



The Innovative Technology Experiences for Students and Teachers (ITEST) program was established by the National Science Foundation (NSF) in direct response to current concerns and projections about the growing demand for and current shortages of STEM (Science, Technology, Engineering and Mathematics) professionals in the U.S. and seeks solutions to help ensure the breadth and depth of the STEM workforce. The ITEST National Learning Resource Center (LRC) at Education Development Center, Inc., supports projects and synthesizes and disseminates the program's learnings to a wide audience.

This Data Brief explores project level findings reported in the 2011–2012 Management Information Systems (MIS). Overall, these results shed light on the collective findings from the ITEST program, and provide examples of successful participant outcomes and project implementation strategies of interest to the ITEST Community and NSF. Additional and more in-depth analyses of MIS questionnaire data will likely uncover further evidence of replicable models from ITEST that contribute to the knowledge base on science, technology, engineering and mathematics (STEM) education and workforce development.



ITEST Participants: Reaching Underserved and Underrepresented Groups

The National Science Foundation (NSF) ITEST Program explicitly states its commitment to “projects that focus on students from groups underserved and underrepresented in STEM and ICT-intensive careers” in the 2011 program solicitation (<http://www.nsf.gov/pubs/2011/nsf11525/nsf11525.htm>). The ITEST Management Information System (MIS) asks projects to identify characteristics of their student participants, and this data brief explores that information to determine whether and to what degree projects are working with underserved and underrepresented students.

Over the nine years that NSF has been funding ITEST projects, more than 227,500 students and 8,000 teachers have participated in STEM and ICT-intensive learning experiences through the program. In 2011, 83 projects completed the MIS, 55 of which were in years 1 to 3 of implementation. They served a total of 1,835 teachers and 10,838 student participants. An additional 79,000 students were exposed to ITEST learning experiences in classrooms taught by teacher participants.

Project characteristics

ITEST projects are distributed across 43 states. Table 1 shows the geographic distribution of the 83 projects that completed the MIS in 2011.

Table 1. Number of ITEST Projects by Geographic Region

	Number of ITEST Projects (n=83)*
East North Central	14
East South Central	6
Middle Atlantic	16
Mountain	9
New England	16
Pacific	15
South Atlantic	23
West North Central	6
West South Central	8
Total	113

* The total is more than 83 because 13 projects work in more than one geographic region.

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ITEST projects work with participants from rural, suburban, and urban areas. While the majority of projects (57) work in more than one area, 6 projects work only in rural areas, 2 work only in suburban areas, and 15 work only in urban areas. Table 2 shows the number of projects working in each geographic area.

Table 2. Number of ITEST Projects Targeting Specific Geographic Areas

	# of projects targeting (n=80)*
Urban	66
Suburban	54
Rural	47
* 57 projects targeted more than one geographic area.	

ITEST projects reach students in grades K–12, with the majority working in middle and high school (Table 3). Of the 14 projects that work in elementary schools, 12 of them also work at the middle and/or high school level. Of the 48 projects working at the middle school level, 30 also work at the elementary and/or high school levels. Finally, of the 57 projects that work with high school students, 28 also work with middle school students, and 12 of those also work with elementary school students. Thirty-one projects work at more than one grade span.

Table 3. Grade Spans Served by ITEST Projects

	Number of ITEST Projects (n=83)*
Elementary School students	14
Middle School students	48
High School students	57
* 31 projects work at more than one grade span.	

