CIRCL PORTFOLIO MONITORING: 2015 FAST FACTS

CURRENT STATE OF CYBERLEARNING

Investments in cyberlearning research and development are a priority at the National Science Foundation (NSF). The cyberlearning theme aims to intersect advances in technologies with progress made in the understanding of how people learn. Several directorates have contributed to the Cyberlearning and Future Learning Technologies Program and cyberlearning-related awards since 2014 (See Figure 1). These included the Directorates for Computer & Information Science & Engineering (CSE or CISE), Directorate for Engineering (ENG), Education & Human Resources (EHR), and Social, Behavioral & Economic Sciences (SBE). Within these NSF directorates, multiple programs, under different divisions, have funded cyberlearning and cyberlearning-related awards (See Figure 2).

Figure 1: Awards by Directorate

Figure 2: Cyberlearning and Related Awards by Division

NSF's Cyberlearning investment theme spans a variety of programs, including the Cyberlearning and Future Learning Technology program[1]. As of calendar year 2013 the Cyberlearning program had awarded over $73,000,000 in funds, with an additional $20,000,000 funded through calendar year 2014. Projects funded by Cyberlearn & Future Tech have also received funds from other programs across NSF, including DRK-12, REAL, AISL and TUES. CIRCL[2] has sent out five surveys to the PIs of projects funded by the Cyberlearning program (NSF Program Element: 8020) or projects that have been labeled as cyberlearning-related (NSF Program Reference Code: 8244). The survey covered a variety of topics, including project focus/participants, approaches to research, product development/dissemination, and opportunities to strengthen the portfolio. There were three surveys sent out, one in 2014 and two in 2015 (See Table 1). The first survey was sent out to Cohort 1, which was the first group of Cyberlearning award recipients. The second survey was sent out to Cohorts 2 and 3, which were the first group of cyberlearning-related award recipients and the second group of Cyberlearning award recipients, respectively. The third and final survey, sent out towards the end of 2015, was sent to Cohorts 4 and 5, which included the second group of cyberlearning-related award recipients and the third group of Cyberlearning award recipients.

Table 1: Summary of Cohorts					
Cohort	Program Element/Code	Number of Awards	Number of Survey Respondents	% of Awardees who Responded	% Awards Expired as of June 30, 2016
1	8020	99	73	74%	43%
2	8244	242	105	43%	27%
3	8020	47	19	40%	21%
4	8244	71	42	59%	3%
5	8020	37	26	70%	0%

HIGHLIGHTS FROM SURVEYS

PROJECT DISCIPLINES

Survey respondents were asked to select all of the disciplines that their projects addressed from a list of six disciplines: Science, Mathematics, Reading, Engineering, Computer and Information Sciences, Social Sciences, or Statistical Methods or Research Design. The CIRCL portfolio's strength is in its support of Science as well as Computer and Information Sciences. There are almost no projects that PIs consider to address Reading.

TARGETED DEMOGRAPHICS OF PROJECTS

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[1] The program was started in 2011 by NSF Solicitation 14-526.

[2] The Center for Innovative Research in Cyberlearning (CIRCL) is an NSF-funded support program for the broader Cyberlearning theme, in partnership with SRI International, Education Development Center, Inc., and the National Opinion Research Center (NORC) at the University of Chicago. CIRCL aims to broker collaborations across the field of cyberlearning, in addition to conducting portfolio management of current Cyberlearning-program funded and Cyberlearning-themed awards.

While the questions regarding demographics served has changed over the iterations, in the two most recent versions, are the most similar. Generally, projects cater to community populations between grades 6-12, undergraduates, and educators who work with these age groups. Few projects target infants or toddlers. The last four cohorts indicate that many projects are designed to serve underrepresented minorities or girls/women. Few target the other special populations. The most common site of project are formal school settings; very little implementation occurs at other possible types of locales.

PROJECT CLASSIFICATION

The National Science Foundation (NSF) and the Institute of Education Sciences (IES) of the U.S. Department of Education jointly created the Common Guidelines for Education Research and Development which classifies projects in six categories. Projects were asked to choose the category or categories that best classify their work. For every cohort, the two most common classifications were early-stage/exploratory research or design and development.

PRODUCT DEVELOPMENT

Projects were asked to choose the types of products that have resulted from their work in 10 different categories. The most common product developed is a web-based service or online applications.

FIRST SURVEY: CYBERLEARNING AND FUTURE LEARNING TECHNOLOGY PROGRAM 2014

In 2014, CIRCL sent a survey to 99 PIs of projects funded by the Cyberlearning program, of which 73 people responded.

PROJECT DISCIPLINES

Survey respondents were asked to select all of the disciplines that their projects addressed from a list of six disciplines (see Figure 3).

Figure 3: Disciplines addressed by Project
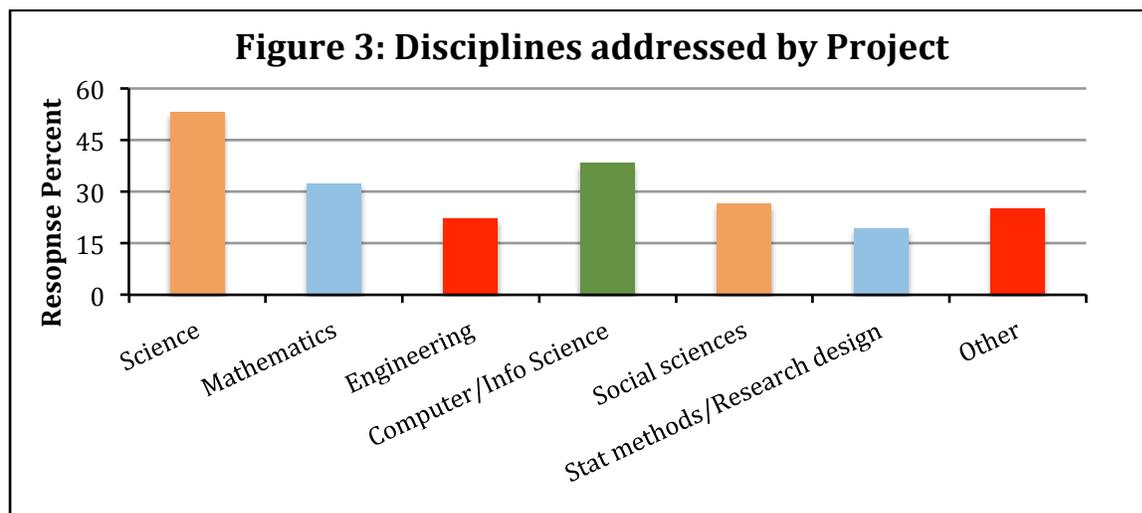
- Science was the most often chosen (53%). Computer and information science was chosen second most often (38%).
- Statistical methods and research design was the least often chosen (19%).

TARGETED DEMOGRAPHICS OF PROJECTS

Projects were asked several questions regarding participant demographics including the age, educational level and number of participants served by their work (see Figures 4-7).
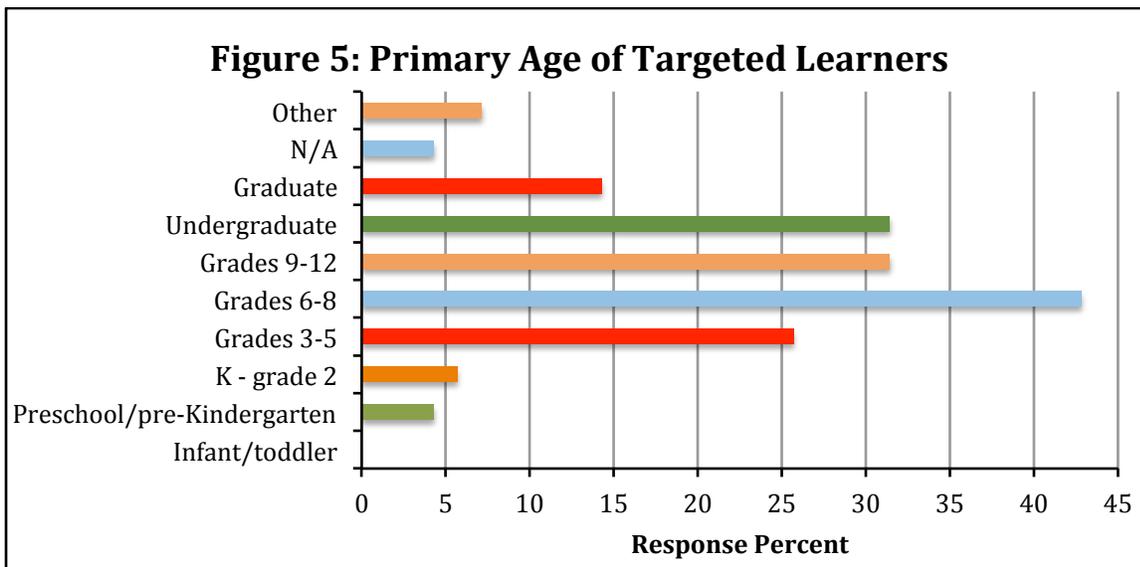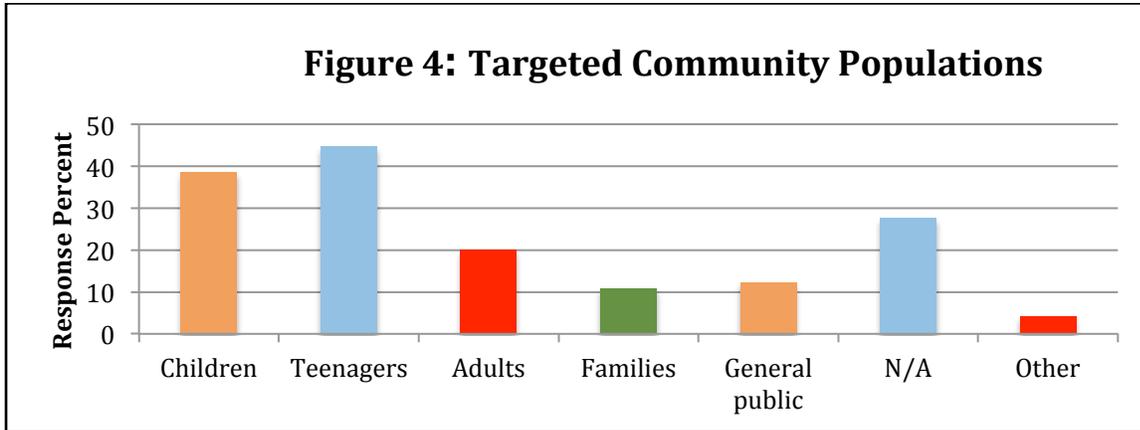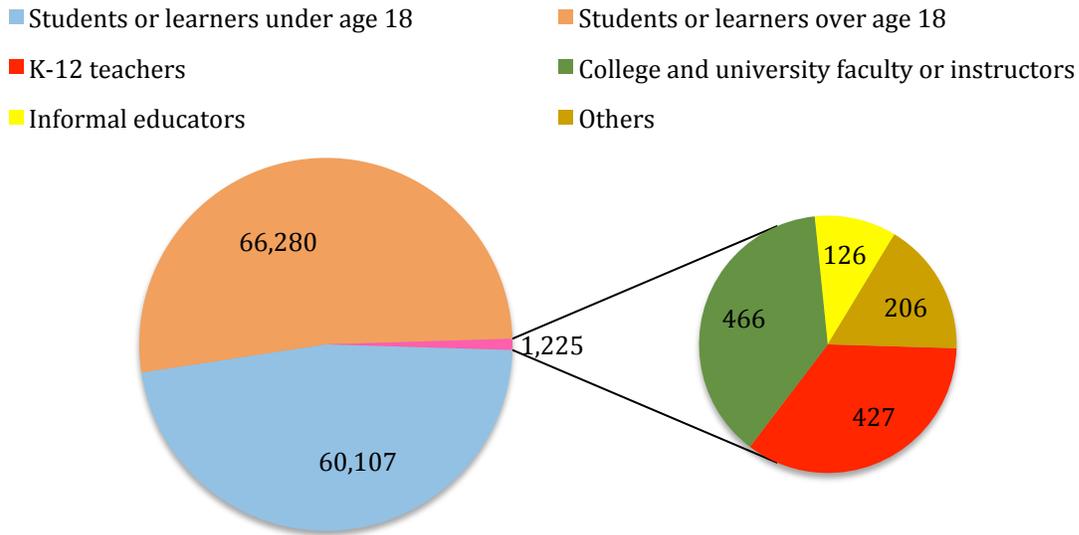
Figure 4: Targeted Community Populations

