STEMLINK AFTERSCHOOL GRANT PROGRAM EVALUATION: FOR GRANTEES

Year Three: 2016-17

THE UNIVERSITY OF UTAH

UTAH EDUCATION POLICY CENTER

Bridging Research, Policy, & Practice

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EXECUTIVE SUMMARY

Year 3 (2016-17) STEMLink Grant Program Evaluation

In 2014, the STEMLink grant program was established by the Department of Workforce Services Office of Child Care (DWS OCC) and was funded by Temporary Assistance for Needy Families (TANF). Collaborators included the STEM Action Center, Utah Afterschool Network (UAN), and the Utah State Board of Education (USBE). Through a competitive process, grants were awarded to out-of-school-time programs that provided science, technology, engineering, and math (STEM) activities. The purpose of the grant was to increase students' STEM interest, STEM skills and awareness, and interest in STEM education and career opportunities. Grantees were expected to provide programing for at least eight hours per week for middle, junior high, and/or high school youth. The STEMLink grant specified that programs would serve economically disadvantaged youth and that at least 70% of programming would be STEM related.

The DWS OCC contracted with the Utah Education Policy Center (UEPC) to conduct an external evaluation of the STEMLink afterschool grant program. This executive summary provides answers to ten evaluation questions. Four questions address program implementation and six questions address program outcomes. Data sources used to answer the evaluation questions include a staff survey, student survey, program participation data, and student education data.[1]

Who did the STEMLink Afterschool Programs Serve?

Ten of thirteen STEMLink grantees submitted program participation data, which included records for 1,987 student participants. Forty-three percent of matched STEMLink participants were female and forty-five percent were students of color.

Demographic Group	STEMLink Participants		Statewide	
	Students	%	Students	%
American Indian or Alaskan Native	18	2%	7,465	1%
Asian	87	8%	11,472	2%
Black or African-American	147	13%	9,778	1%
Latino/Hispanic	201	17%	112,695	2%
Multi-racial/ethnic	30	3%	16,282	17%
Native Hawaiian or Pacific Islander	20	2%	10,524	2%
White	646	56%	495,354	75%
State Student Classification	**Students**	**%**	**Students**	**%**
Mobile Students	185	16%	100,547	15%
Low Income Students	636	55%	248,831	37%
Special Education Students	139	12%	87,328	13%
English Language Learners	220	19%	45,333	7%

Sources: 2016-17 STEMLink Participation Data and Student Education Data
Note: Statewide numbers in this table show minor differences than those published by the USBE due to varied procedures for cleaning data.

[1] This report uses data made available through a data sharing agreement between the USBE and the UEPC. The views expressed are those of the authors and are not necessarily the USBE's or endorsed by the USBE.

To what extent were staff members prepared to implement STEM-related afterschool programs?

Reports of staff preparation were mixed. In most cases, staff who received PD reported that they found it useful, 71% reported that they received about the right amount or too much PD, and 98% reported that they implemented practices they learned from their afterschool program's PD offerings. However, 30% had unanswered questions about their jobs and among those who received PD, 29% reported that they did not receive enough professional development. For every PD topic identified on the staff survey, about one-third of staff members reported that PD was applicable to their roles, but they did not receive it. The greatest needs for staff preparation were for working with specific groups of students. Overall, 19% of staff members indicated that they did not receive training or professional development. Regardless of specific preparation of staff members, 97% of staff reported that they found their work rewarding, 95% reported that they received support from their supervisor(s), and 95% reported that they enjoyed working in their programs.

Staff Preparation	Areas of Success	Opportunities for Improvement
Staff Experience & Education	• 45% of staff members reported that they had 3 or more years of experience working for a program that serves youth. • 50% of staff members reported that they held a bachelor's degree or higher.	• 42% of staff members reported that they worked or volunteered for the program for less than one year.
Participation in Professional Development	• 81% of staff members reported that they received PD. • Staff members reported that they received an average of 16 hours of PD.	• Of the 19% of staff members who reported that they did not receive PD, 44% worked more than 10 hours a week. • 65% of the staff members who reported that they did not receive PD were program staff.
Professional Development on STEM Topics	• On average, 48% of staff members reported that they received useful STEM-related PD. • 54% of staff reported they received useful PD to help students learn STEM skills.	• On average, 29% of staff members reported that STEM-related PD was applicable for their roles, but they did not receive it. • 11% of staff reported that PD about helping students to think critically and get excited about STEM was not useful.
Professional Development on Academic Support	• Over 50% of staff reported receiving useful PD in helping students learn good work habits or study skills. • Almost 40% of staff reported receiving useful PD on academic tutoring and helping students develop science skills.	• On average, 35% of staff reported PD in academic support activities was applicable for their roles, but that they did not receive PD on this topic. • 25% of staff reported that they received PD in helping students develop math skills, but 40% reported that they didn't receive PD even though they felt it was applicable to their roles.
Professional Development on Afterschool Activities	• Over 50% of staff reported that they received useful PD in most activities. • 80% of staff reported that they received useful PD for engaging students in activities. • Over 70% of staff reported that they received useful PD in developing positive relationships.	• On average, 45% of staff reported that working with student who have disabilities, working with English language learners, and/or working with students from low income families was applicable to their roles, but that they did not receive PD in these topics. • 33% of staff reported that working with diverse students was applicable to their roles, but that they did not receive PD on this topic.
Professional Development on Youth Development Topics	• 69% of staff reported that they received useful PD in mentoring students. • 65% of staff reported that they received useful PD in developing leadership skills. • 53% of staff reported that they received useful PD in positive interpersonal relationships.	• On average, 35% of staff reported that PD about prevention activities was applicable for their roles, but that they did not receive PD on this topic. • On average, 31% of staff reported that they received useful PD about prevention topics.

Staff Preparation	Areas of Success	Opportunities for Improvement
Professional Development on Family Engagement	• On average, 40% of staff reported that they received useful PD on family engagement.	• On average, 35% of staff reported that PD about family engagement was applicable for their roles, but that they did not receive PD on this topic.
Professional Development on Working with School Personnel	• On average, 37% of staff reported that they received useful PD related to working with school day personnel. • 98% of staff reported that they implemented practices learned from the afterschool program's PD offerings.	• On average, 36% of staff reported that PD related to working with school day personnel was applicable to their roles, but that they did not receive PD. • 21% of staff reported that they had unanswered questions about their jobs.
Amount of Professional Development	• 71% of staff members reported that they received about the right amount or too much PD.	• 29% of staff members reported that they did not receive enough PD.
Barriers and Supports	• 97% of staff reported that they found their rewarding. • 95% of staff reported that they got the support they needed from their supervisors. • Over 85% of staff reported positive experiences about working in the afterschool program.	• 34% of staff reported that they had trouble communicating with students who did not speak English. • 30% of staff reported that they had unanswered questions about their jobs. • 22% of staff reported limited resources were a barrier to achieving program goals.

To what extent did staff members provide quality afterschool programming?

The staff survey included questions about alignment with the school day, positive relationship development, and positive program experiences as indicators of program quality. Reports of aligning afterschool experiences with school day experiences were mixed. Most staff members reported that their programs used data to make programming decisions and based program choices on student needs, but more than a third of staff members reported they did not adjust their afterschool teaching based on data about student learning. Most staff members reported that they collaborated with school day personnel, but one-third indicated that they were not working with teachers to coordinate school day and afterschool lessons. Most students reported that they had positive relationships with staff members and peers in their STEMLink programs. Almost all students reported that they were having positive experiences. We suggest that program providers maximize the use of evidence to make programmatic decisions, work closely with school day personnel, and continue to foster positive and supportive relationships within their programs.

Aspects of Program Quality	Areas of Success	Opportunities for Improvement
Program Planning and Alignment	• 87% of staff reported that their programs developed learning activities based on students' needs. • 76% of staff reported that their programs used data to make decisions about their activities. • 83% of staff reported the programs were aligning afterschool programming with school day expectations about behavior. • 80% of staff reported that they were collaborating with school day personnel.	• 34% of staff reported they disagree or strongly disagree that they work with classroom teachers to coordinate school day and afterschool lessons.

Aspects of Program Quality	Areas of Success	Opportunities for Improvement
Interactions with School Day Personnel	• 66% of staff reported that they communicated directly with school day personnel. • More than 45% of staff reported that they talked about student behavior, student disciplinary issues, and students' academic achievement with school day personnel often or every time they met.	• 41% of staff reported they did not adjust their afterschool teaching based on data about student learning.
Positive Relationship Development	• 90% of students reported that adults in the program went out of their way to help kids and that adults listened to them. • 89% of students reported that they had friends they could trust in their programs. • 88% of students reported that they could trust the adults and that they looked up to the adults in the program.	• 15% of students disagreed or strongly disagreed that there were adults in the program that they could talk to about their problems. • 16% of students disagreed or strongly disagreed that they knew other kids in the program well.
Positive Program Experiences	• 97% of students reported that they liked the activities their programs provided. • 96% of students reported that they had fun in their programs. • 94% of students reported that they were included in activities.	• 17% of students disagreed or strongly disagreed that they could choose what they wanted to do in their programs.

To what extent did STEMLink programs provide STEM-related learning opportunities for participants?

Based on the program participation data submitted to the UEPC, STEMLink programs collectively provided science interventions for 1,361 (68%) participants, technology interventions for 1,428 (72%) participants, engineering interventions for 1,178 (59%) participants, and math interventions for 1,433 (72%) participants. More than half (60%) of the students attended STEMLink programs for fewer than 30 days. In addition to program reports of participation, staff members reported that they provided science lessons often or very often. About one-quarter of staff members reported that they did not provide science lessons, STEM-related resources, or resources about STEM-related post-secondary education opportunities. The most common STEM-related opportunities that staff provided were opportunities to participate in STEM-related lessons or activities. Based on these results, we recommend the program providers promote student attendance and maximize exposure to academic interventions.

STEM-related Learning	Areas of Success	Opportunities for Improvement
Frequency of STEM and Academic Opportunities	• 70% of staff reported that they provided STEM-related lessons or activities often or very often. • 67% of staff reported that they provided academic tutoring or homework help.	• 27% of staff reported that they never provided resources about STEM-related post-secondary education opportunities. • 26% of staff reported that they never provided STEM-related resources such as podcasts, magazines, tv shows, books, or websites. • 24% of staff reported that they did not provide science lessons.
Program Attendance	• STEMLink afterschool programs reported serving 1,987 students.	• 60% of STEMLink participants attend programs for less than 30 days.

STEM-related Learning	Areas of Success	Opportunities for Improvement
Participation in Science Interventions	• STEMLink programs reported that 68% (1,361) of their students participated in science interventions at least once.	• STEMLink programs reported that 32% (626) of their participants received no science interventions.
Participation in Technology Interventions	• STEMLink programs reported that 72% (1,428) of their students participated in technology interventions at least once.	• STEMLink programs reported that 28% (559) of their participants received no technology interventions.
Participation in Engineering Interventions	• STEMLink programs reported that 59% (1,178) of their students participated in engineering interventions at least once.	• STEMLink programs reported that 41% (809) of their participants received no engineering interventions.
Participation in Math Interventions	• STEMLink programs reported that 72% (1,433) of their students participated in math interventions at least once.	• STEMLink programs reported that 28% (554) of their participants received no math interventions.

To what extent did STEMLink programs provide prevention education learning opportunities for participants?

STEMLink programs collectively reported that 1,735 (89%) students participated in enrichment activities at least once. Two-thirds of staff members reported that they provided opportunities to develop leadership skills and help students develop positive interpersonal relationships often or very often, but overall staff reported that they provided prevention-related activities infrequently. We recommend that program providers offer a balance of academic and developmental supports and that every student participate in prevention education activities.

Enrichment Opportunities	Areas of Success	Opportunities for Improvement
Prevention Activities Offered and Participation	• 33% of staff reported that they provided youth violence and gang prevention often or very often. • On average, 24% of staff reported that they provided prevention-related activities at least occasionally. • STEMLink programs reported that 89% (1,735) of their students participated in prevention interventions at least once.	• Overall, staff reported that they provided prevention-related activities infrequently. • STEMLink programs reported that 11% (213) of their participants received no prevention interventions.
Enrichment Opportunities Offered	• 66% of staff reported that they provided opportunities to develop leadership skills often or very often. • 63% of staff reported that they provided opportunities to help students develop positive interpersonal relationships often or very often.	• 49% of staff reported that they provided no financial literacy enrichment opportunities. • 40% of staff reported that they provided no nutrition education opportunities.

To what extent did students' interest in STEM change?
To what extent did students' STEM skills change?
To what extent did students' awareness of and interest in STEM-related post-secondary opportunities and career information change?

On average, students reported increased interest in science, technology, and engineering; increased perseverance and critical thinking; increased interest in STEM-related postsecondary or career opportunities; and increased awareness of STEM careers. However, students had greater interest in STEM opportunities than they had awareness. Participants reported increased frequency of doing STEM-related activities. We recommend that programs continue to provide STEM-related opportunities, activities, and resources that promote interest in STEM subjects and continue to promote interest in STEM-related post-secondary and career opportunities, while increasing efforts to make students aware of possibilities and paths for pursuing future careers in STEM.

STEM Outcomes	Areas of Success	Opportunities for Improvement
STEM Interest	• Over 70% of students reported that they were more interested in technology and engineering as a result of participating in STEMLink programs. • Students reported greater interest in science, engineering, and technology after participating in the program. • Students reported increased frequencies of engaging in STEM activities such as reading STEM-related magazines or newspapers articles and visiting websites about STEM topics.	• 44% of students strongly disagreed or disagreed that they were more interested in math as a result of participating in the program. • There was no statistical difference in mean scores for math interest between the retrospective pretest and posttest.
STEM Skills	• Mean scores for perseverance and critical thinking were higher from the retrospective pretest to posttest.	• The mean score of perseverance was slightly lower than critical thinking.
Awareness and Interest	• Students reported increased interest in STEM-related postsecondary or career opportunities and increased awareness of STEM careers.	• Students had greater interest in STEM opportunities than they had awareness.

To what extent did students perceive change in social competencies, empathy and prosocial behaviors, academic behaviors, and work habits?

On average, students perceived significant, positive increases in their work habits, social competency, academic behaviors, and empathy and prosocial behaviors. We recommend that programs continue to offer programming that promotes positive afterschool outcomes and to ensure that program practices align with the specific afterschool outcomes they hope to achieve.

	Areas of Success	Opportunities for Improvement
Afterschool Outcomes	• Empathy and prosocial behavior had the highest mean score for all afterschool outcomes.	• Work habits had the lowest mean score for all afterschool outcomes.

What were the science, math, and English language arts proficiency rates of STEMLink participants?
What were the chronic absence rates of STEMLink participants?