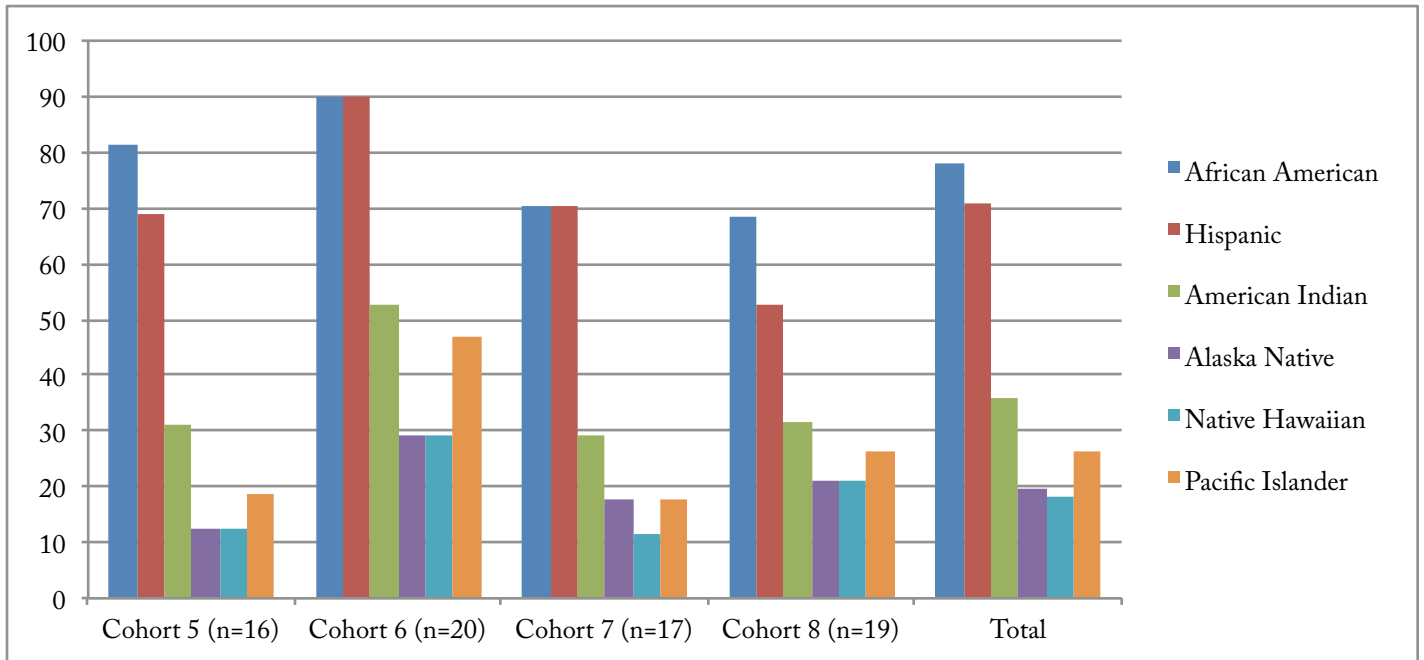
ITEST projects are divided into six primary content areas: (1) bioscience, (2) computer science: programming, (3) computer science: gaming, (4) engineering, (5) environmental science, and (6) mathematics. All of the content areas work at all grade spans, except for bioscience; all bioscience projects work with students in grades 9–12; three also work with middle school students; and no bioscience projects work in the elementary grades.

Youth participants in ITEST projects

The MIS collects information from projects about the demographic characteristics of their youth participants. In the 2011–2012 MIS, 72 of the 83 projects reported that they work directly with students.