Response Percent (y-axis, 0–50)

Children, Teenagers, Adults, Families, General public, N/A, Other (x-axis categories)

Figure 5: Primary Age of Targeted Learners

Categories (top to bottom): Other, N/A, Graduate, Undergraduate, Grades 9-12, Grades 6-8, Grades 3-5, K - grade 2, Preschool/pre-Kindergarten, Infant/toddler

Response Percent (x-axis, 0–45)

Figure 6: Number of Participants Served

Legend:
- Students or learners under age 18
- Students or learners over age 18
- K-12 teachers
- College and university faculty or instructors
- Informal educators
- Others

Main pie: 66,280 (Students or learners over age 18); 60,107 (Students or learners under age 18); 1,225

Exploded pie: 126 (Informal educators); 206 (Others); 427 (K-12 teachers); 466 (College and university faculty or instructors)

Figure 7: Location of Project Implementation

Y-axis: Response Percent (0 to 45)

Categories: Preschool, Elementary school, Middle school/junior high, High school, College/university, Museum/science center, Afterschool program, Summer program, Library/community center, Homes, Other
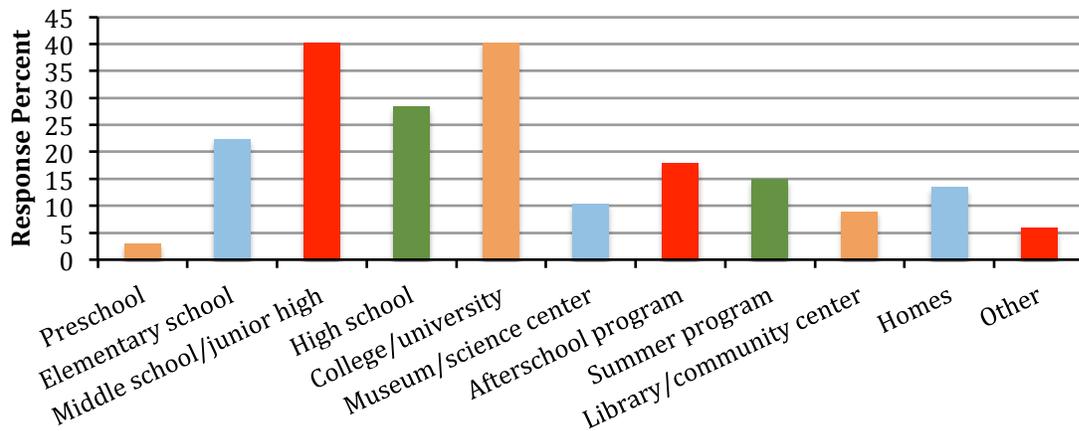
- Project designs most often targeted children (38%) and teenagers (45%).
- Projects are expected to reach large numbers of participants. Survey responses indicate that they expect to serve a total of over 127,000 participants through their projects. The overwhelming majority of project participants are learners of all ages.
- No projects addressed infants or toddlers.

- Project implementation was most commonly in middle schools (40%) or colleges/universities (40%), and targeting 6th-8th graders (43%).

PROJECT CLASSIFICATION

The National Science Foundation (NSF) and the Institute of Education Sciences (IES) of the U.S. Department of Education jointly created the Common Guildines for Education Research and Development which classifies projects in six categories. Projects were asked to choose the category or categories that best classify their work (see Figure 8). Projects often spanned multiple categories.

Figure 8: NSF Common Guidelines for Education Research and Development

Category	Response Percent
Scale-up Study	~1
Effectiveness Study	~1
Efficacy Study	~9
Design and Development	~70
Early-Stage or Exploratory Research	~73
Foundational Research	~19
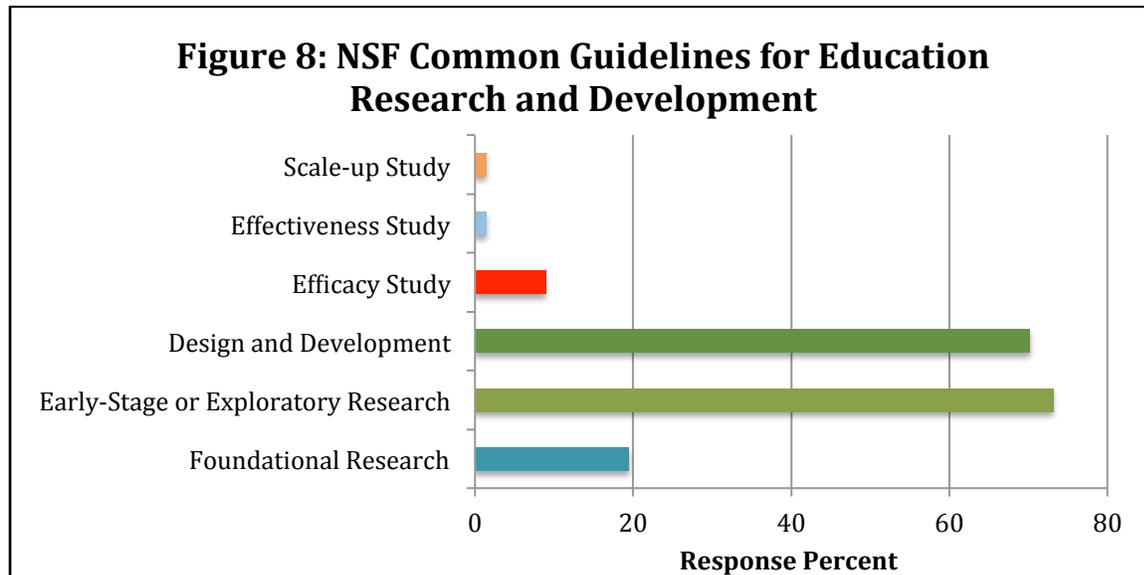
- A large majority of projects were early-stage/exploratory research (73%) and design and development (70%).

PROJECT DISSEMINATION

Projects were asked to provide information on the mediums they use to discuss and disseminate their work, including forms of social media and forms of publication regarding their work that occured in 2013 or will occur in 2014 (see Figure 9).

Figure 9: Publications about Project
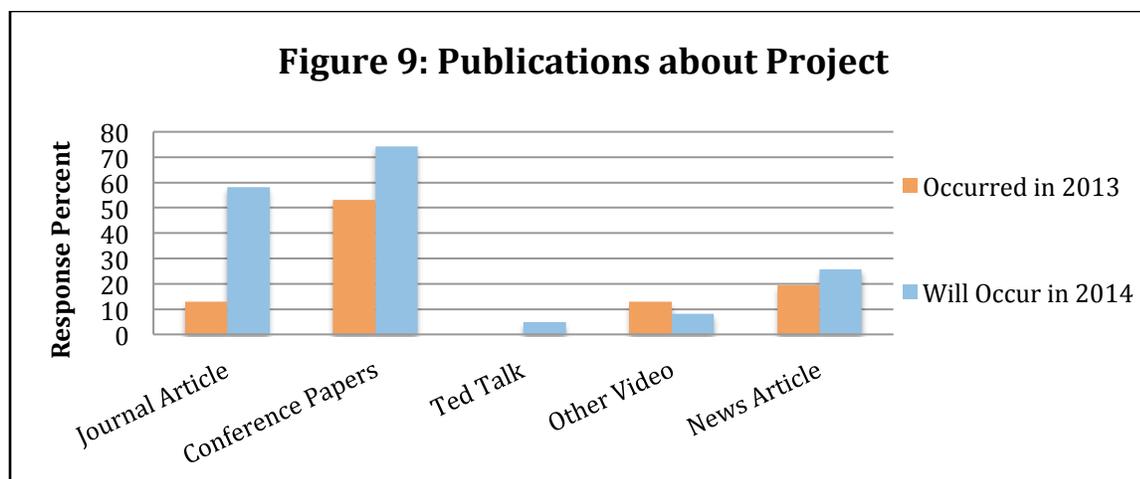
- Over half (53%) published a conference paper in 2013, and 74% plan to do so in 2014. 13% published a journal article in 2013 and 58% plan to in 2014. Three respondents (5%) even plan to give a Ted talk in 2014.

