



# **Industry Initiatives in Math & Science Education (IISME):**

## **2013 Evaluation Report Highlights**



By

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## Purpose

Industry Initiatives for Science & Math Education (IISME) was founded in 1985. Since then, the organization has been an early leader in providing summer experiences for math and science teachers in industry and academia. The goals are to infuse real world applications into math and science lessons, motivate teachers in the profession, and inspire students towards majors and careers in science, technology, engineering, and math (STEM). Each summer, IISME places between 150-175 math and science as well as English, Social Studies, Computer Science, Special Education and other teachers (elementary through community college) into 40-50 host organizations.

In 2012, IISME commissioned Quality Evaluation Designs (QED) to conduct an external evaluation focused on *how IISME summer fellowships change teachers' perspectives and behaviors related to their teaching, professional development, understanding of workplace culture and skills, and career decision-making.*

## Data Gathered

Data were collected from January through July 2013. QED interviewed 25 randomly selected teachers, then designed a comprehensive survey for all participating IISME teachers since 2001. QED also interviewed 14 principals about the impacts they perceived of their teachers' participation in IISME.

The IISME survey asked teachers about:

- Motivations for participating in IISME, the number of fellowships in which they have participated, and the nature of those fellowships
- Impacts of their IISME experiences on their teaching, students, and professional development, including impacts on subject area knowledge, teaching and advising, awareness of workforce readiness skills, professional development, career, sponsor culture, and effects of multiple fellowships
- Demographic and professional information, including subject area and grade level they teach, percent students on free and reduced lunch, years in education and the effects (if any) of IISME on whether to remain in or leave education.

Highlights of the results are presented below. For the full report, see *IISME 2013 Evaluation Report*, by Cathleen Simons and Gary Lichtenstein, Quality Evaluation Designs, December 2013, available from IISME.

## Highlights of the Results

### Very strong, enthusiastic support from teachers and principals

476 of the 880 teachers who participated in IISME since 2001 responded to the survey, for a strong response rate of 54%.

### High impact in many areas

- Overall, survey results are extraordinarily positive across a broad range of variables.
- Consistently high results on related variables reinforce an over-arching conclusion that the IISME experience is uniformly effective across a broad spectrum of teachers with diverse teaching contexts, years in the field, subject area expertise, and life experience.

### Strongest impacts

- Workplace Readiness – increased awareness and integration into classroom of critical thinking, technology, and teamwork/collaboration skills)
- Professional Development – enhanced technology knowledge and skills, understanding of workplace expectations of students, and professional confidence
- Teaching Knowledge – greater knowledge of real-world examples and better advising for students about STEM jobs

