers.

This information sharing is also critical within the NSF AISL program, where potential and existing PIs can find information about existing projects and resources, as well as helpful tools such as the PI Guide for Managing Evaluation and blog posts about the Institutional Review Board (IRB) process. In addition to the resources on InformalScience.org, CAISE also helps the NSF AISL program by engaging NSF AISL Program Officers in its convenings and PI meetings, and through ongoing conversation with the AISL cluster of Program Officers. And more broadly within the National Science Foundation, CAISE has been an important contributor to NSF-wide efforts -- most notably, through facilitating a conference for NSF on broadening participation in STEM ahead of the Inclusion Across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES) solicitation.

➤ **CAISE is viewed as a high-quality and high-value resource to the ISE field**

CAISE is viewed as a unique and high-quality resource. The individual resources that CAISE provides are rated as being of high quality and value by AISL PIs and members of the field writ large. For example, 86% of AISL PI meeting respondents rated the CAISE newsletter as high or very high quality, while 61% rated it as high or very high value. In addition, the percentage of respondents to the AISL PI Meeting survey rating the PI meeting as high or very high quality and value have risen steadily with each meeting, with the 2016 meeting receiving the highest quality and value ratings to date -- 87% of survey respondents rated the 2016 meeting as high or very high quality, and 87% rated it as high or very high value (compared with 81% and 84% of respondents who rated the 2014 meeting as high

or very high for quality and value). Please see the attached interim evaluation report for more survey findings related to the 2016 PI meeting.

In addition, CAISE has made continual efforts to improve its resources. For example, the CAISE newsletter has been revised and improved over time, and InformalScience.org has been through multiple improvement and refinement processes, including a recent user study. All of these improvements have been favorably received by the field.

In particular, InformalScience.org is seen as a crucial resource for the field. AISL PI meeting survey respondents were also asked to rate InformalScience.org on a number of dimensions. About 90% of survey respondents were familiar enough with InformalScience.org to rate it as to its quality, ease of use, and content. For example,

- 91% of those responding to the questions about InformalScience.org rated the website's uniqueness of resource offered and quality of content as high or very high;
- 87% rated the website as high or very high for its usefulness to the PIs and their work;
- 86% rated the website as high or very high for the comprehensiveness of its content;
- 80% rated the website as high or very high for the quality of its overall design; and
- 69% rated the website as high or very high for its navigability/ease of use.

Ratings from respondents to our broader CAISE newsletter survey² in 2015 about the quality of InformalScience.org were similar:

- 85% rated the website as high or very high for the quality of its content;
- 78% rated the website as high or very high for the quality of its overall design; and
- 62% rated it as high or very high for its navigability/ease of use.

Some three-quarters (78%) of those returning the 2016 AISL PI Meeting survey familiar enough with InformalScience.org to rate it rated the overall quality of the website as high or very high, while 68% rated the value as high or very high. In survey comments, PIs praised the redesign and usefulness of the site:

I really love the redesign.

² In the spring of 2015, Inverness Research implemented a newsletter subscriber survey about CAISE and InformalScience.org; N = 414 (response rate of 13%); and a newsletter subscriber survey about the ISE field; N = 465 (response rate of 15%).

Our staff uses it and would give it high marks.

When I want to find out about other projects in my field, I start with InformalScience.org.

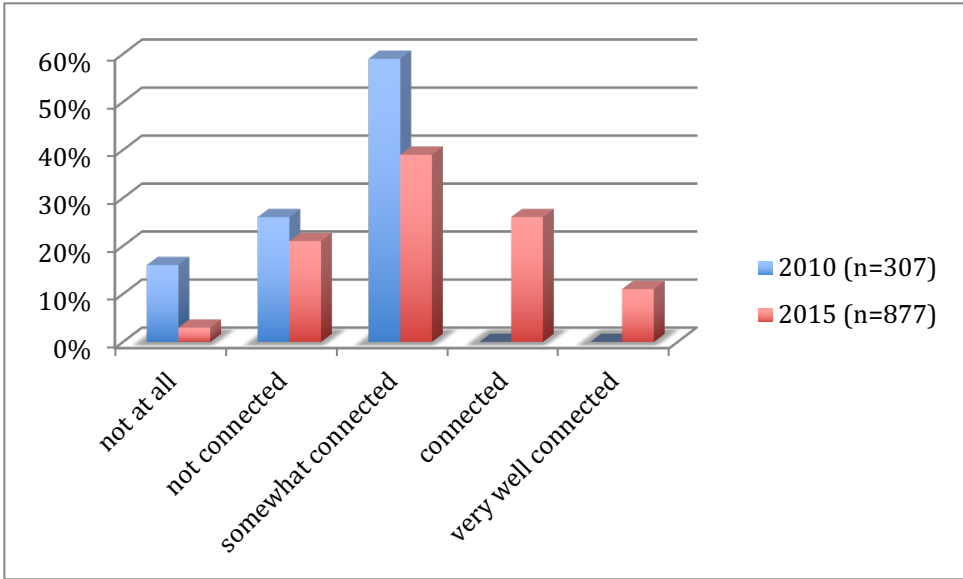
Importantly, the perception of CAISE’s current and potential value to NSF AISL PIs and the ISE field has grown over time, and the gap between CAISE’s current and potential value has shrunk over time. In 2010, 2012, 2014, and 2016, we asked AISL PIs about the current and potential value of CAISE, both to themselves as ISE professionals, and to the ISE field. We asked the same question of CAISE newsletter subscribers in 2010 and 2015. For both audiences, the current value of CAISE to both themselves and the ISE field has grown steadily over time; perhaps most importantly, there was a significant increase from the 2014 AISL PI meeting respondents to the 2016 AISL PI meeting respondents of the number of PIs rating the current value of CAISE as high or very high to them (from 51% in 2014, to 64% in 2016). Also significantly, the percentage of AISL PIs rating the potential value of CAISE to the ISE Field in 2016 was 97%. Please see the tables below for additional details.