PRODUCT DEVELOPMENT

Projects were asked to choose the types of products that have resulted from their work in 10 different categories. At least 292 products are in some stage of development including at least 31 phone/tablet applications, 44 products in online services, and 30 desktop applications.

SECOND SURVEY: CYBERLEARNING AND FUTURE LEARNING TECHNOLOGY PROGRAM 2015

The 2015 survey was sent to PIs of projects funded by the Cyberlearning program (NSF Program Element: 8020) and projects that have been labeled as cyberlearning-related (NSF Program Reference Code: 8244).

CYBERLEARNING-RELATED SURVEYS (8244)

Of the 242 PIs of cyberlearning-related projects, 105[3] people responded.

PROJECT DISCIPLINES

Survey respondents were asked to select all of the disciplines that their projects addressed from a list of six disciplines (see Figure 10).

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[3] There were 106 responses; one was a PI submitting a second. As it was unclear which response was the correct one, but responses were included in the data analysis.

Figure 10: Disciplines addressed by Project
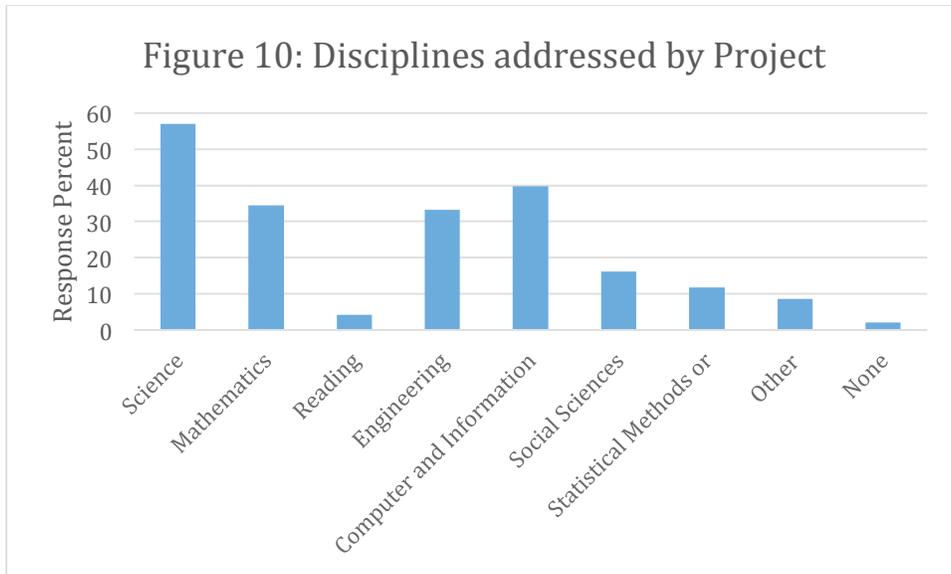
- Science was the most often chosen (57%). Computer and information science was chosen second most often (40%).
- Reading was the least often chosen (4%).

TARGETED DEMOGRAPHICS OF PROJECTS

Projects were asked several questions regarding participant demographics including the age, educational level and number of participants served by their work (see Figures 11-14).
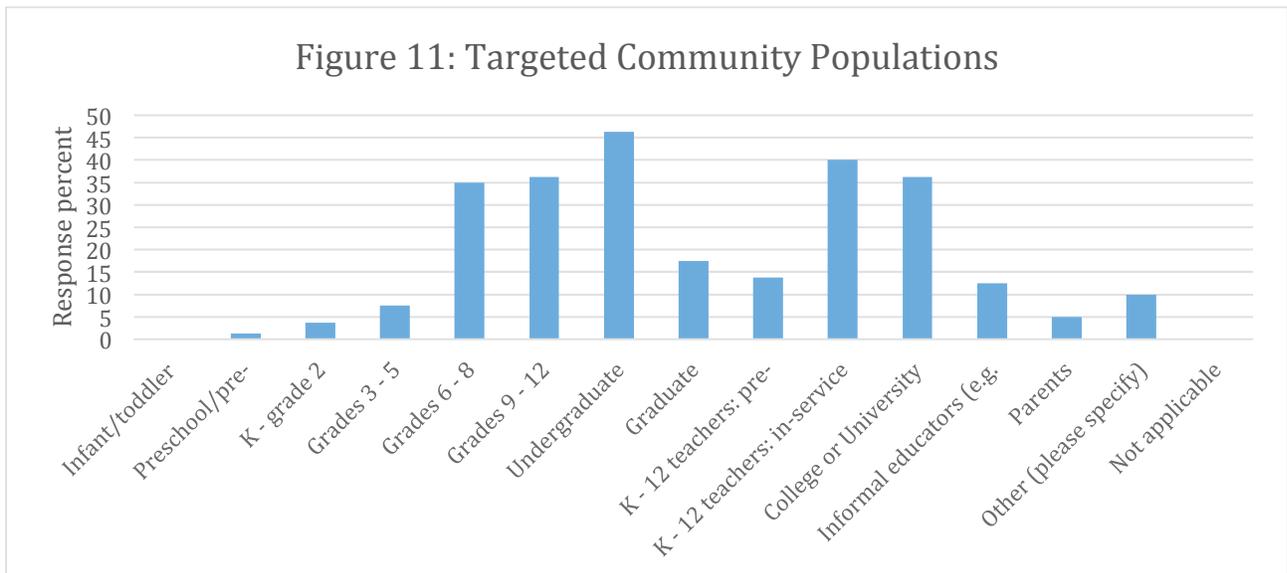

Figure 11: Targeted Community Populations

Figure 12: Number of participants served for each targeted community population

Legend: ■ 0 - 50 ■ 51 - 100 ■ 101 - 500 ■ 501 - 1000 ■ More than 1000
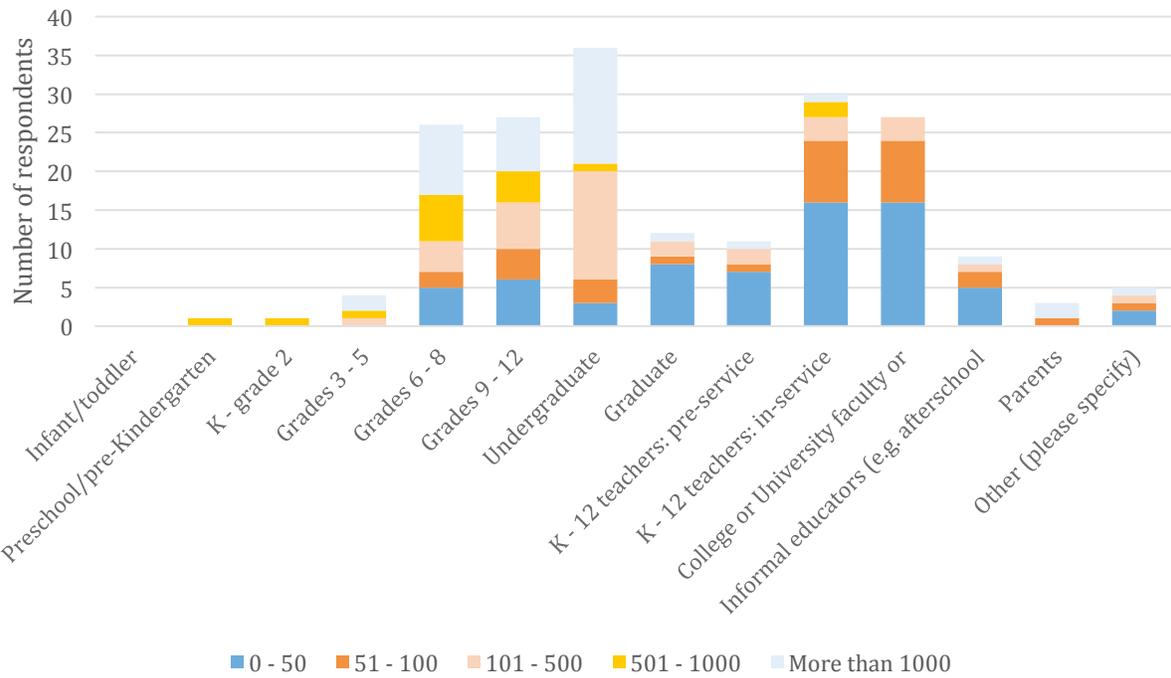
Figure 13: Targeted special populations
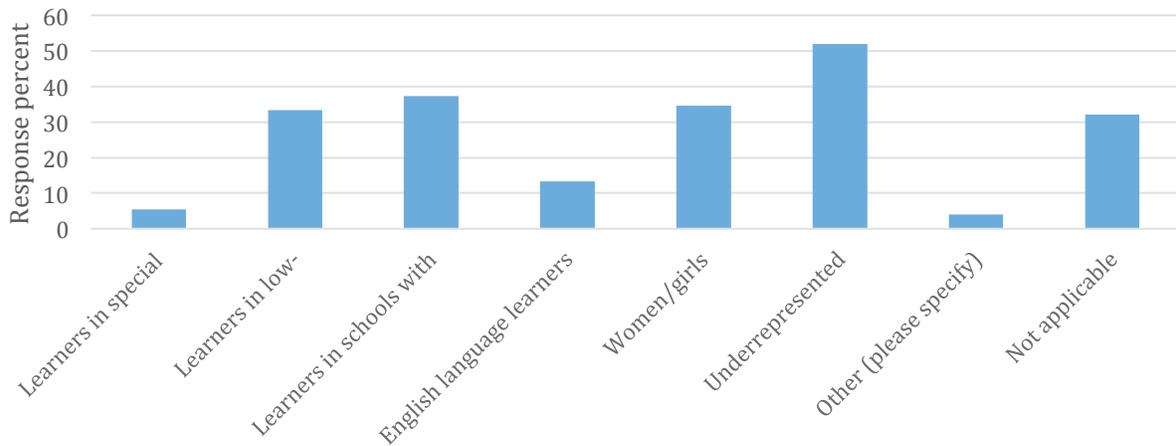
Figure 14: Location of Project Implementation
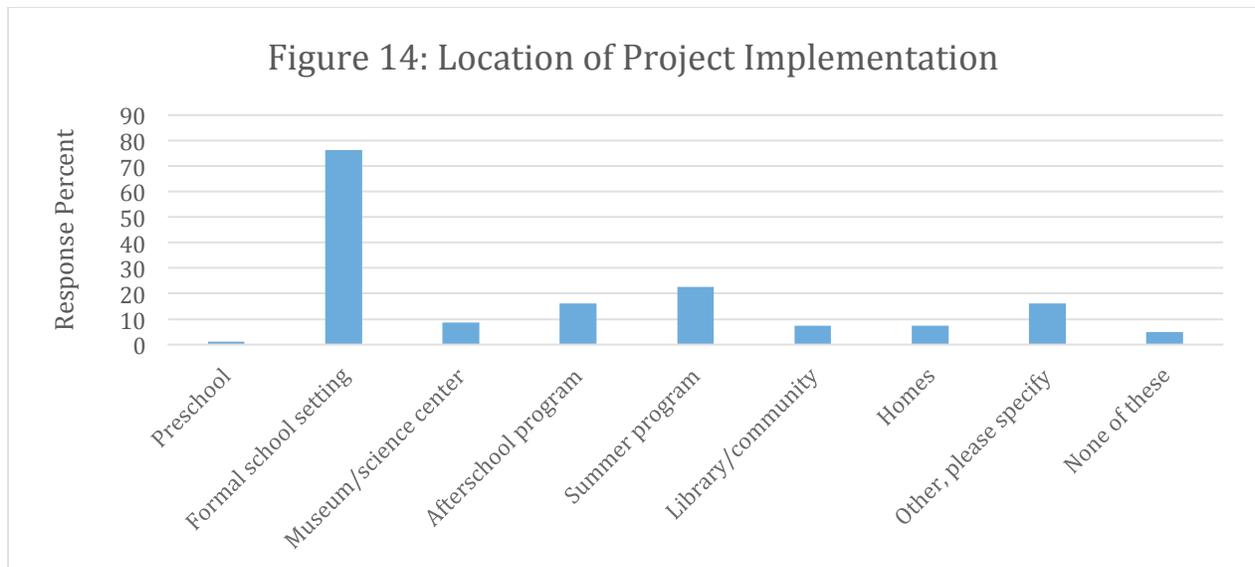
- Project designs most often targeted undergraduate students (46%). The second most targeted groups were students in grades 9-12 and college or university faculty or instructors (both were 36%).
- No projects addressed infants or toddlers.
- Projects were most likely to target underrepresented minorities (52%). The other three most commonly selected categories of target populations included: learners in schools with 50% or more students receiving free or reduced lunch (37%), women/girls (35%), and learners in low-performing districts or schools (33%).
- Project implementation was most in a formal school setting (76%) or summer programs (23%). Programs were least likely to take place in a preschool (1%).