STEMLink student proficiency rates in science, math, and English language arts were lower than statewide averages, indicating the programs were serving students who could benefit from additional academic supports. Chronic absence rates for STEMLink students were similar to the state average for seventh and eleventh graders, but were higher than the state average for eighth and ninth graders. Providing ongoing, effective academic support and interventions will require program providers to work with school day staff, review student performance, and identify specific areas for targeted instruction.

Academic Outcomes	Areas of Success	Opportunities for Improvement
Science, Math, and English Language Arts	• STEMLink programs were serving students who would benefit from additional academic support.	• STEMLink student proficiency rates in science, math, and English language arts were lower than the statewide averages
Chronic Absence	• Rates of chronic absence for STEMLink students were similar to the state average for seventh and eleventh graders.	• Rates of chronic absence for STEMLink students were higher to the state average for eighth and ninth graders.

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INTRODUCTION

In 2014, the STEMLink grant program was established by the Department of Workforce Services Office of Child Care (DWS OCC) and was funded by Temporary Assistance for Needy Families (TANF). Collaborators included the STEM Action Center, Utah Afterschool Network (UAN), and the Utah State Board of Education (USBE). Competitive grants were awarded to out-of-school-time (afterschool and summer) programs that provided science, technology, engineering, and math (STEM) activities. The purpose of the grant was to increase students' STEM interest, STEM skills, and awareness and interest in STEM education and career opportunities.

Thirteen out-of-school-time programs received three years of funding. Two of the organizations, Granite School District and Utah Valley University, operated summer only programs. The 2016-17 school year marked the third and final year of the STEMLink grant program.

Table 1. STEMLink Grantees

STEMLink Grantees	Number of Programs
City Academy	1
Promise South Salt Lake	6
Grand County School District (Beacon)	1
Granite School District: Granite Technical Institute*	1
Jordan School District	3
Salt Lake City Corporation	2
Salt Lake County Youth Services	3
Spy Hop Productions	1
Thanksgiving Point	1
University of Utah (CSME)	3
Utah State University	6
Utah Valley University*	1
YMCA of Northern Utah	4

*Summer only program

The DWC OCC administered STEMLink funds and outlined minimum requirements for the grant. Funders expected grantees to provide programing for at least eight hours per week for middle, junior high, and/or high school youth. The STEMLink grant specified that programs would serve economically disadvantaged youth and that at least 70% of programming would be STEM related. For additional information about the STEMLink grant program, readers are encouraged to review STEMLink evaluation reports from Years 1 and 2. These are available on the Utah Education Policy Center website (uepc.utah.edu).

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HOW TO USE THIS REPORT

This third annual STEMLink evaluation report addresses program implementation and outcomes from academic year 2016-17. The methods section presents evaluation questions, data sources, data analyses, descriptions of survey respondents, participant information, and data match rates. The results are organized by evaluation questions, and for each question, we provide a summary of key findings before presenting the results. Throughout the results section are tables and figures. In some cases we provide additional explanation for a particular table or figure, but in most cases, we focus narrowly on highlighting key areas of success and opportunities for improvement. The portion of results dealing with professional development has a unique scale and we explain how to utilize the scale to maximize the value of the results.

Following the results is a summary of findings and considerations for program improvement. We encourage readers to consider these findings in light of their own program's context and unique offerings. Some findings may be critical to some programs, while less relevant to others. Several appendices provide additional detail to the results. Appendices include qualitative data findings, additional student survey data analysis, and student proficiency and chronic absence tables. This is the final annual evaluation report for the three-year grant cycle.

Call-Out Boxes Used in This Report

Area of Success
A call-out box with a checkmark identifies an area of success.

Opportunity for Improvement
A call-out box with a magnifying glass calls attention to findings that may represent opportunities for improvement.

Items of Interest

- We use this icon to bring attention to findings that are of interest but may not be clearly identified as an area of success or an opportunity for improvement.

EVALUATION METHODS

The evaluation focuses on program implementation, afterschool outcomes, STEM-related outcomes, and other academic outcomes. The following questions guided the evaluation.

Implementation Questions

1. To what extent were staff members prepared to implement STEM-related afterschool programs?
2. To what extent did staff members provide quality afterschool programming?
3. To what extent did STEMLink programs provide STEM-related learning opportunities for participants?
4. To what extent did the STEMLink programs provide prevention education learning opportunities for participants?

Outcome Questions

5. To what extent did students' interest in STEM change?
6. To what extent did students' STEM skills (critical thinking and perseverance) change?
7. To what extent did students' awareness of and interest in STEM-related post-secondary opportunities and career information change?
8. To what extent did students perceive change in social competencies, empathy and prosocial behaviors, academic behaviors, and work habits?
9. What were the math, science, and English language arts proficiency rates of STEMLink participants?
10. What were the chronic absence rates of STEMLink participants?

Data Sources

Data sources used to answer these questions included staff surveys, student surveys, program participation records, and student education data.

STEMLink Staff Survey

The UEPC evaluation team administered staff surveys in the fall (October) and spring (April - May) of the 2016-17 academic year. The fall staff survey gathered information about staff needs for professional development. The UEPC shared results from the fall staff survey with STEMLink program administrators in December 2016.

The spring staff survey collected information about staff members' education and experience, professional development, program implementation, and barriers and supports. The UEPC shared results from the spring staff survey with STEMLink program administrators in July 2017. We present findings from the spring staff survey in the results section of this report. Additional information about the development of the staff survey is available in the year one evaluation report.

STEMLink Student Survey

The STEMLink student survey was administered by the UEPC evaluation team as a single retrospective pretest and posttest in April and May 2017. The purpose of the student survey was to assess STEM-related outcomes and common afterschool outcomes. The UEPC sent a survey link to program administrators and asked them to administer the survey to students. Additional details about the student survey are available in the year one and two evaluation reports.

Retrospective Student Survey

The student survey included both posttest and retrospective pretest items. Students responded to the same questions in the retrospective pretest as those in the posttest, but were asked to remember their interest in STEM before they started the program. For example, one retrospective item read, "Before I participated in this program I was interested in learning about science." A summary of retrospective pretest and posttest analysis is available in Appendix C.

STEMLink Program Participation Data

Grantees provided participation records via an online submission process in June 2017. The participation data included total days of program attendance, days of possible attendance, days of science intervention, days of technology interventions, days of engineering interventions, days of math interventions, and number of prevention activities. The purpose of collecting

participation data was to document program participation in key interventions and to look for relationships between program participation and academic outcomes.

Student Education Data

Student education data included demographics, Student Assessment of Growth and Excellence (SAGE) proficiency rates, and school attendance. This report uses student education data from 2016-17. Education data were provided by the USBE in accordance with a data sharing agreement.[2]

Data Analysis

Staff and student surveys included multiple choice and open-ended questions. The UEPC used descriptive statistics to analyze multiple choice survey questions. We used paired sample t tests to compare the difference in means between retrospective and posttest scores from the student survey. Open-ended responses were analyzed by identifying common themes and the frequencies.

Program participation data required extensive preparation and cleaning. Evaluators asked some grantees to make corrections to the original data submitted. We treated cases in which students were missing data for particular interventions as if they had received no interventions. The UEPC evaluation team used these data to calculate program attendance rates and average numbers of interventions. Participation data was matched with student education data to describe student demographics, report chronic absence rates, and understand academic outcomes for STEMLink participants.

[2] This report uses data made available through a data sharing agreement between the USBE and the UEPC. The views expressed are those of the authors and are not necessarily the USBE's or endorsed by the USBE.

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Staff Survey Respondents

Table 2. Staff Survey Responses

Grantee	Fall '16 Responses	Spring '17 Responses
Promise South Salt Lake	38	39
Utah State University	13	22
YMCA of Northern Utah	11	12
University of Utah (CSME)	17	10
Salt Lake County Youth Services	6	8
Jordan School District	17	7
Salt Lake City Corporation	8	7
City Academy	15	6
Grand County School District	8	6
Spy Hop Productions	5	5
Thanksgiving Point	2	4
Granite School District*	0	0
Utah Valley University*	0	0
Total	**140**	**126**

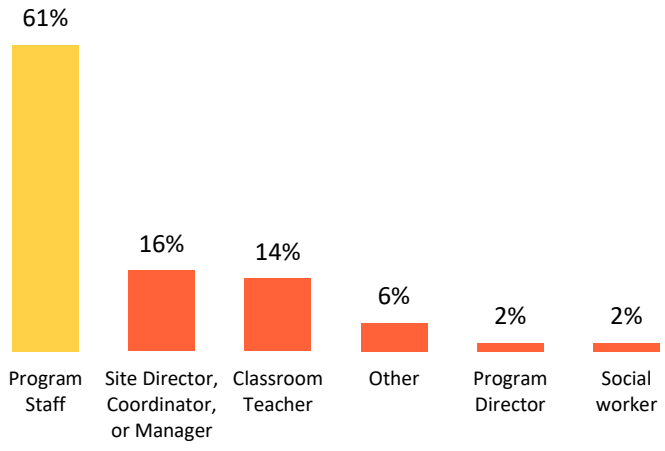
Sources: UEPC 2016-17 Fall and Spring STEMLink Staff Survey
*Summer program

Table 3. Staff Demographics

Demographic Group	% of Staff
African American	13%
American Indian or Alaska Native	1%
Asian	5%
Latina/o	12%
Multi-Racial	2%
White	68%

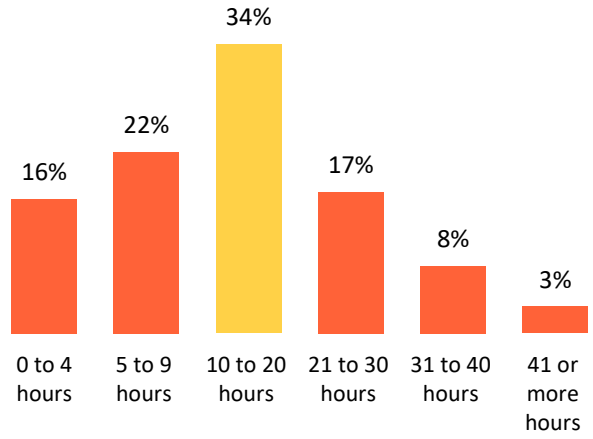
Source: UEPC 2016-17 Spring STEMLink Survey

Figure 1. Role in Program



Source: UEPC 2016-17 Spring STEMLink Staff Survey

Figure 2. Hours Worked Per Week



Source: UEPC 2016-17 Spring STEMLink Staff Survey

- Staff members' ages ranged from 16-63 years old, with an average age of 32 years old.
- 58% of staff members identified as female, 40% male, and 2% identified as another gender.

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Participant Information

Student Education Data Match Rates

- The UEPC matched program participation data with student education data. Ten grantees provided participation data for 1,987 students.
- Evaluators matched 1,157 STEMLink participants with state education data (Table 4).

Table 4. Student Participation Data and Education Data Match Rates

Grantee	STEMLink Participants	Matched	Match Rate
City Academy	190	118	62%
Promise South Salt Lake	454	272	60%
Grand County School District	74	70	95%
Jordan School District	295	263	89%
Salt Lake City Corporation	53	37	70%
Salt Lake County Youth Services	193	3	2%
Spy Hop Productions	123	77	63%
Thanksgiving Point Institute	39	20	51%
University of Utah (CSME)	79	33	42%
Utah State University	487	264	54%
Total	**1,987**	**1,157**	**58%**

Sources: STEMLink participation data and state education data

Demographics

- 45% of matched STEMLink participants were students of color.
- 43% were female.

Table 5. Student Participant Characteristics Compared to State Average

Demographic Group	STEMLink		State Average	
	Students	%	Students	%
African American	147	13%	9,778	1%
American Indian or Alaskan Native	18	2%	7,465	1%
Asian	87	8%	11,472	2%
Latino/Hispanic	201	17%	112,695	17%
Multi-racial/ethnic	30	3%	16,282	2%
Native Hawaiian or Pacific Islander	20	2%	10,524	2%
White	646	56%	495,354	75%
Participant Characteristics	**Students**	**%**	**Students**	**%**
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Low Income	636	55%	248,831	37%
Special Education	139	12%	87,328	13%
ELL	220	19%	45,333	7%

Sources: Participation data and state education data

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RESULTS

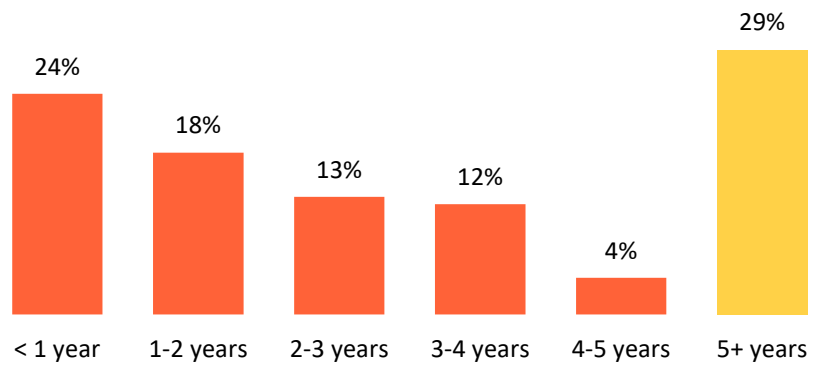
To what extent were staff members prepared to implement STEM-related afterschool programming?

Key Findings

- About half (45%) of staff members had professional experience working with youth, but 42% were in their first year working with their STEMLink programs.
- Most staff members had completed post-secondary degrees or were working to complete degrees.
- Not all staff members received professional development, but most staff members who received professional development reported that they found it useful.
- For every professional development topic identified on the staff survey, about one-third of staff members reported that it was applicable to their roles, but they did not receive it. This was true for key topics such as STEM-related professional development and providing academic support to students.
- About half (48%) of staff members reported that they received useful professional development about STEM-related topics and providing academic support to students.
- Most (64%) staff members reported that they received about the right amount of professional development, but 29% felt that they did not receive enough and 30% reported that they had unanswered questions about their jobs.
- Almost all staff members reported that they found their jobs rewarding and felt supported by their supervisors.