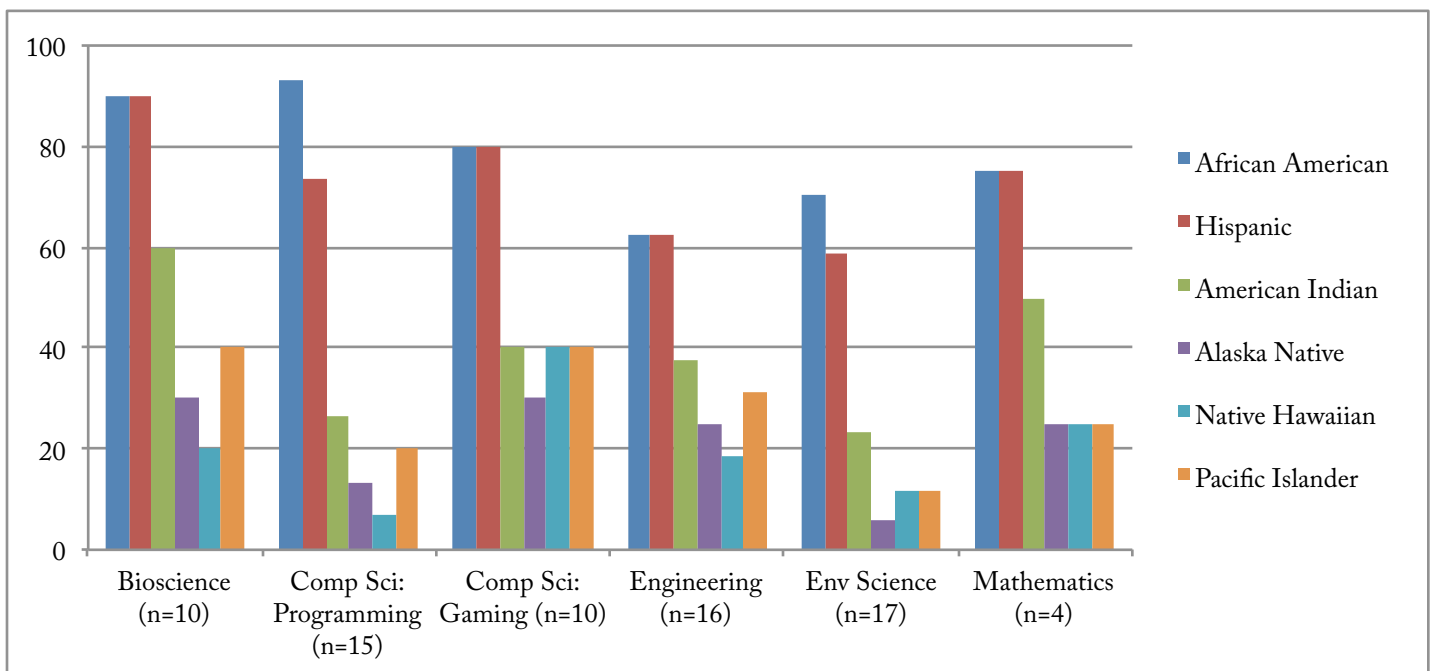
Figures 1 and 2 show the percentages of projects that target youth by race/ethnicity (projects self-identified whether or not they specifically target each group). African American and Hispanic students participate in the largest percentage of projects (more than 70% of all projects target one or both groups), with 90% of projects from Cohort 6 targeting one or both groups (Figure 1).

Figure 1. Percentage of Projects Working with Youth by Race/Ethnicity and Cohort (n=72)



Patterns vary slightly more when looking at the different primary content areas of ITEST projects (Figure 2). More than 80% of bioscience projects target African American and Hispanic students, and 60% target American Indians. Fewer than 30% of computer programming and environmental science projects target American Indians, Alaska Natives, Native Hawaiians, or Pacific Islanders.