PROJECT CLASSIFICATION

The National Science Foundation (NSF) and the Institute of Education Sciences (IES) of the U.S. Department of Education jointly created the Common Guidelines for Education Research and Development which classifies projects in six categories. Projects were asked to choose the category or categories that best classify their work (see Figure 8). Projects often spanned multiple categories.

Figure 15: NSF Common Guidelines for Education Research and Development
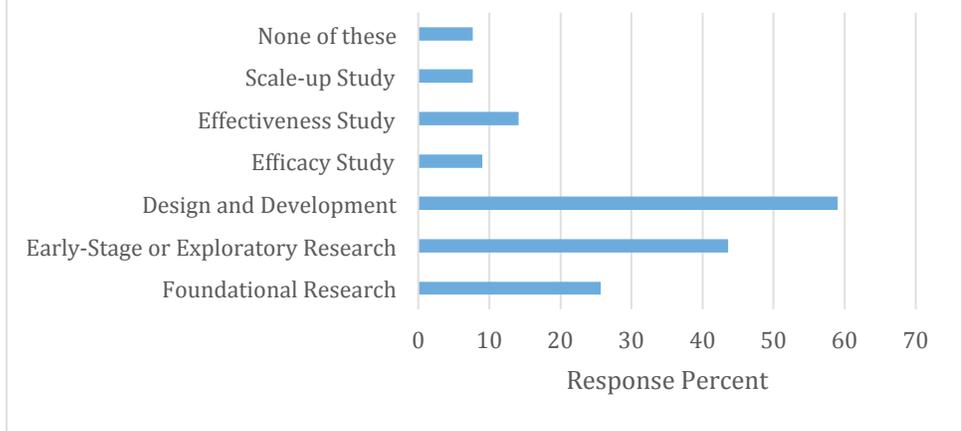
- A large majority of projects were design and development (59%) and early-stage/exploratory research (44%).

PROJECT DISSEMINATION

Projects were asked to provide information on the media they used to discuss and disseminate their work, and whether these publications occurred in 2014 and early 2015, or would occur later in 2015 (see Figure 9).

Figure 16: Publications about Project
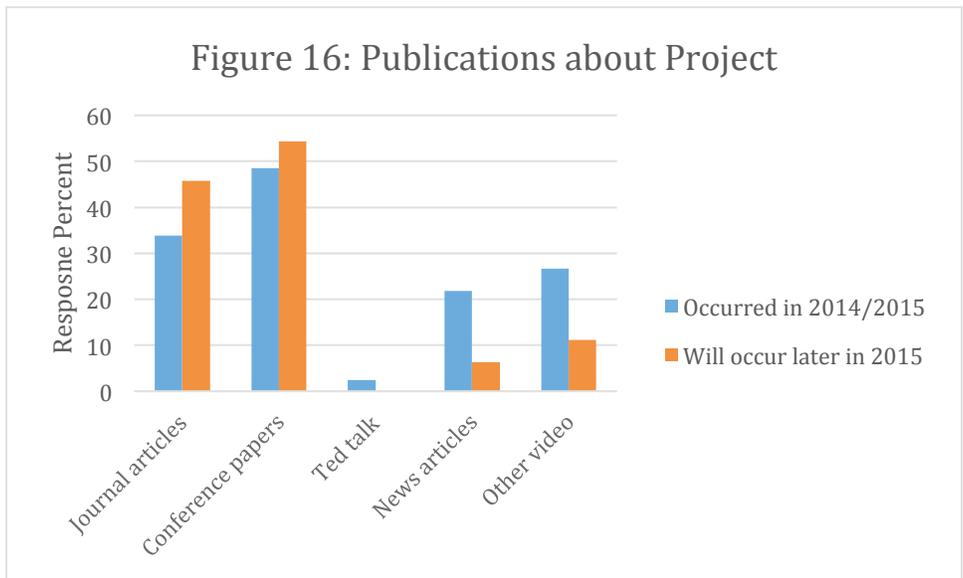
- 49% of respondents published a conference paper in 2014 or early 2015, and 54% planned to do so later in 2015. 34% published a journal article in in 2014 or early 2015 and 46% planned to in later 2015.
- Only one respondent (3%) had given a TED talk prior to the survey.

PRODUCT DEVELOPMENT

Projects were asked to choose the types of products that have resulted from their work in 8 different categories. At least 237 products were in some stage of development including at least 43 web-based services or online application, 42 curriculum/instructional material e.g., textbook, and 40 instruments (e.g., to assess interest, engagement). There were 82 products that were going to be developed.

CYBERLEARNING PROGRAM SURVEYS

Of the 47 PIs of projects funded by the Cyberlearning program, 19 responded.

PROJECT DISCIPLINES

Survey respondents were asked to select all of the disciplines that their projects addressed from a list of six disciplines (see Figure 17).

Figure 17: Disciplines addressed by Project
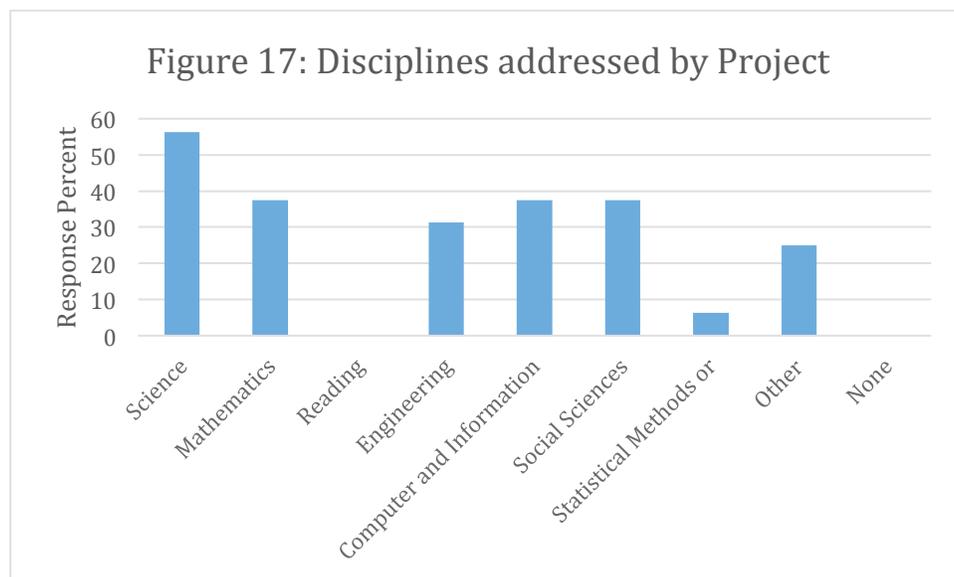
- Science was the most often chosen (56%). After Science, Mathematics, Computer and Information Science, and Social Sciences, were equally likely to be addressed by the project (38%).
- Reading was the least often chosen (0%).