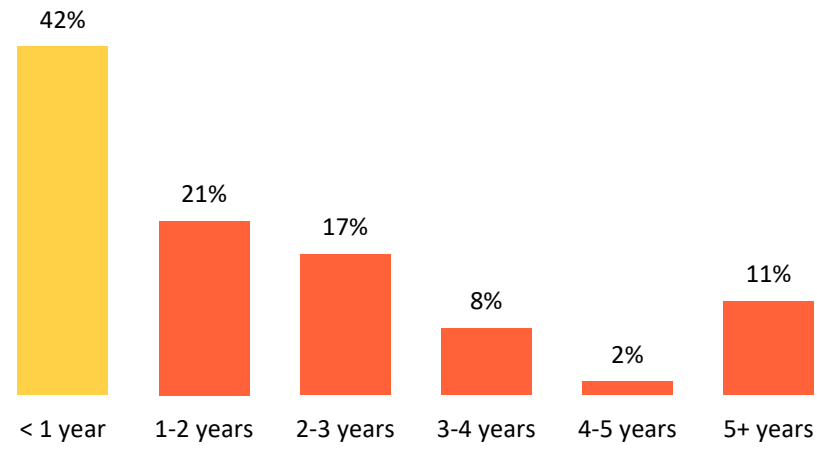
Staff Experience & Education

Figure 3. Number of Years Worked or Volunteered for Current Program



Source: UEPC 2016-17 Spring STEMLink Staff Survey

Figure 4. Staff Experience Working for a School or Program Serving Youth Ages 10-18

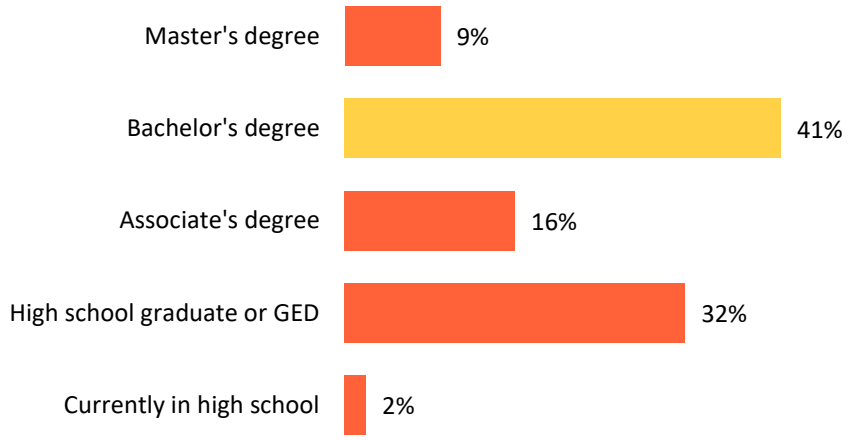


Source: UEPC 2016-17 Spring STEMLink Staff Survey

45% of staff reported that they had 3 or more years of experience working for a program that serves youth.

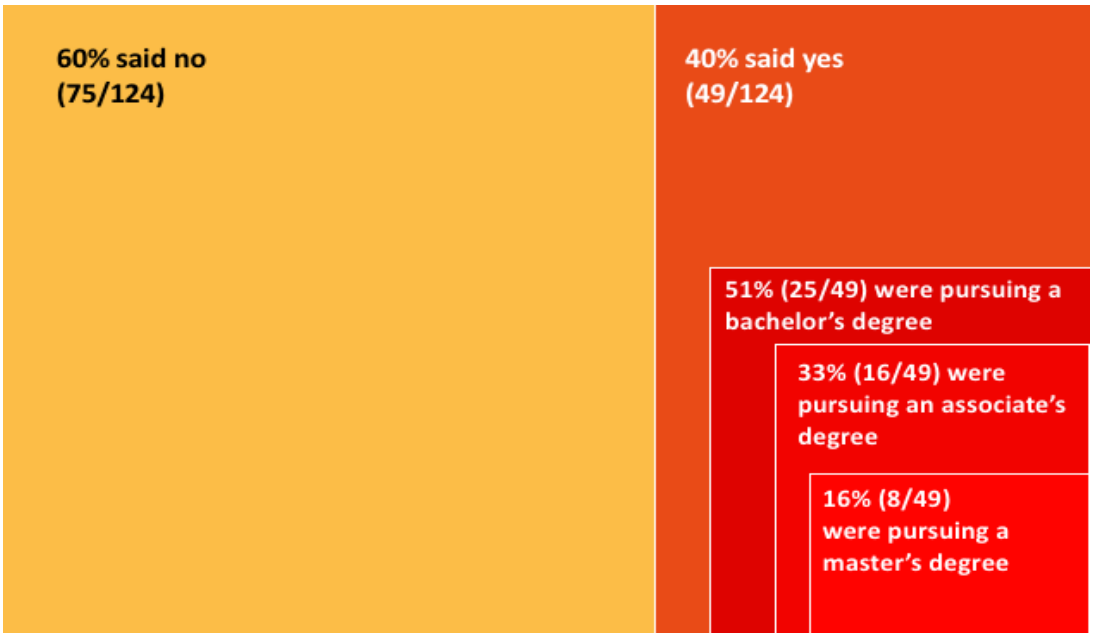
42% of staff reported that they worked or volunteered for their current program for less than one year.

Figure 5. Staff Highest Education Level Completed



Source: UEPC 2016-17 Spring STEMLink Staff Survey

Figure 6. Staff Enrolled in a Degree Program



Source: UEPC 2016-17 Spring STEMLink Staff Survey

- Figure 6 shows responses to a staff survey question that asked respondents if they were enrolled at a college or university to complete a degree. The 49 staff members who responded "yes" were then asked to identify the type of degree they were pursuing. The three red boxes within the "yes" box represent these responses.

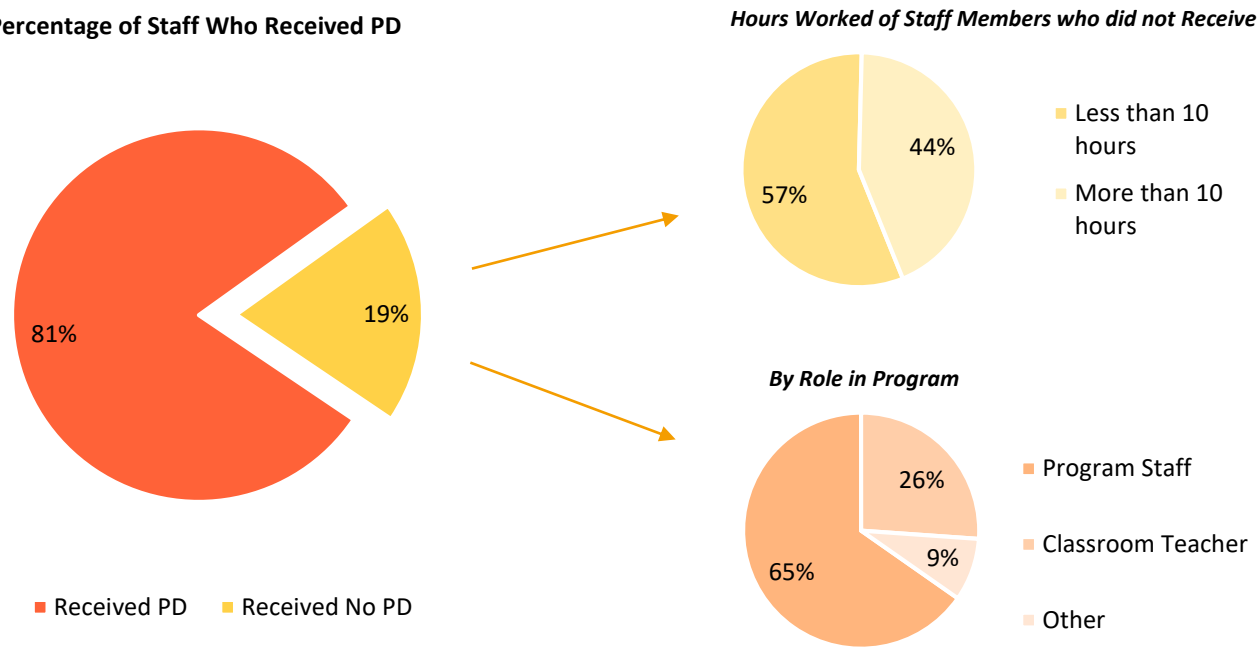
50% of staff reported that they held bachelor's degree or higher.

Professional Development

Eighty-one percent of staff members reported that they participated in useful training or professional development during the 2016-17 academic year. Among the 19% of staff members who did not receive training or PD (N=23), 57% reported that they worked less than 10 hours per week, 65% were program staff, and 26% were classroom teachers.

Participation in Professional Development

Figure 7. Percentage of Staff Who Received PD



Source: UEPC 2016-17 Spring STEMLink Staff Survey

Given the varied roles and responsibilities of staff members, one cannot assume that all staff members should receive PD in all areas. Some programs utilized staff and volunteers to work with students in specific areas. For instance, a classroom teacher might provide tutoring in English language arts and we would not expect that same teacher to receive PD in math and science. To account for this phenomenon, the staff survey asked respondents to indicate not only if they received useful PD, but also if PD was applicable to their roles in the program. For each professional development question in the staff survey, respondents indicated one of the following: they received useful professional development, they received PD but it was not useful, the question was applicable for their role but they did NOT receive PD, **or** the question was not applicable to their roles in the program.

In this section, you will see that in most cases staff who received PD found it useful. However, in many areas of professional development, roughly a quarter to a third of staff reported that they did not receive PD in areas that were applicable to their roles.

81% of staff reported that they received PD.

Staff reported that they received an average of **16 hours** of PD.

Of the **19%** of staff who reported that they did not receive PD, **44%** worked more than 10 hours a week.

65% of the staff who reported that they received no PD were program staff.

Table 6. Staff Professional Development on STEM-related Topics

	Received PD, but it was Not Useful	Not Applicable For My Role in this Program	Applicable for My Role, but I Did Not Receive PD	Received Useful PD
Helping students learn to persevere	9%	8%	27%	56%
Finding resources to plan STEM-related activities	6%	17%	22%	55%
Helping students learn STEM skills	4%	18%	24%	54%
Facilitating STEM-related lessons or activities	6%	16%	26%	52%
Helping students learn to think critically	11%	8%	30%	51%
Helping students get excited about STEM activities	11%	17%	25%	48%
Providing STEM-related resources such as magazines, TV shows, books, or websites	4%	20%	35%	41%
Providing information about STEM-related post-secondary education opportunities	4%	20%	36%	40%
Providing information about STEM-related post-secondary career opportunities	5%	19%	37%	39%

Source: UEPC 2016-17 Spring STEMLink Staff Survey

On average, 48% of staff reported that they received useful STEM-related PD.

54% of staff reported they received useful PD to help students learn STEM skills.

On average, 29% of staff reported that STEM-related PD was applicable for their roles, but that they did not receive it.

11% of staff reported that PD about helping students to think critically and get excited about STEM was not useful.

Table 7. Staff Professional Development on Academic Support

	Received PD, but it was Not Useful	Not Applicable For My Role in this Program	Applicable for My Role, but I Did Not Receive PD	Received Useful PD
Helping students learn good work habits or study skills	10%	10%	27%	54%
Academic tutoring or homework help	7%	22%	34%	38%
Helping students develop science skills	12%	22%	29%	37%
Providing targeted academic support for low performing students	10%	22%	35%	33%
Providing resources about post-secondary career opportunities for students	3%	26%	38%	33%
Providing resources about post-secondary education opportunities for students	7%	23%	39%	32%
Helping students develop math skills	8%	27%	40%	25%
Helping students develop English language arts skills	1%	42%	37%	20%

Source: UEPC 2016-17 Spring STEMLink Staff Survey

Over 50% of staff reported receiving useful PD in helping students learn good work habits or study skills.

Almost 40% of staff reported receiving useful PD on academic tutoring and helping students develop science skills.

On average, 35% of staff reported PD in academic support activities were applicable for their roles, but that they did not receive PD.

While **25%** of staff reported that they received useful PD in helping students develop math skills, **40%** reported that it was applicable to their role, but that they did not receive PD.

Table 8. Staff Professional Development Related to Afterschool Activities

	Received PD, but it was Not Useful	Not Applicable For My Role in this Program	Applicable for My Role, but I Did Not Receive PD	Received Useful PD
Engaging students in activities	2%	2%	16%	80%
Developing positive relationships with students	6%	1%	19%	74%
Encouraging positive relationships among students	3%	1%	22%	73%
Facilitating group-building activities	6%	7%	16%	72%
Designing enrichment activities	6%	13%	16%	66%
Working with diverse students	2%	3%	33%	62%
Working with students who exhibit problem behaviors	3%	6%	36%	55%
Understanding adolescent development	3%	8%	36%	52%
Working with students from low income families	2%	4%	42%	52%
Working with students who have disabilities	2%	22%	43%	33%
Working with English language learners	2%	18%	52%	28%

Source: UEPC 2016-17 Spring STEMLink Staff Survey

Over 50% of staff reported that they received useful PD in most activities.

80% of staff reported that they received useful PD for engaging students in activities.

Over 70% of staff reported that they received useful PD in developing positive relationships.

On average, 45% of staff reported that working with students who have disabilities, working with English language learners, and/or working with students from low income families was applicable to their roles, but that they did not receive PD in these three topics.

33% of staff reported that working with diverse students was applicable to their role, but that they did not receive PD.

Table 9. Staff Professional Development on Youth Development Topics

	Received PD, but it was Not Useful	Not Applicable For My Role in this Program	Applicable for My Role, but I Did Not Receive PD	Received Useful PD
Mentoring students	4%	8%	19%	69%
Leadership skills	5%	9%	22%	65%
Positive interpersonal relationships	6%	15%	26%	53%
Emotional intelligence and self-concept	7%	16%	32%	45%
Education and career readiness	5%	10%	42%	43%
Healthy relationship education	2%	21%	34%	43%
Youth violence and gang prevention	1%	26%	31%	41%
Physical activity	1%	34%	24%	40%
Suicide prevention	3%	29%	28%	39%
Civic engagement	3%	28%	35%	34%
Nutrition education	3%	38%	27%	32%
Addiction prevention	0%	34%	36%	30%
School drop-out prevention	1%	30%	44%	25%
Pregnancy and STI prevention	0%	43%	36%	21%
Helping with school transitions	2%	35%	47%	16%
Financial literacy	7%	39%	40%	14%

Source: UEPC 2016-17 Spring STEMLink Staff Survey

69% of staff reported that they received useful PD in mentoring students.

65% of staff reported that they received useful PD in developing leadership skills.

53% of staff reported that they received useful PD in positive interpersonal relationships.

On average, 35% of staff reported that PD about prevention activities was applicable for their role, but that they did not receive PD.

On average, 31% of staff reported that they received useful PD about prevention-related topics.

Table 10. Staff Professional Development on Family Engagement

	Received PD, but it was Not Useful	Not Applicable For My Role in this Program	Applicable for My Role, but I Did Not Receive PD	Received Useful PD
Engaging families in the afterschool program	4%	20%	30%	45%
Creating a welcoming environment for families	7%	20%	32%	41%
Developing positive relationships with families	6%	17%	36%	41%
Providing information and resources for families	6%	19%	38%	38%
Inviting family members to participate in the program	6%	21%	37%	36%

Source: UEPC 2016-17 Spring STEMLink Staff Survey

On average, 40% of staff reported that they received useful PD on family engagement.