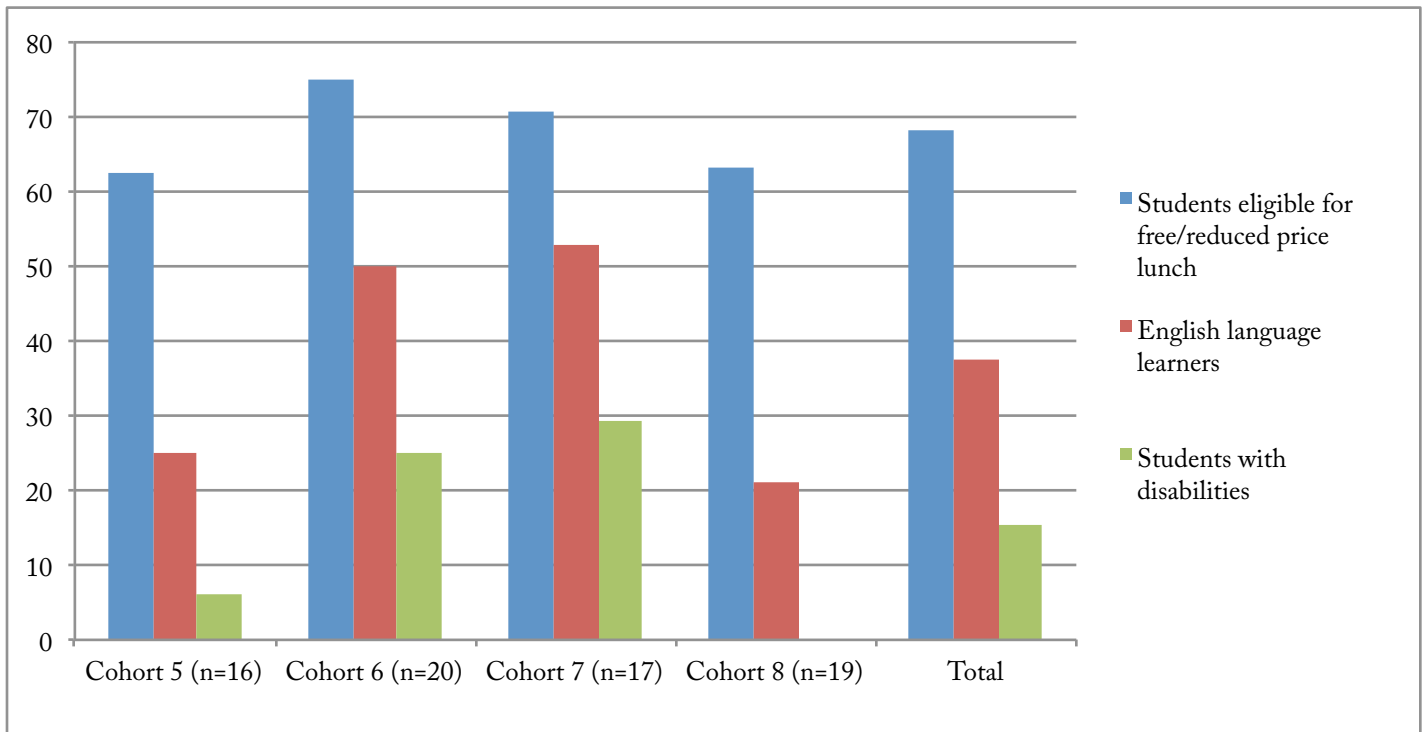
Figure 2. Percentage of Projects Working with Youth by Race/Ethnicity and Primary Content Area (n=72)