TARGETED DEMOGRAPHICS OF PROJECTS

Projects were asked several questions regarding participant demographics including the age, educational level and number of participants served by their work (see Figures 18-21).
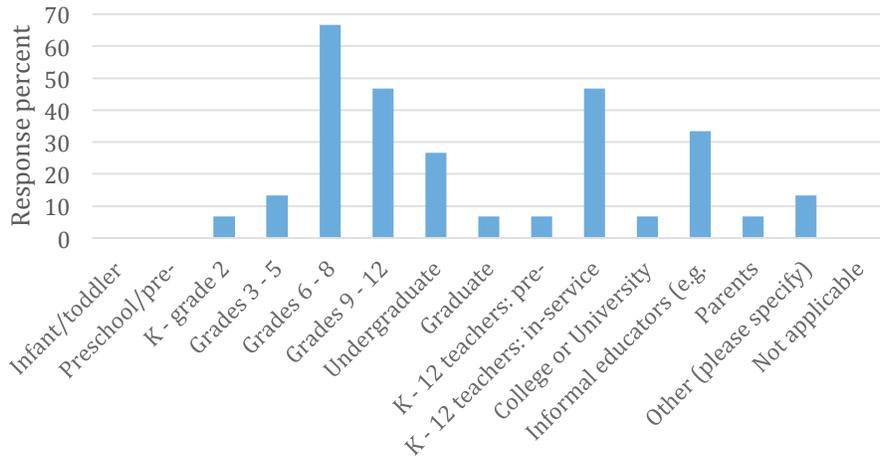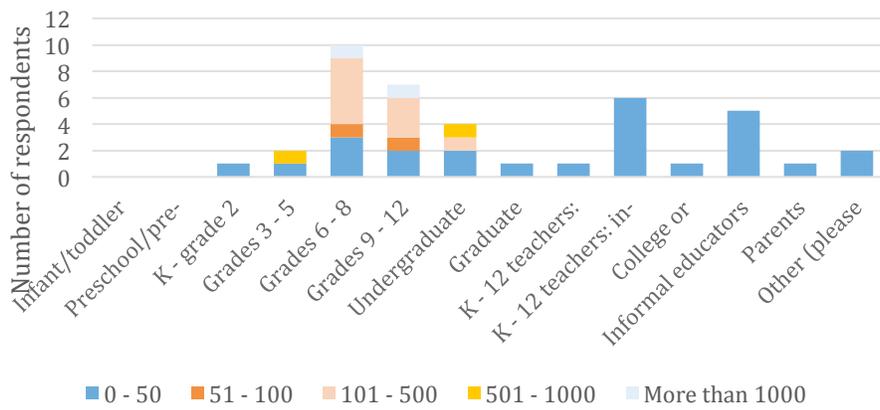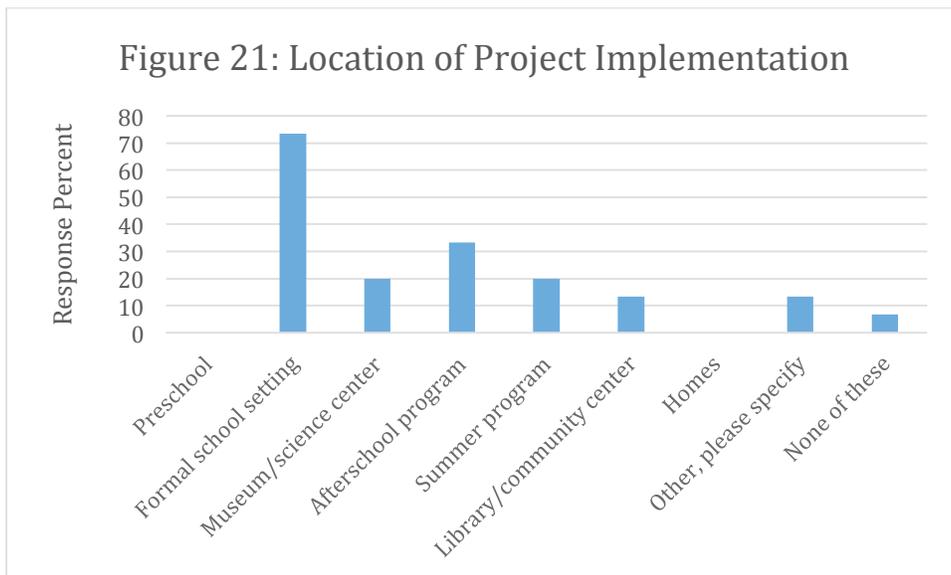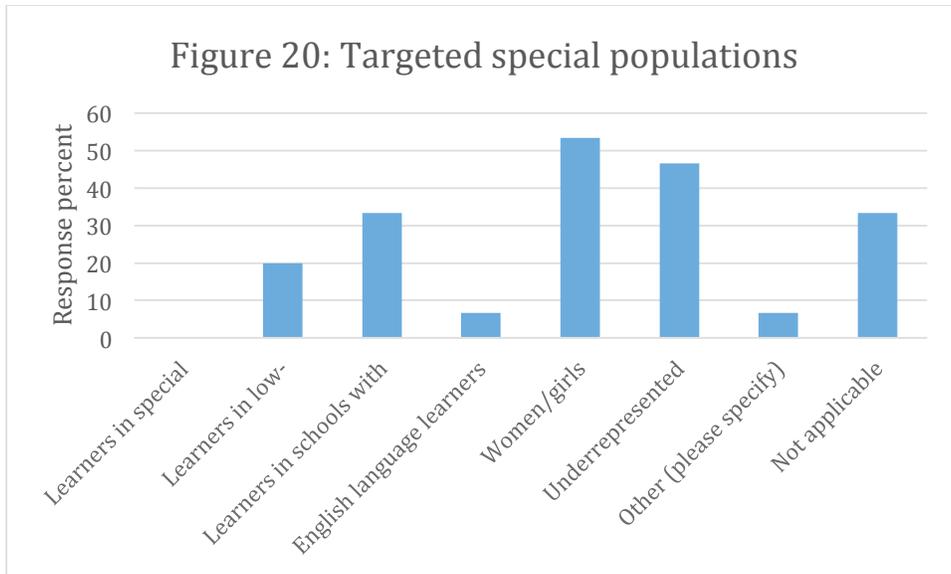
Figure 18: Targeted Community Populations

Figure 19: Number of participants served for each targeted community population

Figure 20: Targeted special populations

Response percent (y-axis: 0 to 60)

Categories (x-axis):
- Learners in special: 0
- Learners in low-: 20
- Learners in schools with: ~33
- English language learners: ~7
- Women/girls: ~53
- Underrepresented: ~47
- Other (please specify): ~7
- Not applicable: ~33

Figure 21: Location of Project Implementation

Response Percent (y-axis: 0 to 80)

Categories (x-axis):
- Preschool: 0
- Formal school setting: ~73
- Museum/science center: 20
- Afterschool program: ~33
- Summer program: 20
- Library/community center: ~13
- Homes: 0
- Other, please specify: ~13
- None of these: ~7

- Project designs most often targeted students in grades 6-8 (67%). The second most targeted groups were students in grades 9-12 and K-12 teachers in-service (both were 47%).
- No projects addressed infants/toddlers or preschool/pre-kindergarten.
- Projects were most likely to target underrepresented minorities (53%) or girls/women (53%).
- No projects targeted learners in special education or with special needs such as learning disabilities.
- Project implementation was most in a formal school setting (73%) or afterschool programs (33%). Programs were least likely to take place in a preschool or homes (0%).

PROJECT CLASSIFICATION

The National Science Foundation (NSF) and the Institute of Education Sciences (IES) of the U.S. Department of Education jointly created the Common Guidelines for Education Research and Development which classifies projects in six categories. Projects were asked to choose the category or categories that best classify their work (see Figure 22). Projects often spanned multiple categories.

Figure 22: NSF Common Guidelines for Education Research and Development

Category	Response Percent
None of these	~6
Scale-up Study	0
Effectiveness Study	0
Efficacy Study	0
Design and Development	~67
Early-Stage or Exploratory Research	~60
Foundational Research	~53
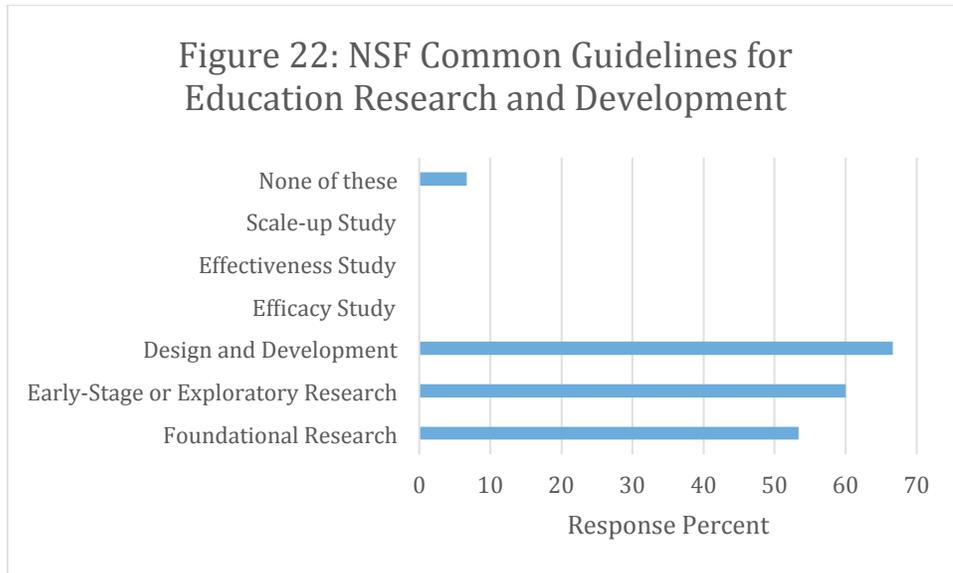
- A large majority of projects were design and development (67%) and early-stage/exploratory research (60%).
- No projects were classified as scale-up, effectiveness, or efficacy studies.