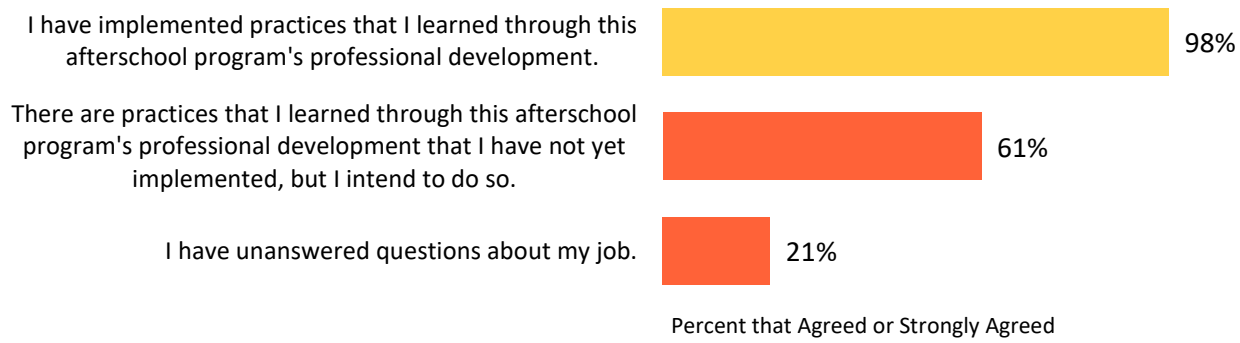
On average, 35% of staff reported that PD about family engagement was applicable for their role, but that they did not receive PD on these topics.

Table 11. Staff Professional Development Related to Working with School Day Personnel

	Received PD, but it was Not Useful	Not Applicable For My Role in this Program	Applicable for My Role, but I Did Not Receive PD	Received Useful PD
Aligning expectations about student behavior	0%	23%	34%	43%
Aligning afterschool and school day curriculum	1%	30%	32%	38%
Collaborating with school personnel	3%	20%	40%	36%
Coordinating school day and afterschool lessons	2%	31%	37%	30%

Source: UEPC 2016-17 Spring STEMLink Staff Survey

Figure 8. Application of Professional Development



Source: UEPC 2016-17 Spring STEMLink Staff Survey

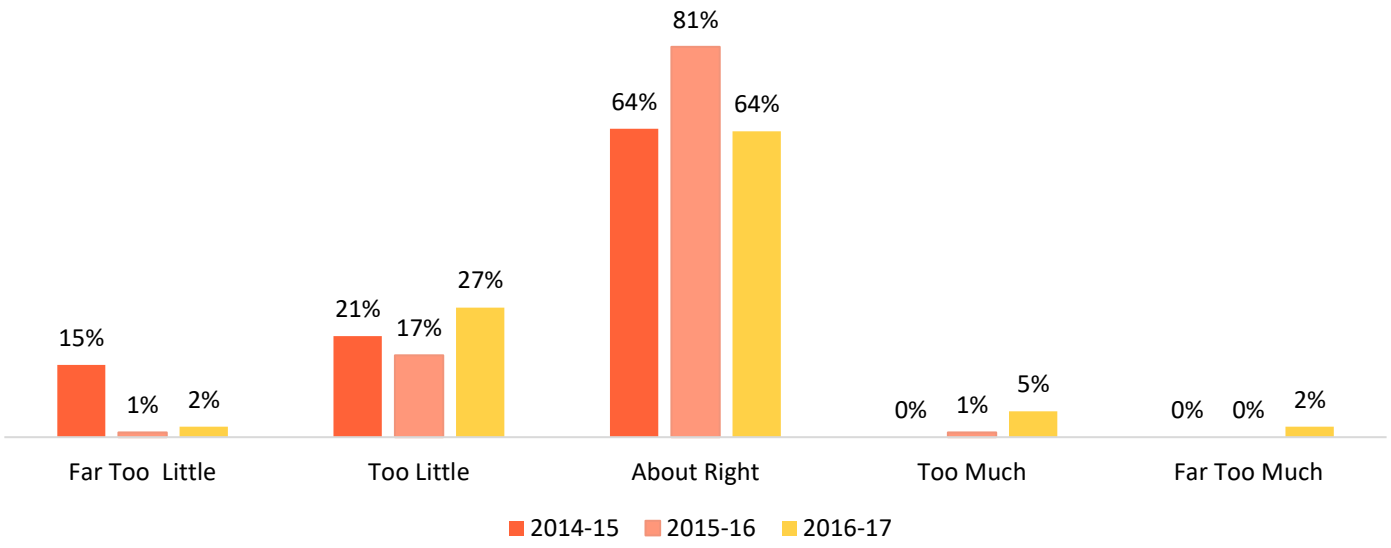
On average, 37% of staff reported that they received useful PD related to working with school day personnel.

98% of staff reported that they implemented practices learned from their afterschool program's PD offerings.

On average, 36% of staff reported that PD related to working with school day personnel was applicable to their role, but that they did not receive PD.

21% of staff reported that they had unanswered questions about their jobs.

Figure 9. Staff Attitudes about the Amount of Professional Development Received



Source: UEPC Spring STEMLink Staff Surveys from all three program years

Staff Reports of Possible Future Professional Development Opportunities

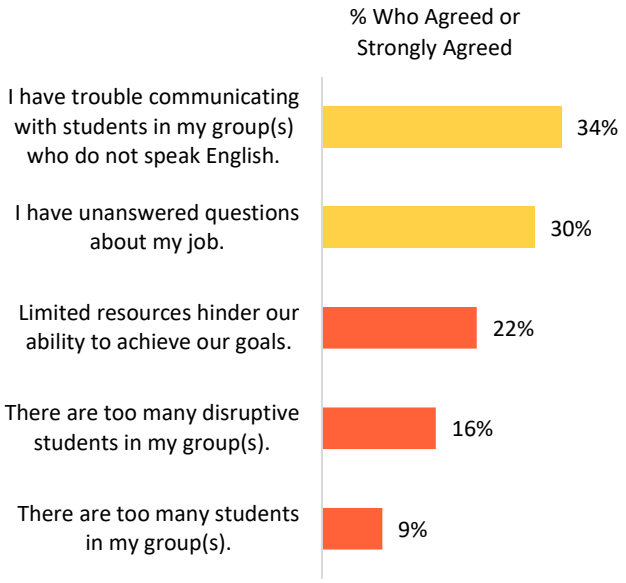
Staff members responded to an open-ended question that asked them to identify the topics they would like to learn more about in future professional development opportunities. Staff members expressed interest in learning more about engaging students in activities and working closely with students of diverse backgrounds or students with diverse needs. Another area of interest for additional PD was related to subject-specific PD, such as STEM-related, classroom management, teaching strategies, and more. Staff members also requested more professional development about involving families, improving behavioral and classroom management, engaging students, and specific STEM programming such as Legos or computer programming. A complete list of summarized responses is available in Appendix A.

71% of staff members reported that they received about the right amount or too much PD.

29% of staff members reported that they did not receive enough PD.

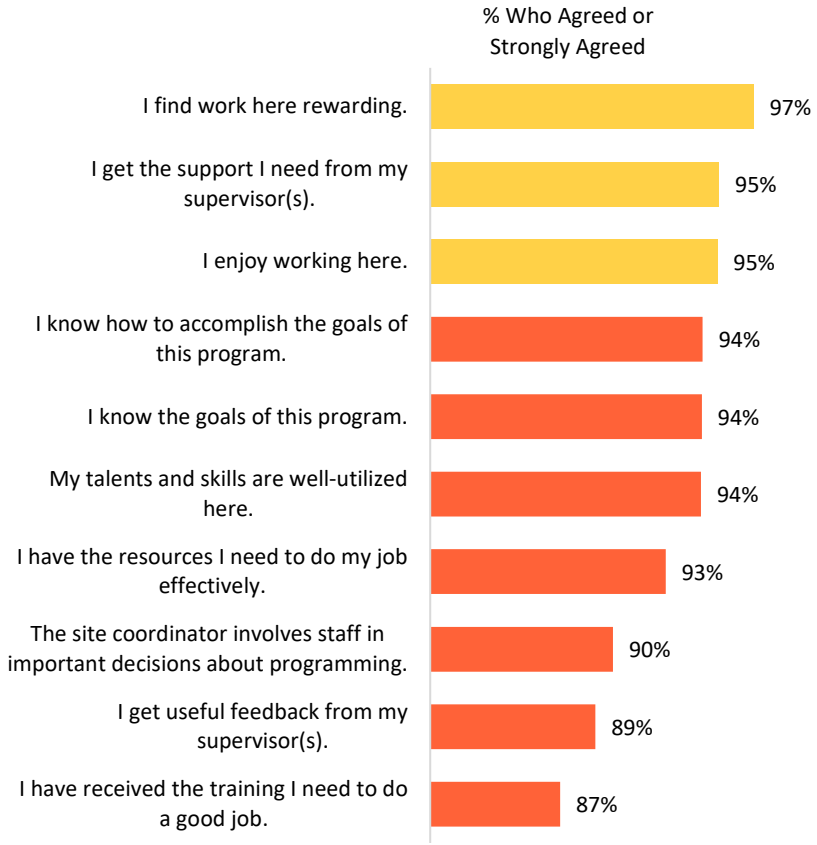
Barriers and Supports to Program Implementation

Figure 10. Staff Barriers to Program Implementation



Source: UEPC 2016-17 Spring STEMLink Staff Survey

Figure 11. Staff Perceptions of Supports and Job Satisfaction



Source: UEPC 2016-17 Spring STEMLink Staff Survey

Staff Reports of Additional Supports Needed for Program Implementation

In response to an open-ended question that asked staff to identify the additional supports they needed to be most effective, many stated that no additional supports were needed. However, some staff requested additional support for collaborating with community and family partners, planning curriculum, or increasing funding and access to resources. Staff members also expressed a need for better communication and collaboration amongst staff and more working hours. Appendix A includes a complete list of summarized responses.

97% of staff reported that they found their work rewarding.

95% of staff reported that they received the support they needed from their supervisors.

Over 85% of staff reported positive experiences about working in the afterschool program.

34% of staff reported that they had trouble communicating with students who did not speak English.

30% of staff reported that they had unanswered questions about their jobs.

22% of staff reported limited resources were a barrier to achieving program goals.

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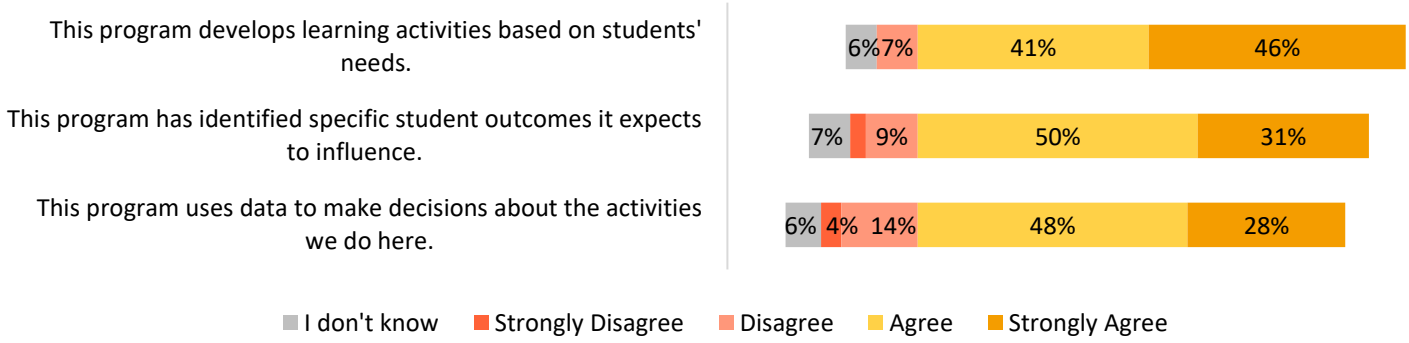
To what extent did staff members provide quality afterschool programming?

Key Findings

- Reports of aligning afterschool experiences with school day experiences were mixed.
- Most staff members reported that their programs used data to make programming decisions and based program choices on student needs, but more than a third (41%) reported that they did not adjust their afterschool teaching based on data about student learning.
- Most (80%) staff members reported that they collaborated with school day personnel, but one-third (34%) disagreed that they worked with teachers to coordinate school day and afterschool lessons.
- About two-thirds of staff members reported that they attended meetings with school day personnel and about half of those attendees reported that they discussed student behavior, student disciplinary issues, and students' academic achievement with school day personnel often or every time they met.
- Most students reported that they had positive relationships with staff members and peers in their STEMLink programs.
- Almost all students reported that they were having positive experiences in their STEMLink programs.

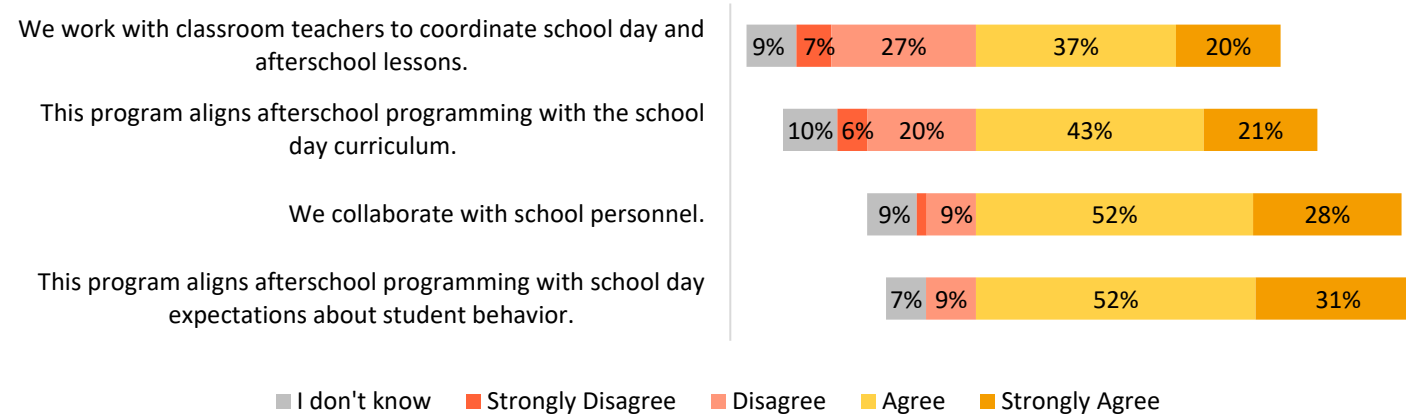
Alignment with the School Day

Figure 12. Goal Oriented and Data-driven Programming



Source: UEPC 2016-17 Spring STEMLink Staff Survey

Figure 13. Program Alignment with the School Day



Source: UEPC 2016-17 Spring STEMLink Staff Survey

87% of staff reported that their programs developed learning activities based on students' needs.