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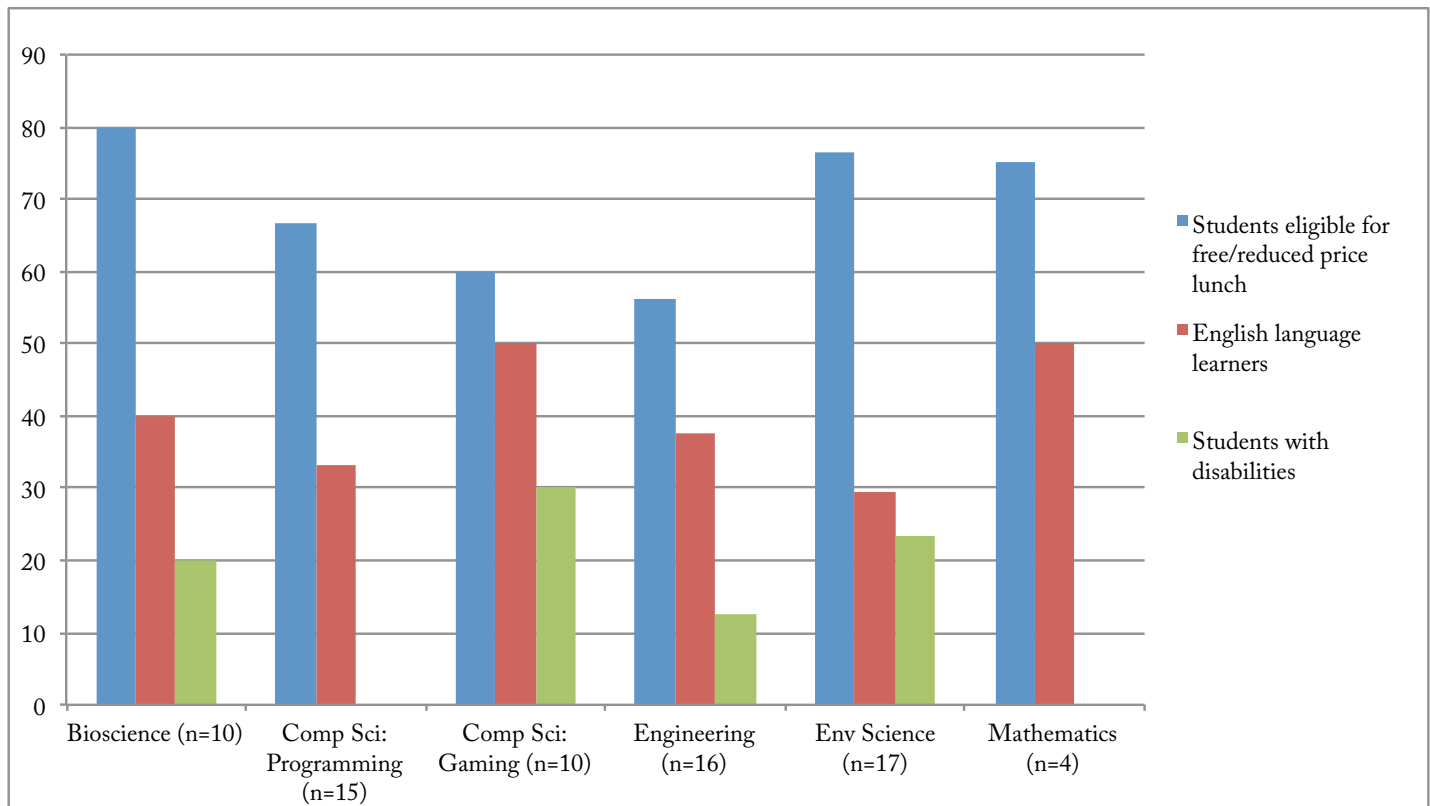
While more than 60% of ITEST projects in each of the cohorts target students who qualify for free or reduced price lunch, a far smaller percentage target students with disabilities (Figure 3). No projects in Cohort 8 specifically target students with disabilities. English language learners are a target population of some projects, but this has varied over time.

Figure 3. Percentage of Projects Working with Youth that Target Specific Subgroups by Cohort (n=72)



More than 75% of bioscience, environmental science, and mathematics projects target their work to include students who are eligible for free or reduced price lunch, while the percentage is lower for computer programming, computer gaming, and engineering projects (Figure 4). However, 30% of gaming projects target students with disabilities, the highest percentage among all projects, and 50% target English language learners.

Figure 4. Percentage of Projects Working with Youth that Target Specific Subgroups by Primary Content Area (n=72)



Summary

One stated goal of the ITEST program is to provide access to STEM career pathways to youth who might otherwise not have such access. The information provided in the 2011–2012 MIS shows that the projects do target, and work with, youth from underserved populations—by race/ethnicity, socioeconomic status, and geography. Some groups are targeted by a large majority of all types of projects: African American students, Hispanic students, and students eligible for free or reduced price lunch. Other groups are targeted by a smaller percentage of projects given their geographical location, such as Alaska Natives and Native Hawaiians. Students with disabilities and English language learners are also targeted by a smaller percentage of projects (15% and 38% respectively). The MIS results show that the projects target those students who have been underserved and underrepresented in STEM careers. With more than 10,000 student participants, the projects reached many youth who otherwise would not have had access to STEM career pathway opportunities.



This document is published by the ITEST Learning Resource Center, a project at Education Development Center, Inc. (EDC), under contract DRL-0737638 from the National Science Foundation. Opinions expressed herein do not necessarily reflect the position of the National Science Foundation, and no official endorsement should be inferred. Upon request, this publication is available in alternate formats to provide access to people with disabilities; please contact itestinfo@edc.org.

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