PROJECT DISSEMINATION

Projects were asked to provide information on the media they used to discuss and disseminate their work, and whether these publications occurred in 2014 and early 2015, or would occur later in 2015 (see Figure 23).

Figure 23: Publications about Project
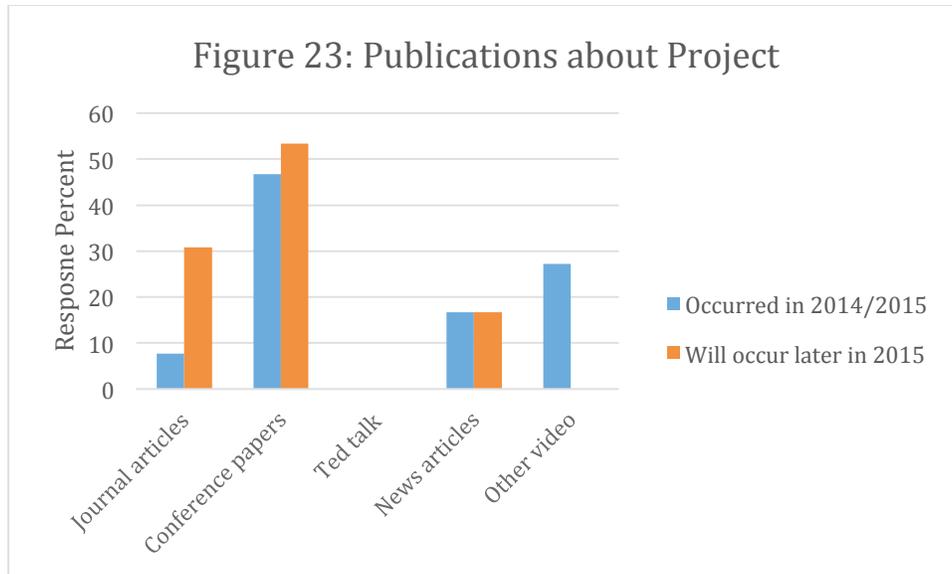
- 47% of respondents published a conference paper in 2014 or early 2015, and 53% planned to do so later in 2015. 8% published a journal article in in 2014 or early 2015 and 31% planned to in later 2015.
- No one had given or planned to give a TED talk.

PRODUCT DEVELOPMENT

Projects were asked to choose the types of products that have resulted from their work in 8 different categories. At least 37 products were in some stage of development. There were 13 products that were going to be developed.

THIRD SURVEY: CYBERLEARNING AND FUTURE LEARNING TECHNOLOGY PROGRAM, LATE 2015

CYBERLEARNING-RELATED SURVEYS

Of the 71 PIs of cyberlearning-related projects, 42 people responded

PROJECT DISCIPLINES

Survey respondents were asked to select all of the disciplines that their projects addressed from a list of six disciplines (see Figure 24).

Figure 24: Disciplines Addressed by Projects
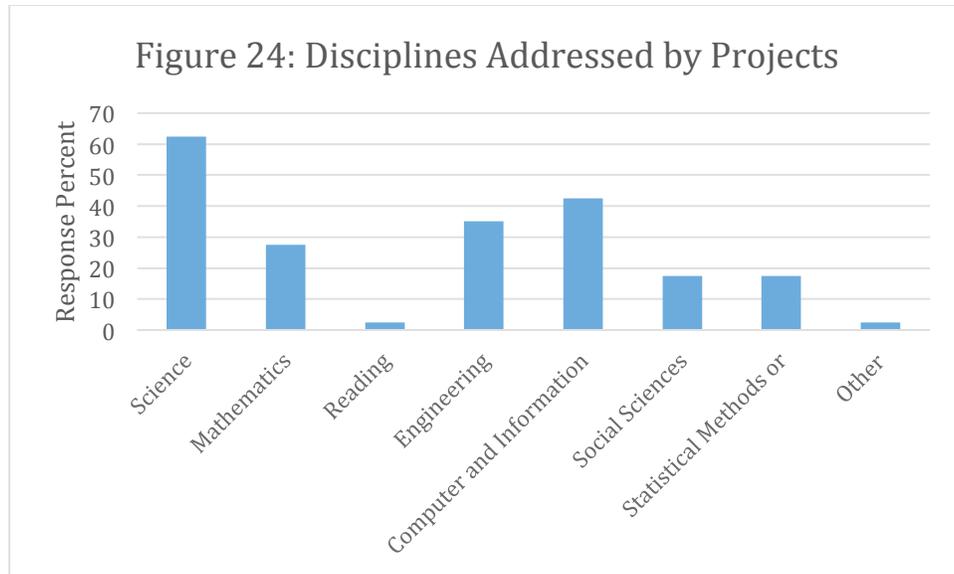
- Science was the most often chosen (63%). Computer and information science was chosen second most often (43%).
- Reading was the least often chosen (3%).

TARGETED DEMOGRAPHICS OF PROJECTS

Projects were asked several questions regarding participant demographics including the age, educational level and number of participants served by their work (see Figures 25-28).
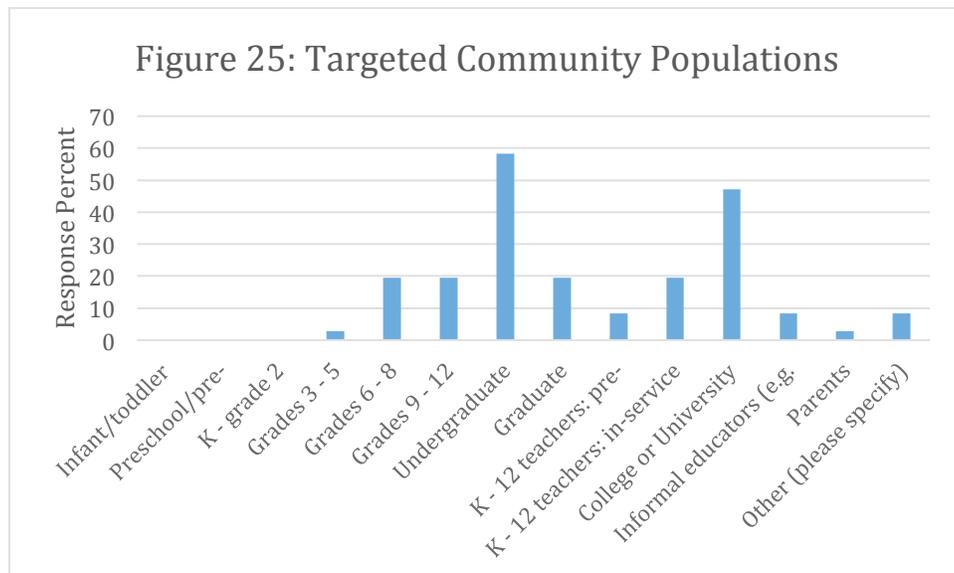

Figure 25: Targeted Community Populations

Figure 26: Number of Participants Served for Each Targeted Population

Legend: 0 - 50, 51 - 100, 101 - 500, 501 - 1000, More than 1000

Y-axis: Number of Respondents (0, 5, 10, 15, 20, 25)

X-axis categories: Infant/toddler, Preschool/pre-, K - grade 2, Grades 3 - 5, Grades 6 - 8, Grades 9 - 12, Undergraduate, Graduate, K - 12 teachers:, K - 12 teachers: in-, College or, Informal educators, Parents, Other (please
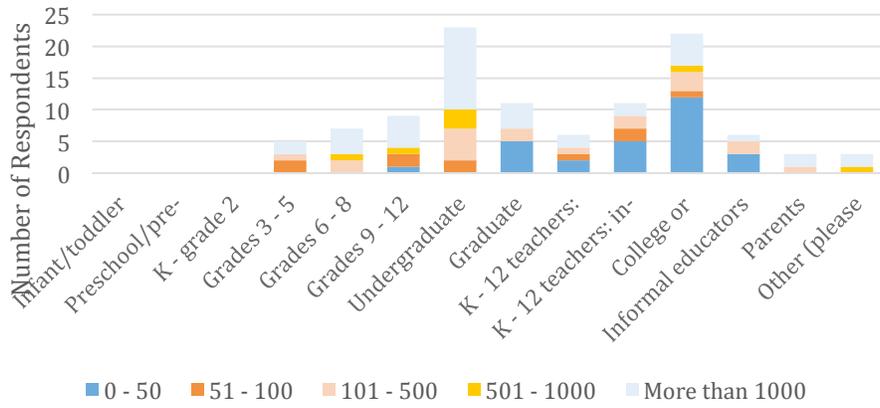
Figure 27: Target Special Populations

Y-axis: Response Percent (0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50)

X-axis categories: Learners in special, Learners in low-, Learners in schools with, English language learners, Women/girls, Underrepresented, Other (please specify), Not applicable