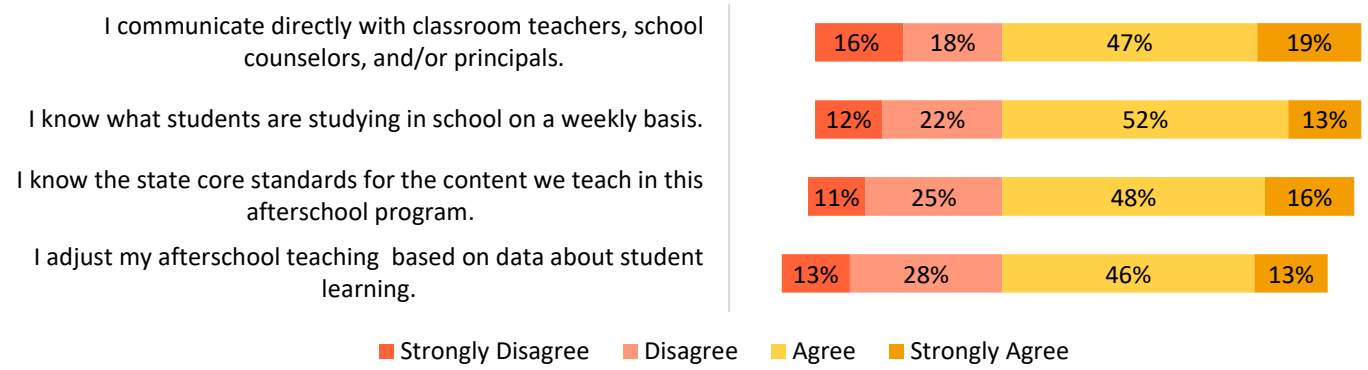
76% of staff reported that their programs used data to make decisions about their activities.

83% of staff reported the programs were aligning afterschool programming with school day expectations about behavior.

80% of staff reported that they were collaborating with school day personnel.

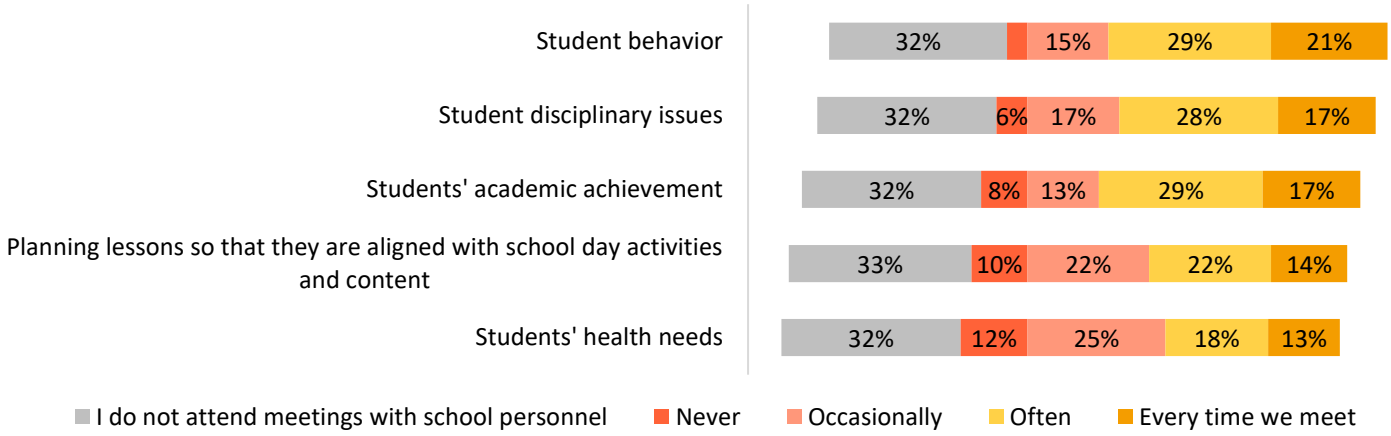
34% of staff reported they disagreed or strongly disagreed that they worked with classroom teachers to coordinate school day and afterschool lessons.

Figure 14. Staff Perceptions of Collaborations with School Day Personnel



Source: UEPC 2016-17 Spring STEMLink Staff Survey

Figure 15. Frequency of Topics Discussed in Meetings with School Day Personnel



Source: UEPC 2016-17 Spring STEMLink Staff Survey

- About one-third of staff reported that they did not attend meetings with school day personnel.
- 34% of staff reported that they did not know what students were studying in school on a weekly basis.

66% of staff reported that they communicated directly with school day personnel.

More than **45%** of staff reported that they talked about student behavior, student disciplinary issues, and students' academic achievement with school day personnel often or every time they met.

41% of staff reported they did not adjust their afterschool teaching based on data about student learning.

Staff Reports of Possible Improvements to Increase Quality and Better Meet the Needs of Students

Staff members responded to an open-ended question that asked them to identify program features that could improve the quality of programming and better meet students' needs. Staff members expressed the need for more communication between school day and afterschool staff and more or better community partnerships. Staff stated that afterschool lessons need more diverse and student-centered activities. Staff also requested the need for additional staff, funding, and better facilities. A complete list of summarized responses is available in Appendix A.

Staff Reports of Greatest Success in the Afterschool Program This Year

Staff members responded to an open-ended question that asked them to identify their greatest success working in STEMlink programs. Staff members reported building meaningful relationships with students and helping to improve student academic performance among their greatest successes. Another success included fostering positive developmental and academic habits. Some staff members expressed that they were able to foster social development while engaging with students. Staff members highlighted working with diverse groups and empowering student leadership as successes. A complete list of summarized responses is available in Appendix A.

Student Reports About What They Wish Was Different About the Afterschool Program

In response to an open-ended question that asked students to identify what they wish was different about the afterschool program, many stated they liked the program in its current form. Some students expressed the need for a greater variety of activities and more opportunities for learning including: more opportunities for teamwork, homework help, and computer programming. Students requested better snacks, additional field trips, and a longer afterschool program. Students cited the need for greater participation of peers and for staff that are more understanding. A complete list of summarized responses is available in Appendix B.

Staff reported that building relationships with students and helping students improve academically were noteworthy successes.

Staff reported that they fostered social development and helped students improve their academic habits.

Most students reported that they would not change anything about the program.

Staff and students requested additional lessons and activities.

Staff reported that they felt additional funding and better facilities would improve program quality.

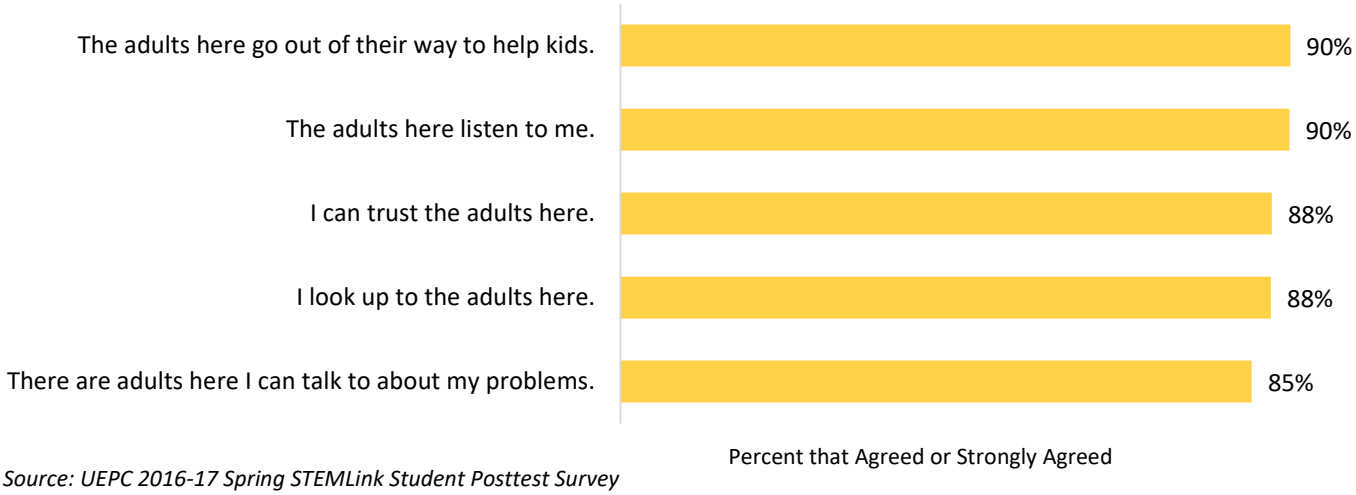
Students reported that they would like additional field trips and a longer afterschool program.

Positive Relationship Development

Figure 16. Student Relationships with Peers

Source: UEPC 2016-17 Spring STEMLink Student Posttest Survey

Figure 17. Student Relationships with Adults in the Program



Source: UEPC 2016-17 Spring STEMLink Student Posttest Survey

90% of students reported that adults in the program went out of their way to help kids and that adults listened to them.

88% of students reported that they could trust the adults and that they looked up to the adults in the program.

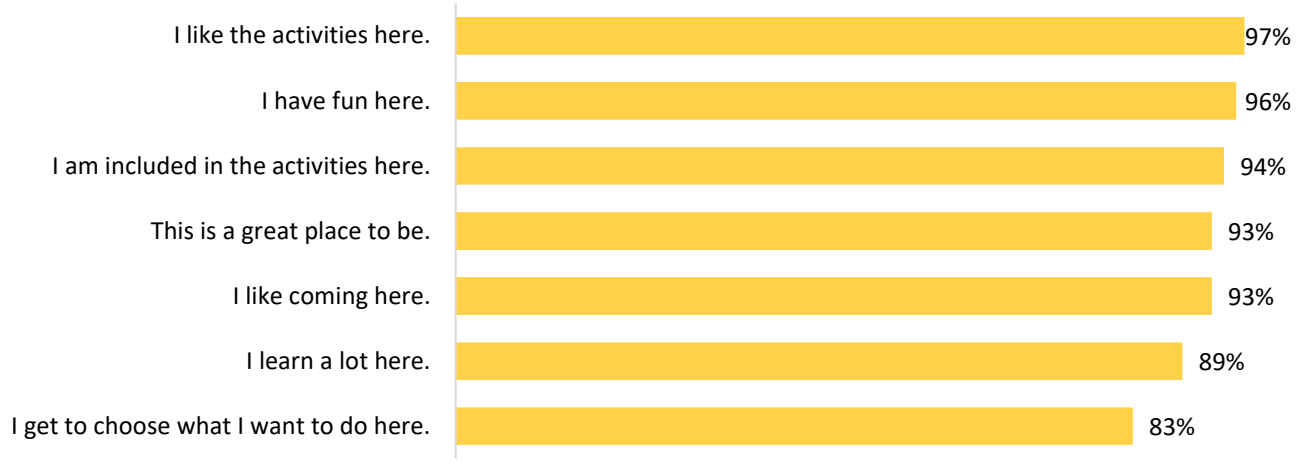
89% of students reported that they had friends they could trust in their programs.

15% of students disagreed or strongly disagreed that there were adults in the program that they could talk to about their problems.

16% of students disagreed or strongly disagreed that they knew other kids in the program well.

Positive Program Experiences

Figure 18. Student Responses for Positive Program Experiences



Source: UEPC 2016-17 Spring STEMLink Student Posttest Survey

Student Reports About the Best Aspects of Attending STEMLink Programs

Students responded to an open-ended question that asked them to report the best thing about attending their afterschool programs. Students expressed that the relationships they formed with staff and friends, along with the quality of interpersonal interactions, were among the best aspects of their experiences with the program. Students also identified activities, sports, and food as favorable aspects of the programs. Students felt the afterschool programs provided a positive environment and they appreciated the opportunity to learn new things and receive help with homework. A complete list of summarized responses is available in Appendix B.

97% of students reported that they liked the activities their programs provided.

96% of students reported that they had fun in their programs.

94% of students reported that they were included in activities.

17% of students disagreed or strongly disagreed that they could choose what they wanted to do in their programs.

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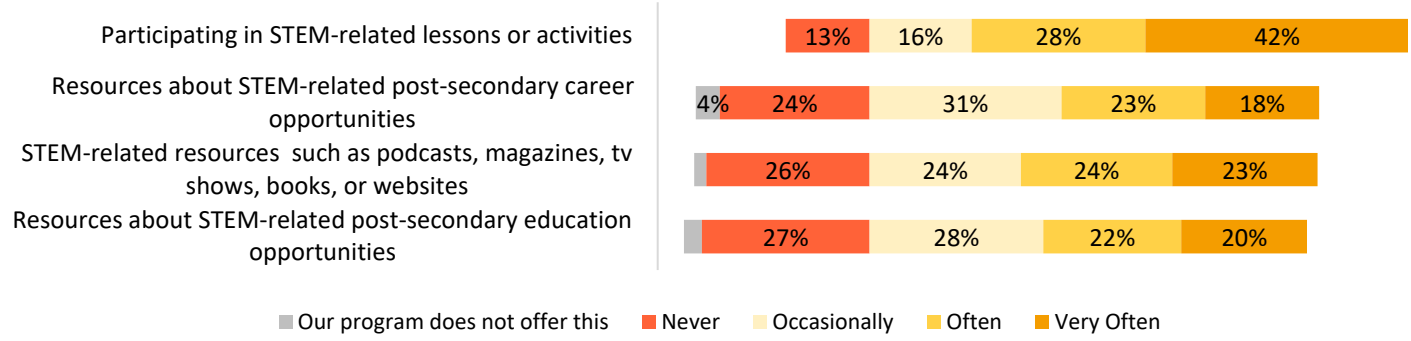
To what extent did STEMLink programs provide STEM-related learning opportunities for participants?

Key Findings

- Half (51%) of staff members reported that they provided science lessons often or very often.
- The most common STEM-related opportunities provided by staff members were opportunities to participate in STEM-related lessons or activities.
- About one-quarter of staff members reported that they did not provide science lessons, STEM-related resources, or resources about STEM-related post-secondary education opportunities.
- Reported average program attendance was lower than expected, with 60% of students attending fewer than 30 days.
- Reported average participation in STEM interventions was lower than expected, with one-third (32%) of students receiving no science interventions.