	AISL PIs				ISE FIELD	
	2010	2012	2014	2016	2010	2015
Percentage of respondents who said the CURRENT value of CAISE to them as ISE professionals is high or very high	40%	43%	51%	64%	24%	34%
Percentage of respondents who said the CURRENT value of CAISE to the ISE field is high or very high	49%	54%	70%	77%	34%	59%

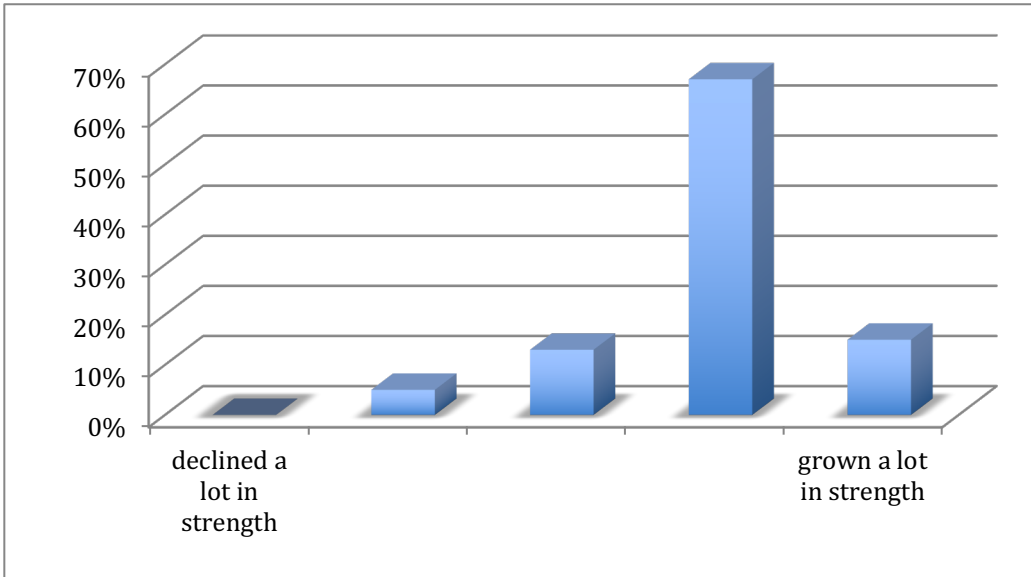
Percentage of respondents who said the POTENTIAL value of CAISE to them as ISE professionals is high or very high	85%	86%	90%	90%	71%	78%
Percentage of respondents who said the POTENTIAL value of CAISE to the ISE field is high or very high	92%	95%	92%	97%	80%	88%

➤ **CAISE has strengthened the ISE field**

CAISE has played an important role in strengthening the ISE field over the past nine years. Members of the ISE field view the field as stronger now than it was ten years ago. In particular, members of the ISE field feel more connected to and part of the ISE field now compared to five years ago.



2015 CAISE newsletter survey data also show that the informal STEM education field has grown over the last decade.



Survey comments from the CAISE newsletter survey highlight CAISE's role in strengthening the field:

I think overall, CAISE has helped the field become a field. That systematic building on each other's ideas in a field that doesn't have so many great venues for publication has been really important.

Five years ago, there was terrible access to ISE information unless you had a personal connection to a project. CAISE is the only reliable and open resource for project information and evaluation data.

Now, CAISE provides a dynamic platform for organizing, connecting, and sharing resources with the community.

SUMMARY

In year nine, CAISE developed and facilitated a high-quality AISL PI meeting, improved its key resource InformalScience.org, and developed an important report about broader impacts and informal science education for both the informal STEM education field and those engaged in public engagement and outreach work. CAISE also engaged with the External Review Board in preparation for its next phase of work, gaining feedback on its plans and guidance on the overall strategy for evaluation and data gathering for the next five years.

Investments in centers are by their very nature different than investments in projects -- they are designed to add value, increase capacity, build infrastructure, and result in multiple, diverse downstream returns for both targeted and broad audiences. CAISE has sought to both support and enhance the AISL Program within NSF, and support and advance the broader informal STEM education field. Over the course of nine years, CAISE has had to be nimble and flexible to respond to new opportunities and strategic directions in the field.

The work of CAISE over the last nine years has indeed helped to strengthen the ISE field -- through creating community and common identity, sharing knowledge that informs the field, and gatherings that help individual members of the field better understand the breadth and depth of the field writ large. Over time, CAISE has proved to offer a unique and valuable service to the ISE field. InformalScience.org and CAISE's facilitation of small convenings and meetings, in particular, have helped to characterize the ISE field for the field, and connect its diverse members. CAISE has helped "the field become a field."