Figure 28: Location of Program Implementation
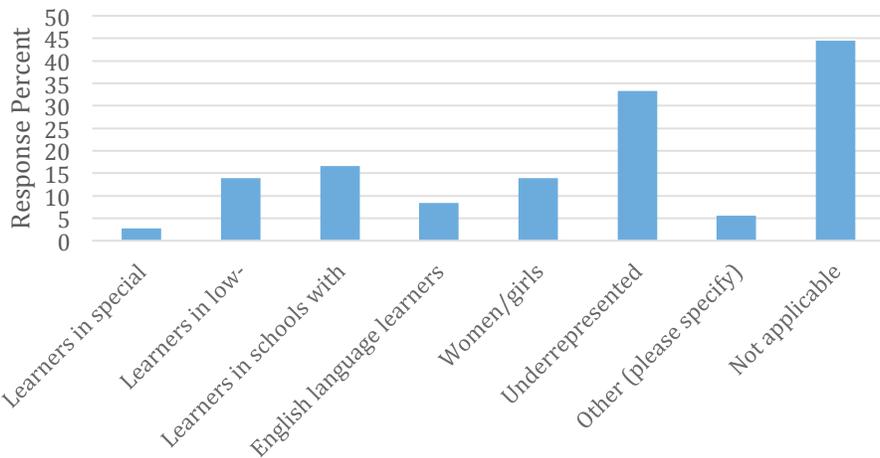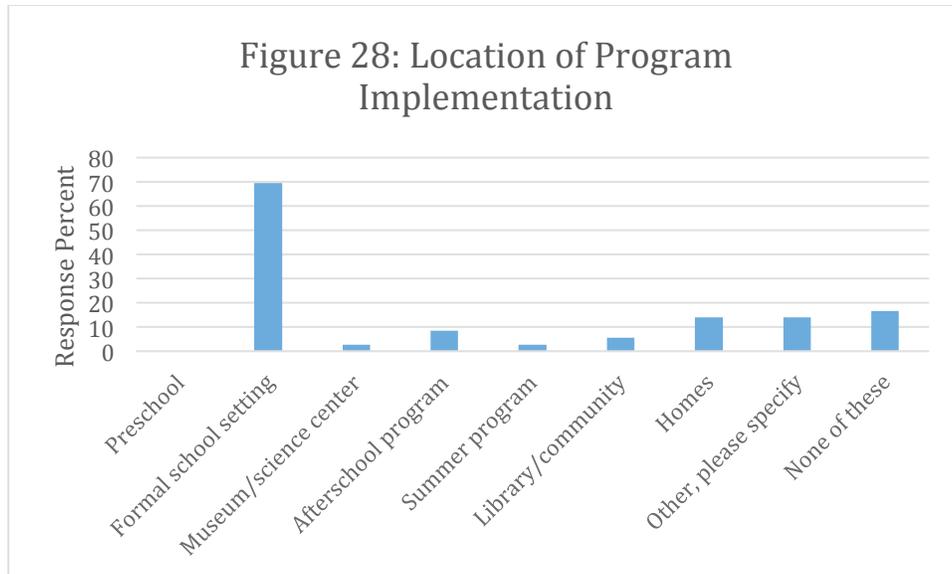
- Project designs most often targeted undergraduate students (58%). The second most targeted groups were college or university faculty or instructors (47%).
- No projects addressed infants or toddlers, preschool/kindergarten, or grades K-2.
- Projects were most likely to target underrepresented minorities (33%). 44% of participants indicated that they did not target special populations with their design (indicated N/A for question).
- Project implementation was most in a formal school setting (69%).

PROJECT CLASSIFICATION

The National Science Foundation (NSF) and the Institute of Education Sciences (IES) of the U.S. Department of Education jointly created the Common Guidelines for Education Research and Development which classifies projects in six categories. Projects were asked to choose the category or categories that best classify their work (see Figure 29). Projects often spanned multiple categories.

Figure 29: NSF Common Guidelines for Education Research and Development
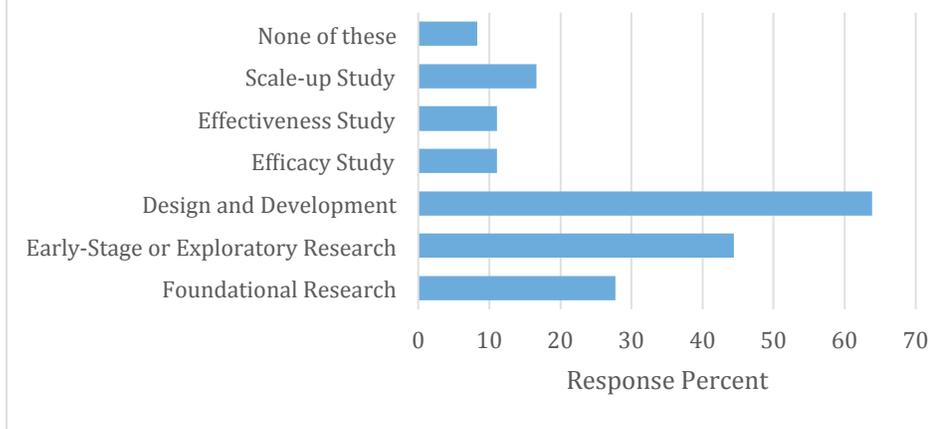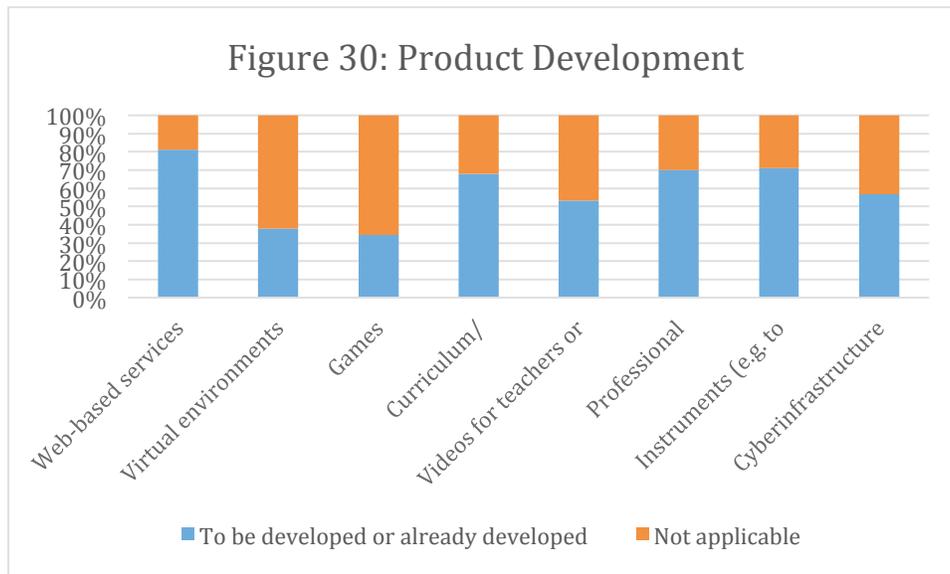
- A large majority of projects were design and development (64%) and early-stage/exploratory research (44%).

PRODUCT DEVELOPMENT

Projects were asked to choose the types of products that have resulted from their work in 8 different categories (see Figure 30).

Figure 30: Product Development

- At least 144 products were going to be developed or had already been developed.
- The most commonly developed product type was web-based services or online applications (26 respondents). Of the respondents, 81% planned to or had already developed this type of product.

CYBERLEARNING PROGRAM AWARDS

Of the 37 PIs who received Cyberlearning program awards, 26 people responded

PROJECT DISCIPLINES

Survey respondents were asked to select all of the disciplines that their projects addressed from a list of six disciplines (see Figure 31).

Figure 31: Disciplines Addressed by Projects
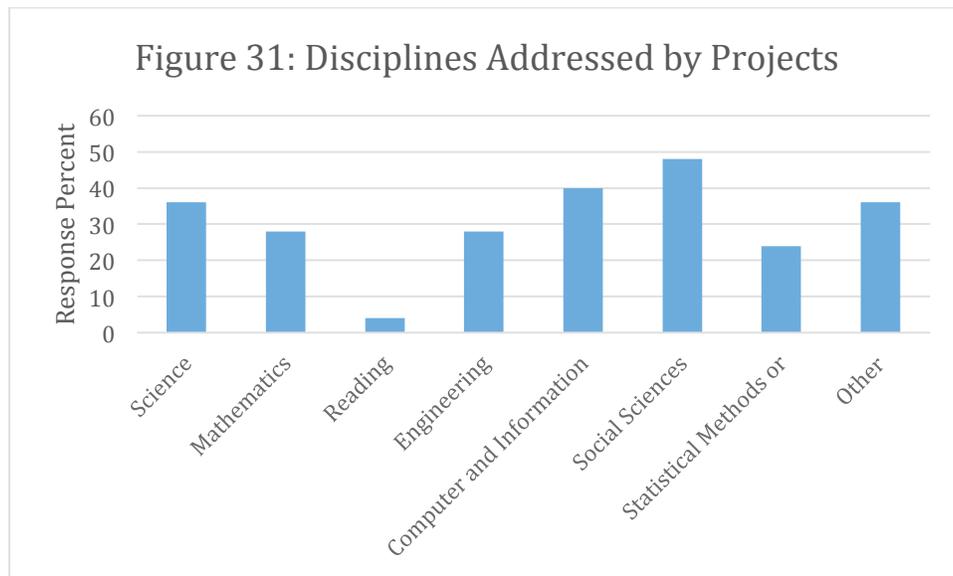
- Social science was the most often chosen (48%). Computer and information science was chosen second most often (40%).
- Reading was the least often chosen (4%).