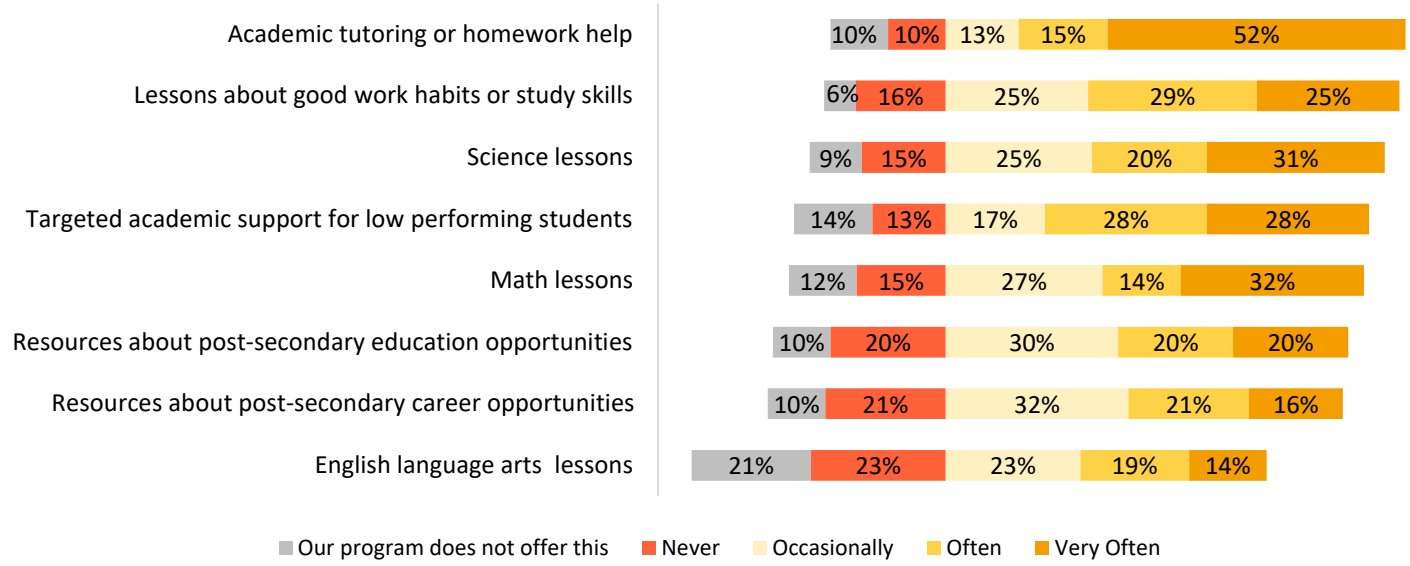
STEM and Academic Related Learning Opportunities

Figure 19. Frequency of STEM-related Opportunities Provided by Staff



Source: UEPC 2016-17 Spring STEMLink Staff Survey

Figure 20. Frequency of Academic Opportunities Provided by Staff



Source: UEPC 2016-17 Spring STEMLink Staff Survey

70% of staff reported that they provided STEM-related lessons or activities often or very often.

67% of staff reported that they provided academic tutoring or homework help.

27% of staff reported that they never provided resources about STEM-related post-secondary education opportunities.

26% of staff reported that they never provided STEM-related resources such as podcast, magazines, post-secondary education and career opportunities.

24% of staff reported that they did not provided science lessons.

Program Attendance and Participation

STEMLink programs reported the number of days students attended their programs, the number of possible days of attendance for each student, and the number of science, technology, engineering, and math interventions in which students participated. Programs reported serving 1,987 students, who attended a total of 68,728 days. The average number of days attended was 35 (SD = 36.8). Most students (60%) attended for 29 days or less, 21% attended 30 - 59 days, 9% attended 60 -89 days, and 10% attended 90 or more days. The overall average attendance rate across programs was 46% (days of attendance/days of possible attendance). We treated cases in which students were missing data for particular interventions as if they had received no interventions.

Table 12. Summary of Student Participation

Grantee	Science	Technology	Engineering	Math
Number of Students who Received Interventions at Least Once	1,361	1,428	1,178	1,433
Percent of Students who Received Interventions at Least Once	68%	72%	59%	72%
Average Number of Days of Participation	10	16	11	11

Source: 2016-17 Program participation data

- Attendance rates ranged from 8% to 81%.
- Most programs had an attendance rate between 36% and 76%.

STEMLink afterschool programs reported serving **1,987 students**.

STEMLink afterschool programs reported that:

68% (1,361) of their students participated in science interventions at least once.
72% (1,428) of their students participated in technology interventions at least once.
59% (1,178) of their students participated in engineering interventions at least once.
72% (1,433) of their students participated in math interventions at least once.

60% of STEMLink participants attend programs for less than 30 days.

STEMLink programs reported that:

32% (626) of their participants received no science interventions.
28% (559) of their participants received no technology interventions.
41% (809) of their participants received no engineering interventions.
28% (554) of their participants received no math interventions.

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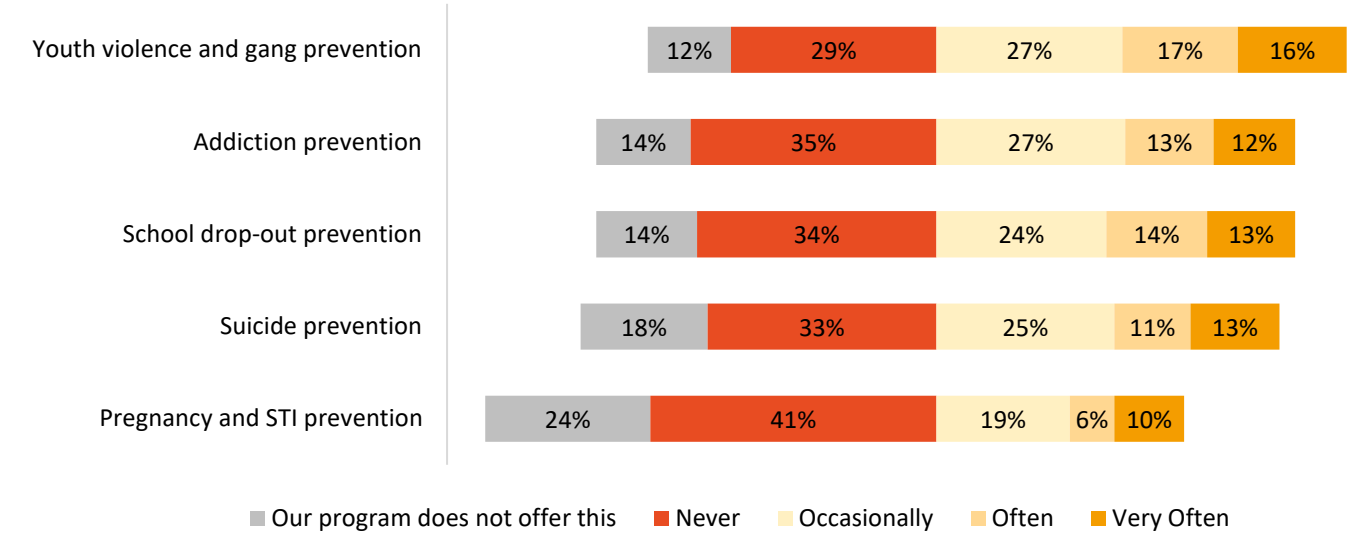
To what extent did STEMLink programs provide prevention education learning opportunities for participants?

Key Findings

- Overall, staff reported that they provided prevention-related activities infrequently. However, programs reported that most (89%) students participated in prevention interventions at least once.
- Two-thirds of staff members reported that they provided opportunities to develop leadership skills and help students develop positive interpersonal relationships often or very often.

Prevention Activities and Participation

Figure 21. Frequency of Prevention Activities Offered



Source: UEPC 2016-17 Spring STEMLink Staff Survey

33% of staff reported that they provided youth violence and gang prevention often or very often.

On average, 50% of staff reported that they provided prevention-related activities at least occasionally.

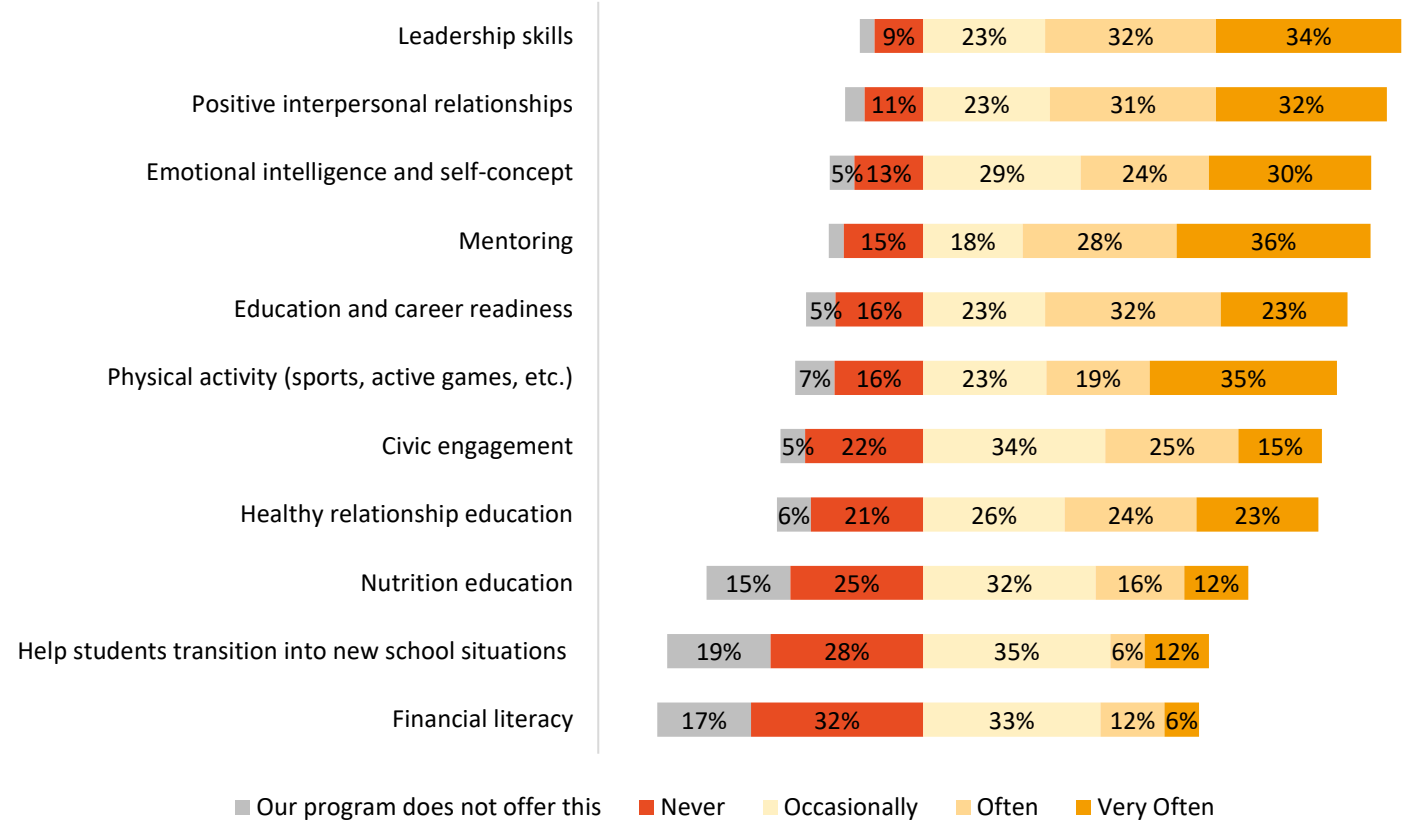
STEMLink programs reported that **89%** (1,735) of their students participated in prevention interventions at least once.

Overall, staff reported that they provided prevention-related activities infrequently.

STEMLink programs reported that **11%** (213) of their participants received no prevention interventions.

Enrichment Opportunities

Figure 22. Frequency of Enrichment Opportunities Offered



Source: UEPC 2016-17 Spring STEMLink Staff Survey

66% of staff reported that they provided opportunities to develop leadership skills often or very often.

63% of staff reported that they provided opportunities to help students develop positive interpersonal relationships often o very often.

49% of staff reported that they provided no financial literacy enrichment opportunities.

40% of staff reported that they provided no nutrition education opportunities.

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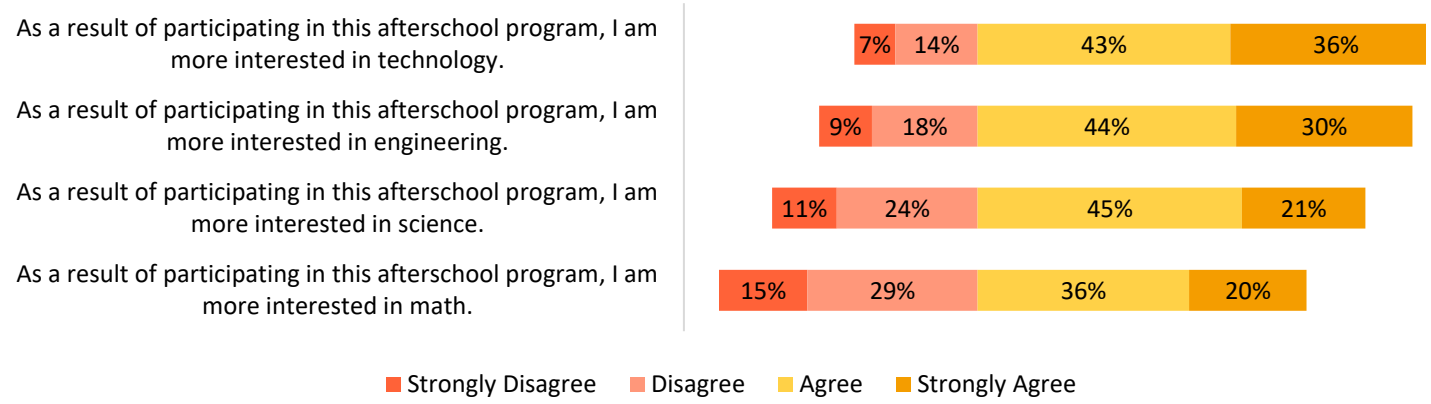
To what extent did students' interest in STEM change?

Key Findings

- On average, students reported increased interest in science, technology, and engineering.
- On average, students reported increased frequency of doing STEM activities.