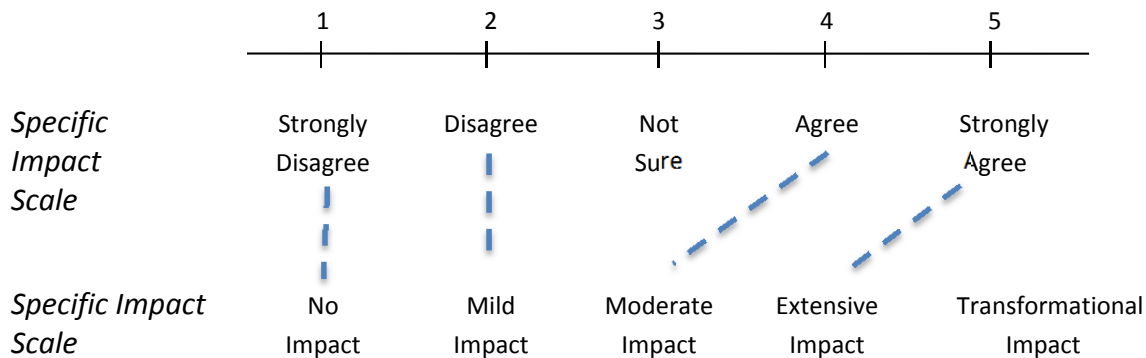
### Transformational

- Across all Overall Impact variables, respondents chose *transformational* 9-21% of the time (mean = 15%). A *transformational* effect is a most powerful outcome, and it is highly notable that teachers opted for this response so often.
- Some of the strongest and most passionate responses during the teacher interviews came from those who had been powerfully affected by the *culture of the sponsor organization itself* – that is, not just the *work* the teacher did there but the *environment* and the *way* the sponsor organization and its people did their work.
- 11% of teachers reported *transformational* impacts on the Sponsor Culture items. Roughly half (49%) reported *extensive* or *transformational* impact on the Collaboration/Teamwork item. Slightly fewer (35% – 45%) reported *extensive* or *transformational* impact on the remaining four variables: Communication, Project management processes, Values/Ethics, and Training.
- Nearly 20% of teachers rated the *Professional Development* associated with IISME *transformational*.
- In the words of the teachers:
  - *IISME Fellowships have been profoundly transformational. From improving my curriculum development skills, to learning and improving my skills in a workplace setting, to allowing me to learn wider applications of technology in and out of the classroom*
  - *Exposure to the corporate culture was the MOST valuable part of the fellowship experience*
  - *An experience that... really transformed my teaching*

### Created new rating scale to handle teachers' "transformational" responses

*Overall Impact* was rated on a unique scale that differed from conventional 5-point scales. In pre-survey teacher interviews, many teachers talked about not merely excellent experiences related to IISME, but *transformational* experiences; that is, life changing, personal and professional impacts. These are the kinds of outcomes reported by people who participate in wilderness trainings such as National Outdoor Leadership School (NOLS) or the Peace Corps. It's very rare to find such effects from an 8-week summer professional development experience.

QED created the *Overall Impact* rating scale that included a *transformational* response option in order to capture these extraordinary effects, which would have been downplayed on a conventional scale, the top choice of which might have been *strongly agree* or *excellent*. Thus, a "3" rating on the *Overall Impact* scale denotes a considerably higher impact rating than a 3 on the *Specific Impact* scale, as shown below:



### Benefits teachers across wide range

Survey results were uniformly high across a range of variables. Benefits of IISME participation accrue to participants regardless of teacher background, grade level and subject(s) they teach, proportion of students eligible for Free and Reduced Lunch, organization type, work type, and what teachers sought when they applied.

### Impacts Principals

- Energized and inspired teachers, as well as colleagues, students, even administrators
- Growth in leadership and professional development, curriculum and instruction, student engagement, and career advancement
- What teachers learned from IISME transferred beyond the classroom to the department, school, and sometimes the district.
- Principals suggested an IISME for principals, which could help replicate workplace culture, not just skills, in schools.

### **New insights – to enhance impact even further**

- Powerful effect of sponsor culture itself—unanticipated outcome of IISME fellowships: Many teachers found that the means by which communication took place and work was planned for and executed in their sponsor organizations differed considerably from conventional classroom and school norms. Many teachers sought to replicate these features within their classrooms. This effort transcends specific skill development. Teachers report that their efforts changed the structure of their own and sometimes even colleagues' classrooms, communication dynamics, and which technologies were used and how they were used for instruction. The effort to make adaptations so that classroom culture looks and feels more like workplace culture is a giant leap towards preparing students to meet expectations of future employers.
- Seeking -- Ratings on all impact variables rose significantly if what teachers are seeking from IISME aligns with their IISME placements

### **Suggestions for the future**

- Enhance impact even further by incorporating new “seeking” insight into application and placement processes
- Leverage IISME to facilitate career advancement
- Create IISME experience for principals
- Conduct study on observed student, classroom and/or school effects

### **Overall evaluation**

- The program model and execution are exceptional. Client satisfaction is extremely high.
- A highly efficacious program model that is consistently well-implemented and strongly valued by teachers and principals.