TARGETED DEMOGRAPHICS OF PROJECTS

Projects were asked several questions regarding participant demographics including the age, educational level and number of participants served by their work (see Figures 32-35).
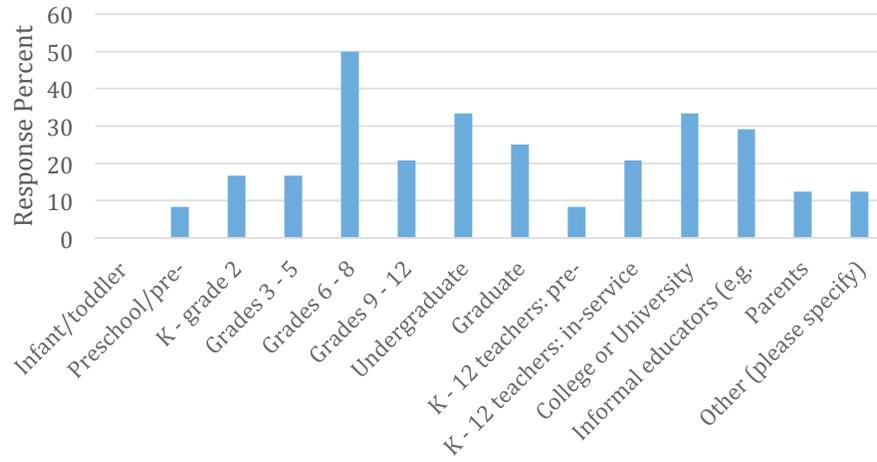
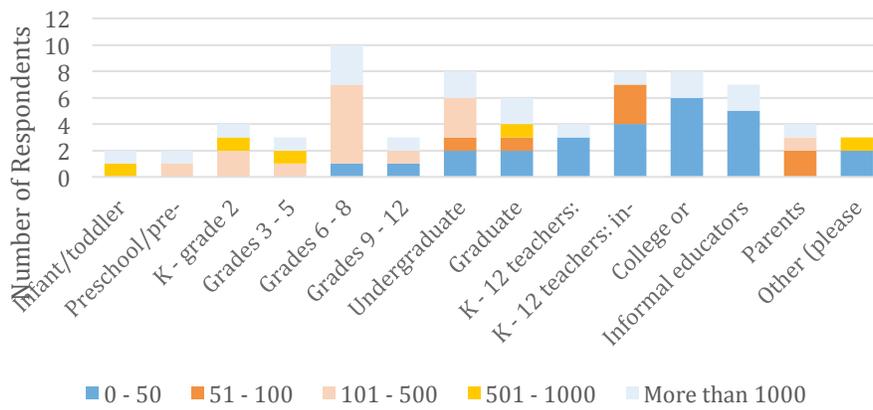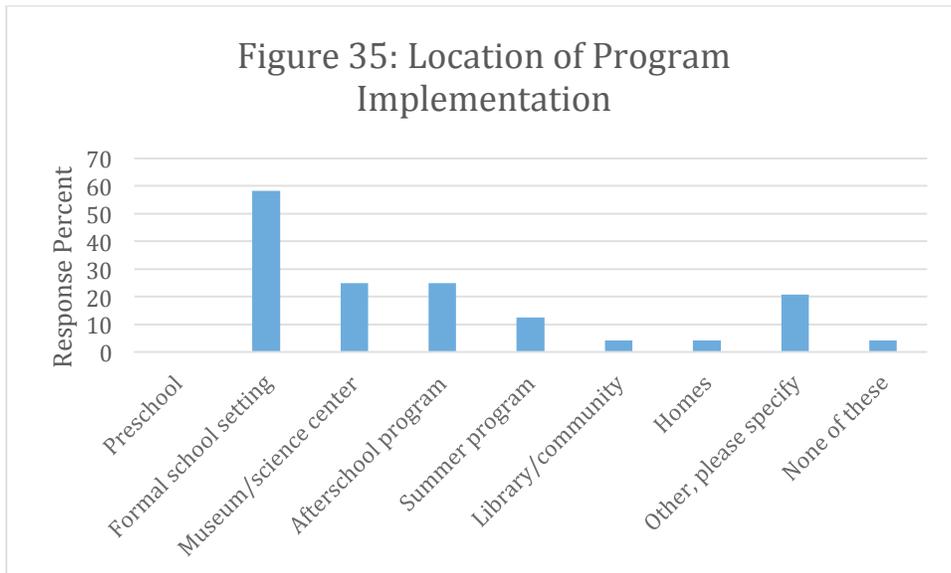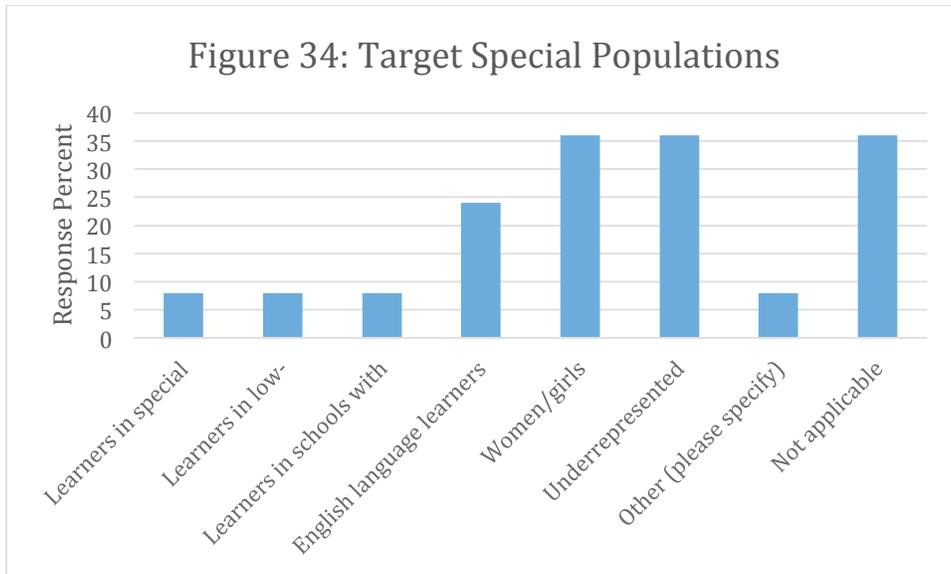Figure 32: Targeted Community Populations

Figure 33: Number of Participants Served for Each Targeted Population

Figure 34: Target Special Populations

Response Percent (y-axis: 0 to 40)

Categories (x-axis):
- Learners in special
- Learners in low-
- Learners in schools with
- English language learners
- Women/girls
- Underrepresented
- Other (please specify)
- Not applicable

Figure 35: Location of Program Implementation

Response Percent (y-axis: 0 to 70)

Categories (x-axis):
- Preschool
- Formal school setting
- Museum/science center
- Afterschool program
- Summer program
- Library/community
- Homes
- Other, please specify
- None of these

- Project designs most often targeted students in grades 6-8 (50%). The second most targeted groups were undergraduate and college or university faculty or instructors (33%).
- No projects addressed infants or toddlers.
- Projects were most likely to target underrepresented minorities or women/girls (36%). 36% of participants indicated that they did not target special populations with their design (indicated N/A for question).
- Project implementation was most in a formal school setting (58%).
- No projects were implemented at pre-schools.

The National Science Foundation (NSF) and the Institute of Education Sciences (IES) of the U.S. Department of Education jointly created the Common Guidelines for Education Research and Development which classifies projects in six categories. Projects were asked to choose the category or categories that best classify their work (see Figure 36). Projects often spanned multiple categories.
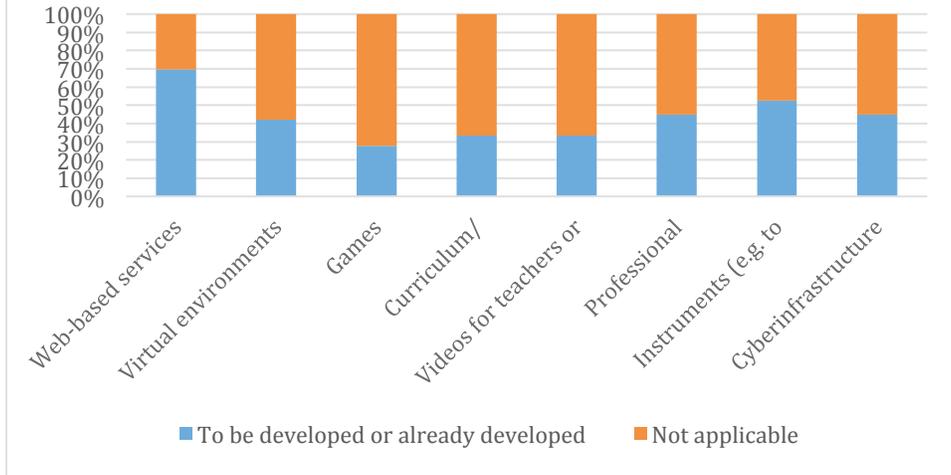
Figure 36: NSF Common Guidelines for Education Research and Development
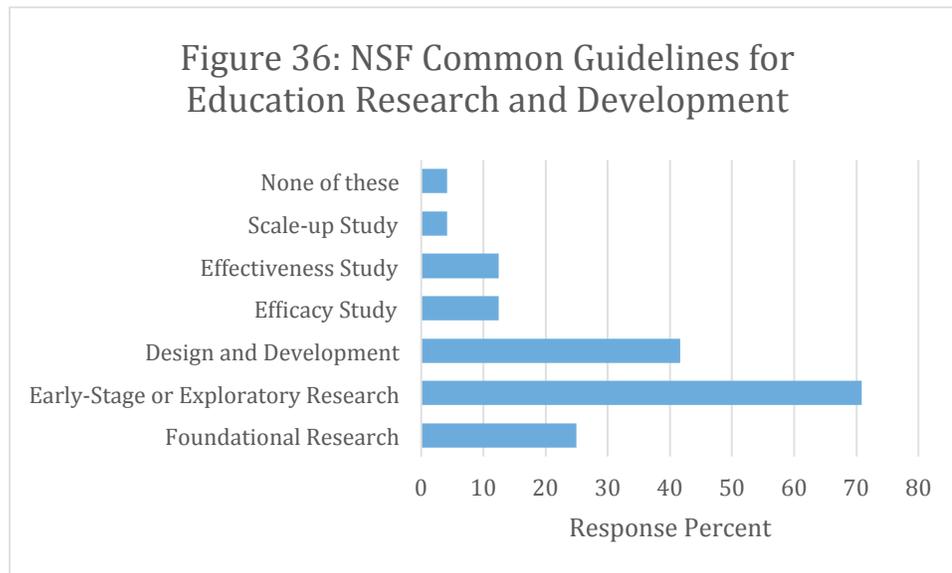
- A large majority of projects were early-stage/exploratory research (71%) and design-development (42%).

PRODUCT DEVELOPMENT

Projects were asked to choose the types of products that have resulted from their work in 8 different categories (see Figure 37).

Figure 37: Product Development

- At least 71 products were going to be developed or had already been developed.
- The most commonly developed product type was web-based services or online applications (16 respondents). Of the respondents, 70% planned to or had already developed this type of product.