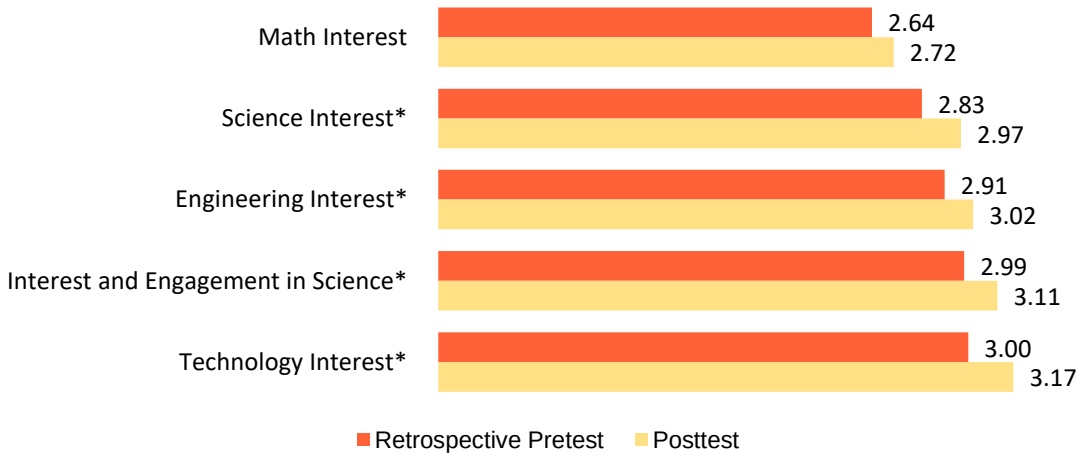
Interest in STEM

Figure 23. Posttest Responses for Interest in STEM Subjects



Source: UEPC 2016-17 Spring STEMLink Student Survey

Figure 24. Retrospective and Posttest Means for Student Interest in STEM



Source: UEPC 2016-17 Spring STEMLink Student Survey
*Statistically significant difference between retrospective pretest and posttest;
See Appendix C for methods and complete statistics.
Scale: 1=Strong Disagree, 2=Disagree, 3=Agree, and 4=Strongly Agree

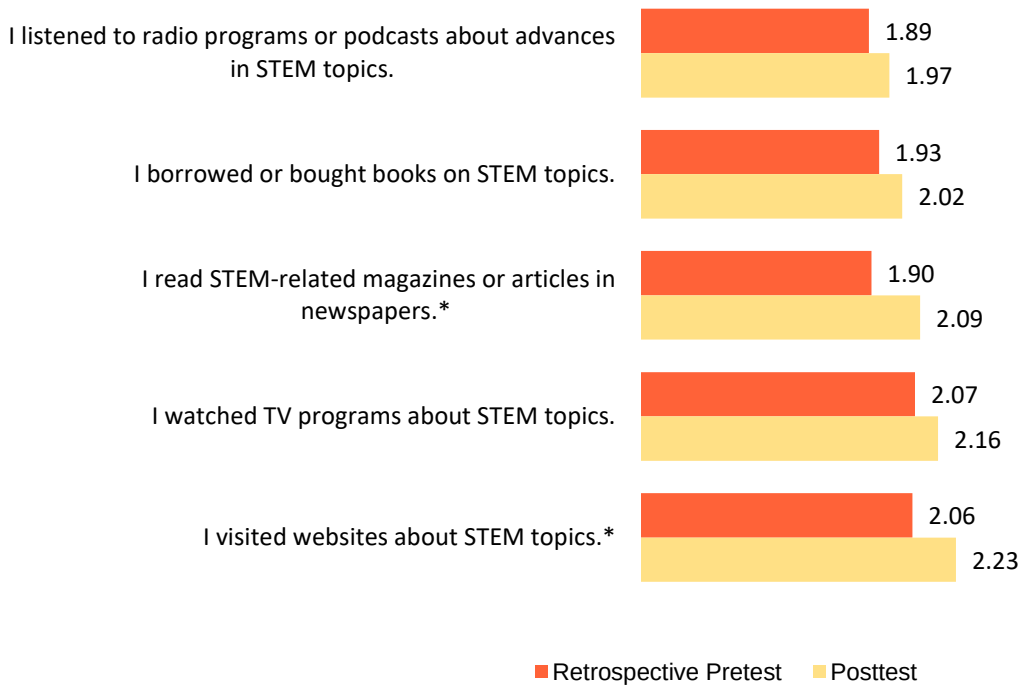
Over 70% of students reported that they were more interested in technology and engineering as a result of participating in STEMLink programs.

Students reported **greater interest** in science, engineering, and technology after participating in the program.

44% of students strongly disagreed or disagreed that they were more interested in math as a result of participating in the program.

There was no statistical difference in mean scores for math interest between the retrospective pretest and posttest.

Figure 25. Retrospective Pretest and Posttest Means for Frequency of Engaging in STEM Activities



Source: UEPC 2016-17 Spring STEMLink Student Survey
*Statistically significant difference between retrospective pretest and posttest for engaging in STEM activities;
See Appendix C for methods and complete statistics.
Scale: 1=Never or Hardly Ever, 2=Sometimes, 3=Regularly, and 4=Very Often

Student Reports About the Aspect of the Program that Changed Their Interest in or Awareness of STEM

Students responded to an open-ended question that asked them to report aspects of the program that changed their interest in STEM opportunities and awareness of STEM careers. Students expressed that participating in technology, engineering, and math courses changed their interest in STEM and that their interest increased. Students reported that participating in hands-on activities changed their interest in STEM and that it provided different opportunities to learn. A complete list of summarized student responses is available in Appendix B.

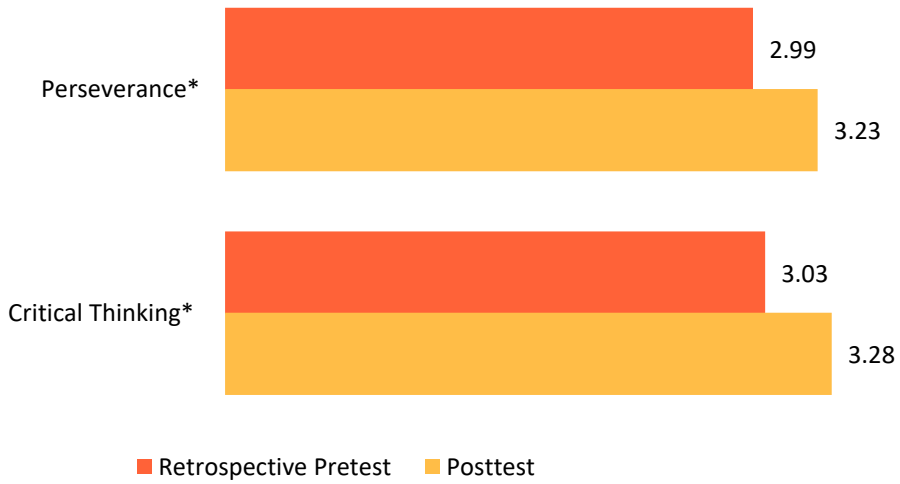
Students reported **increased frequencies of engaging in STEM activities** such as reading STEM-related magazines or newspapers articles and visiting websites about STEM topics.

To what extent did students' STEM skills (critical thinking and perseverance) change?

Key Finding

- On average, students reported increased perseverance and critical thinking.

Figure 26. Retrospective Pretest and Posttest Means for STEM Skills



Source: UEPC 2016-17 Spring STEMLink Student Survey
*Statistically significant difference between retrospective pretest and posttest;
See Appendix C for methods and complete statistics.
Scale: 1=Strong Disagree, 2=Disagree, 3=Agree, and 4=Strongly Agree

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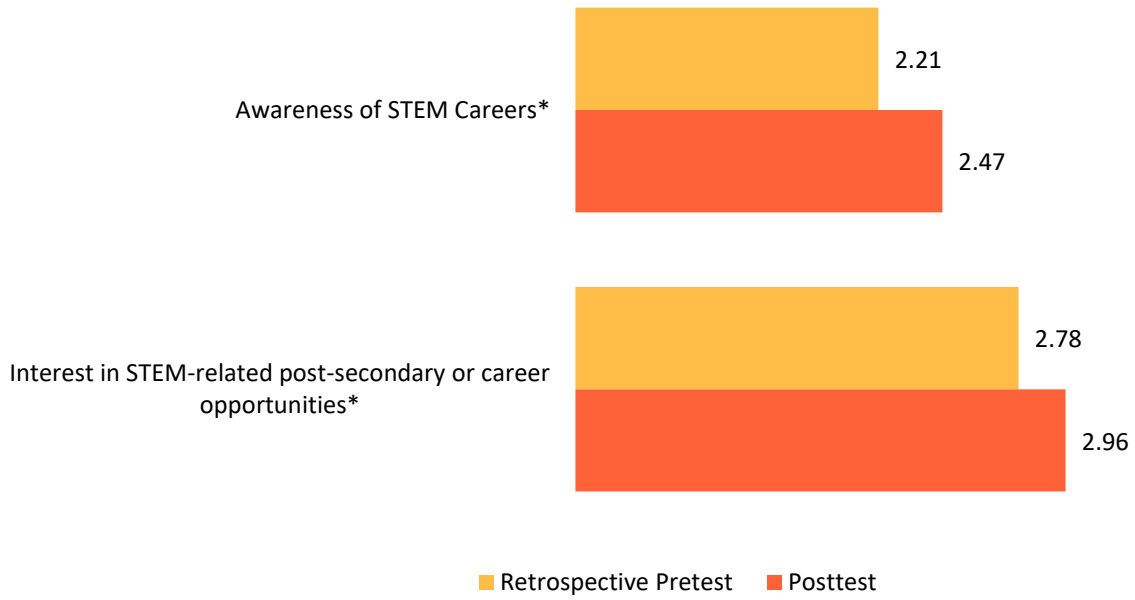
To what extent did students' awareness of and interest in STEM-related post-secondary opportunities and career information change?

Key Findings

- On average, students reported increased interest in STEM-related postsecondary or career opportunities and increased awareness of STEM careers.
- On average, students had greater interest in STEM opportunities than they had awareness.

Figure 27. Retrospective Pretest and Posttest Means for Interest in and Awareness of Future STEM Fields



Source: UEPC 2016-17 Spring STEMLink Student Survey
*Statistically significant difference between retrospective pretest and posttest;
See Appendix C for methods and complete statistics.
Scale: 1=Strong Disagree, 2=Disagree, 3=Agree, and 4=Strongly Agree

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To what extent did students perceive change in social competencies, empathy and prosocial behaviors, academic behaviors, and work habits?

Key Finding

- On average, students perceived significant, positive increases in their work habits, social competency, academic behaviors, and empathy and prosocial behaviors.

Figure 28. Retrospective Pretest and Posttest Mean Scores for Afterschool Outcomes

Source: UEPC 2016-17 Spring STEMLink Student Survey
*Statistically significant difference between retrospective pretest and posttest;
See Appendix C for methods and complete statistics.
Scale: 1=Strong Disagree, 2=Disagree, 3=Agree, and 4=Strongly Agree

Empathy and prosocial behavior had the highest mean score for all afterschool outcomes.

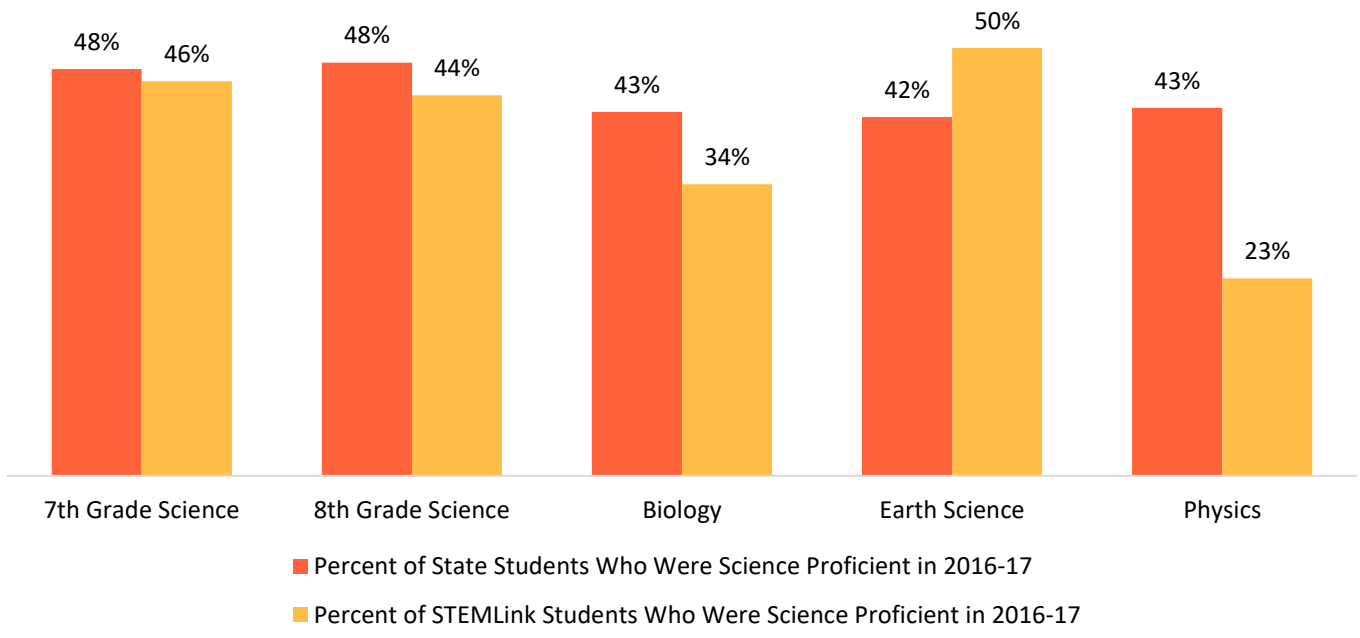
Work habits had the lowest mean score for all afterschool outcomes.

What were the math, science, and English language arts proficiency rates of STEMLink participants?

Key Finding

- STEMLink student proficiency rates in science, math, and English language arts were lower than statewide averages, indicating the programs were serving students who could benefit from additional academic supports.

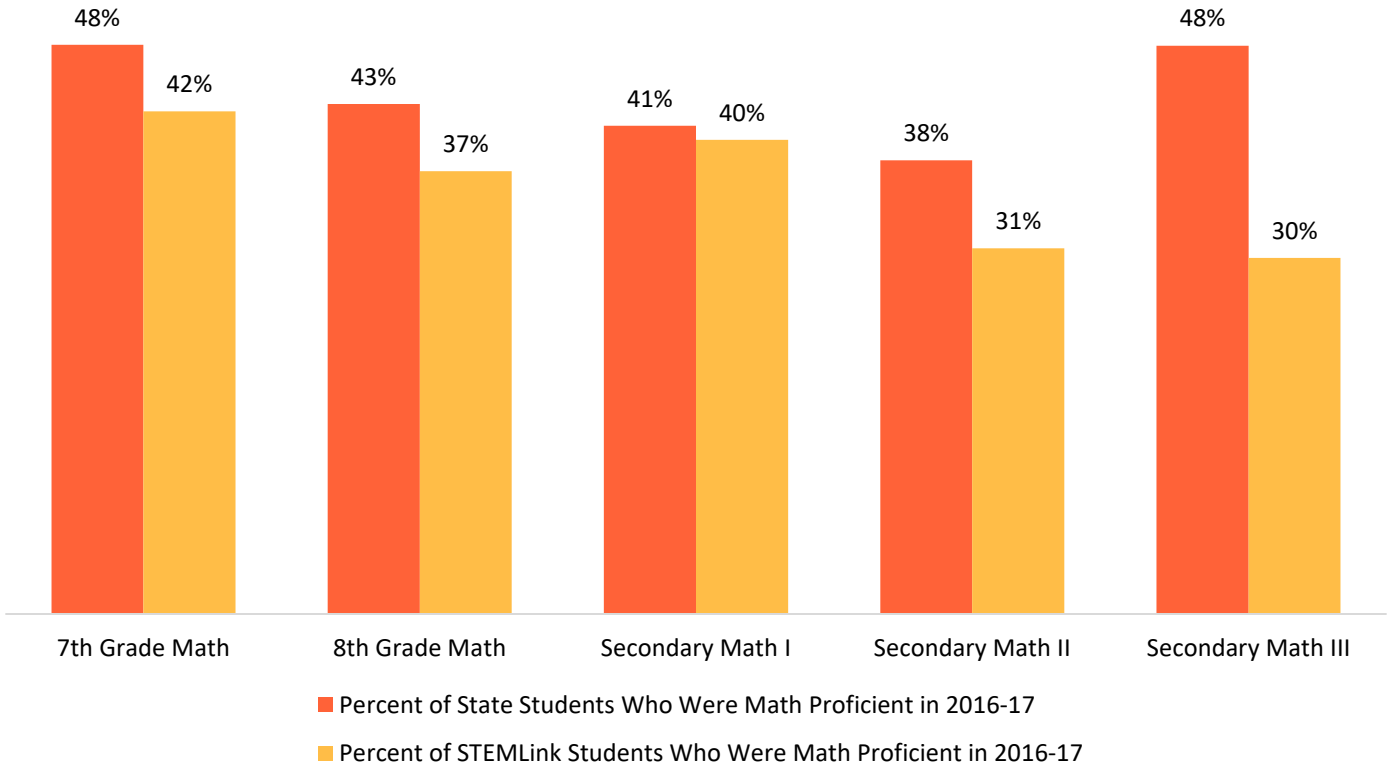
Figure 29. Percent of Science Proficient Students (2016-17)



Source: Student education data (2016-17)
Note: See Appendix D for additional information
Chemistry excluded due to low response (N<10)

- STEMLink students' science proficiency ratings were lower than the statewide average except for earth science.

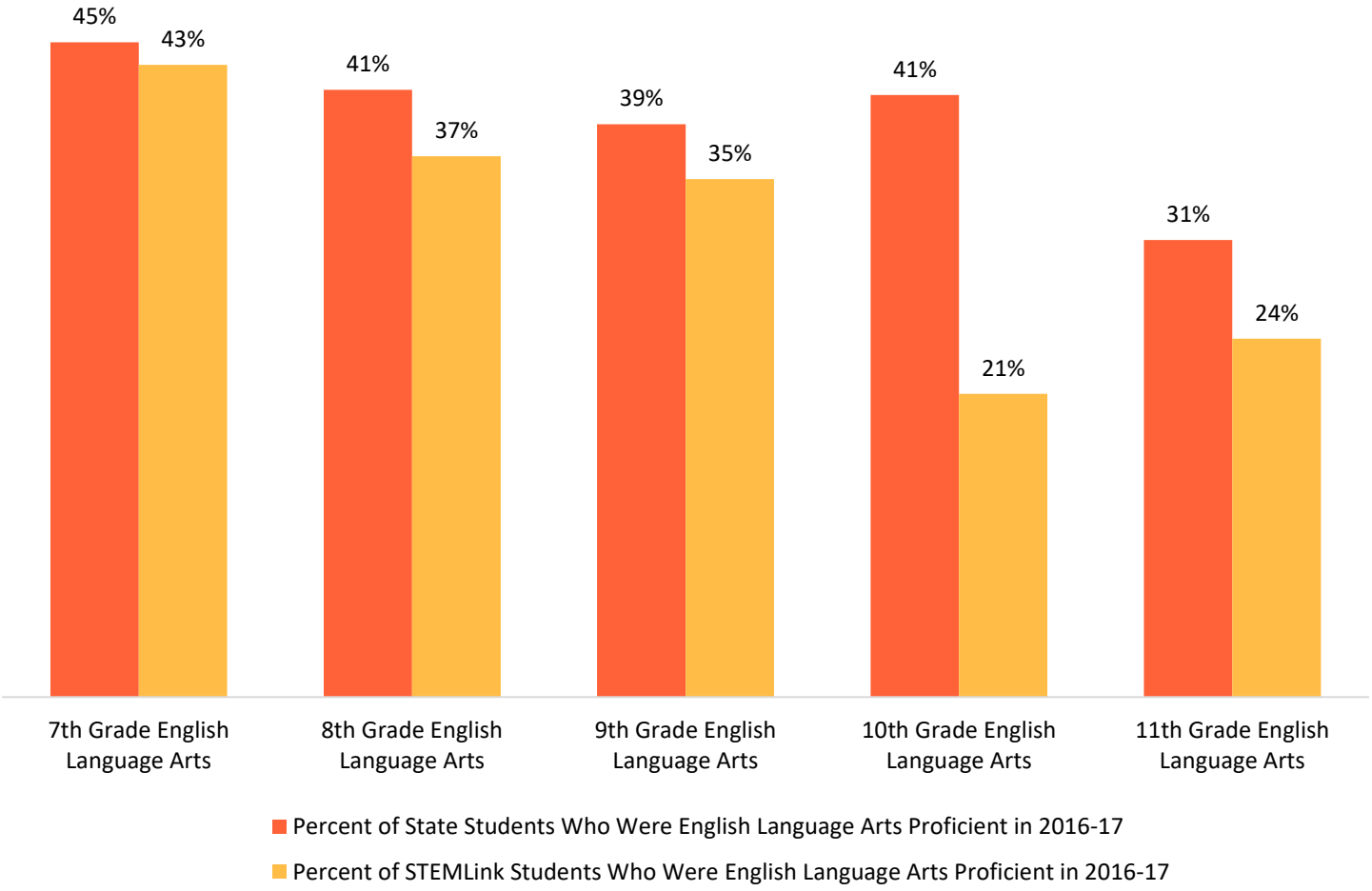
Figure 30. Percent of Math Proficient Students (2016-17)



Source: Student education data (2016-17)
Note: See Appendix D for additional information

- STEMLink students' math proficiency ratings were lower than the statewide average.

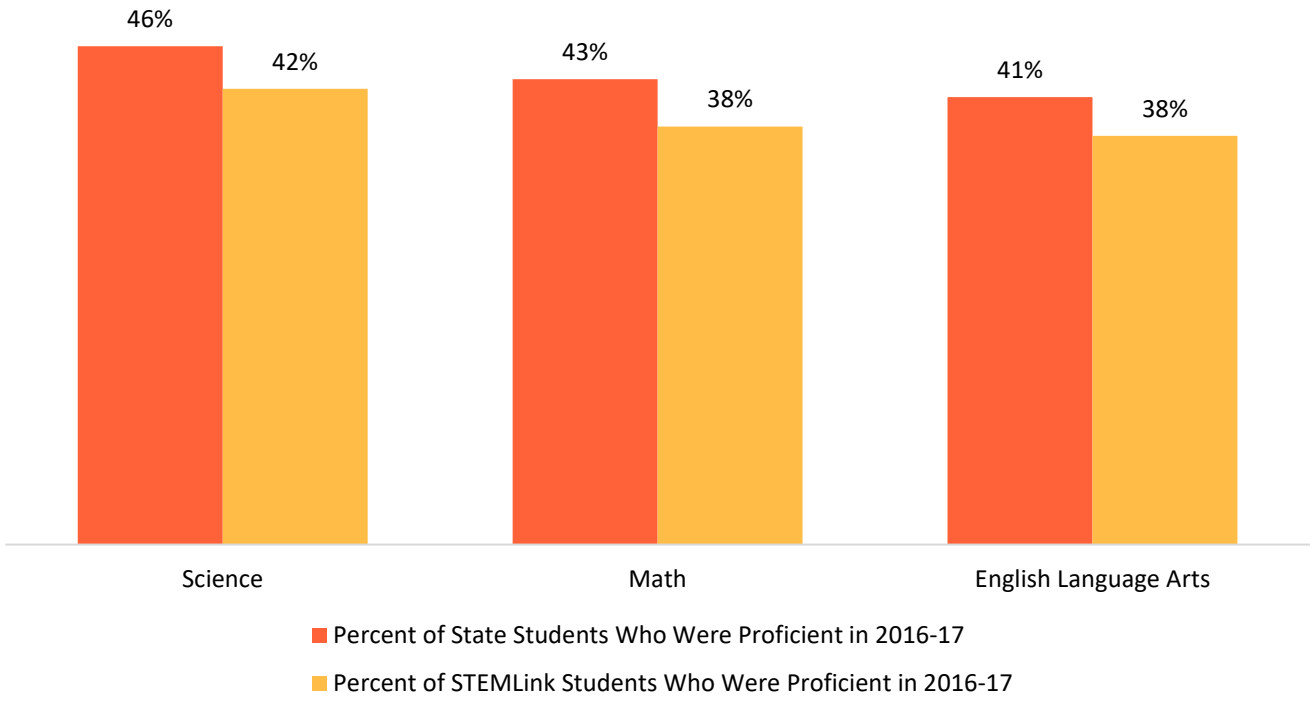
Figure 31. Percent of English Language Arts Proficient Students (2016-17)



Source: Student education data (2016-17)
Note: See Appendix D for additional information

- STEMLink students' English language arts proficiency ratings were lower than the statewide average.

Figure 32. Average Proficiency Rates for All Grades (2016-17)



Source: Student education data (2016-17)
Note: See Appendix D for additional information

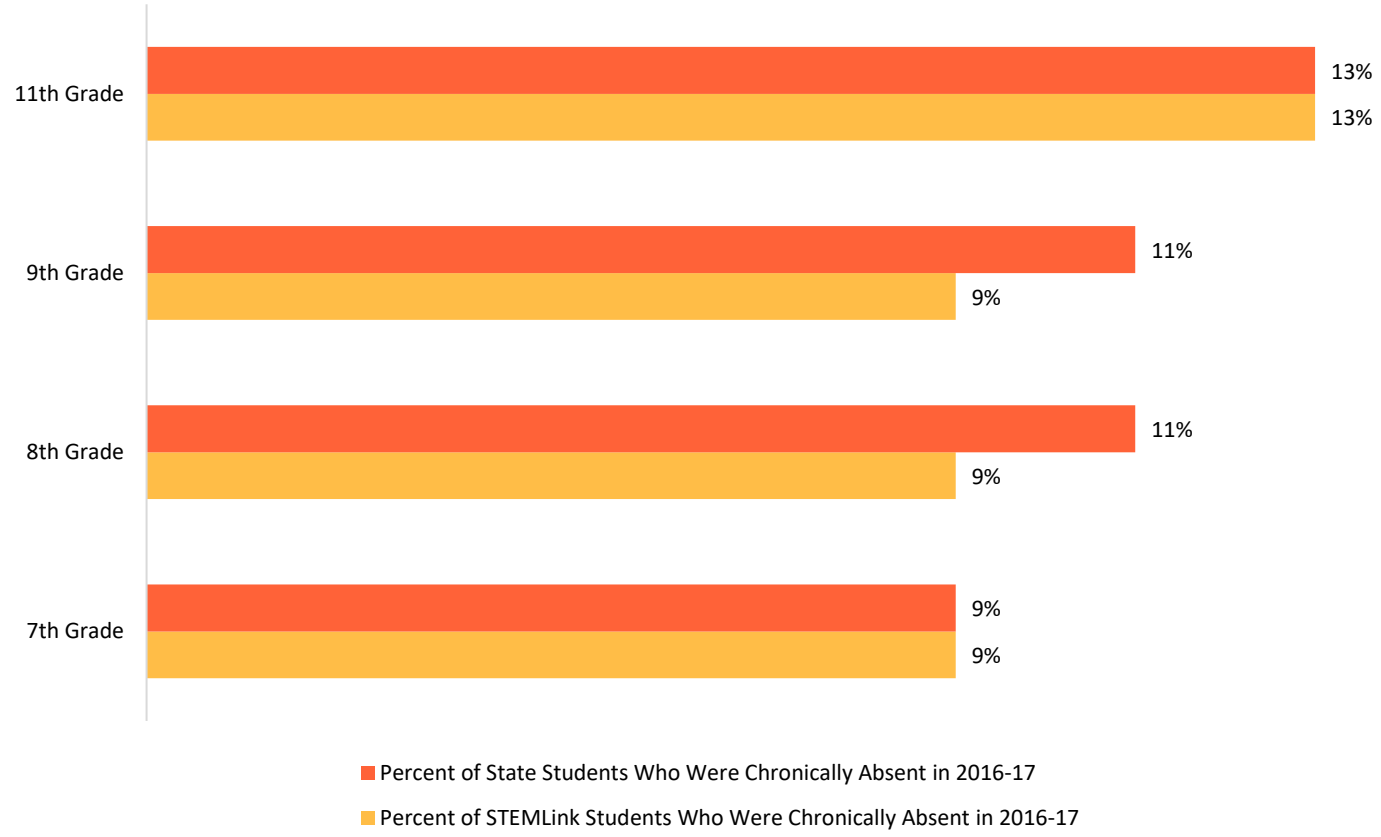
- STEMLink students' average proficiency rates for all grades were lower than the statewide average.

What were the chronic absence rates of STEMLink participants?

Key Findings

- Rates of chronic absence for STEMLink students were similar to the state average for seventh and eleventh graders.
- Rates of chronic absence for STEMLink students were higher than the state average for eighth and ninth graders.

Figure 33. Rates of Chronic Absence (2016-17)



Source: Student education data (2016-17)
* 10th and 12th grades excluded due to low response (N<10)
Note: See Appendix D for additional information

- STEMLink students had the same rate of chronic absence with students statewide in grades seven and eleven, but higher rates in grades eight and nine.

CONSIDERATIONS FOR IMPROVEMENT

This evaluation report addresses the third and final year of the STEMLink grant program. The following tables summarize the key findings presented throughout this report and provide considerations for improvement. The findings are summaries of the areas of success and opportunities for improvement. In order to make the most of the findings summaries, we encourage readers to carefully review the results section. The considerations for improvement represent actions that state and program level administrators might consider in order to maximize STEMLink afterschool program outcomes.

To what extent were staff members prepared to implement STEM-related afterschool programs?

Summary of Findings	Considerations for Improvement
• About half of staff members had professional experience working with youth, but 42% were in their first year working with their STEMLink programs. • Most staff members had completed post-secondary degrees or were working to complete degrees. • Not all staff members received PD, but most staff who received PD found it useful. • For every PD topic identified on the staff survey, about one-third of staff members reported that PD was applicable to their roles, but they did not receive it. This was true for key topics such as STEM-related PD and providing academic support to students. • About half of staff members reported that they received useful PD for STEM-related topics and providing academic support to students. • Most staff member reported that they received about the right amount of PD, but 29% felt that they did not receive enough PD and 30% reported that they had unanswered questions about their jobs. • Almost all staff members reported that they found their jobs rewarding and felt supported by their supervisors.	**State Level Considerations** • Increase state level support and coordination for PD that aligns with the greatest needs as identified in the fall staff survey. • Collaborate with the UAN to use grantee and program level survey results to design and implement PD opportunities. • Work with partners to develop creative ways to establish a pool of highly qualified afterschool staff. • Communicate to grantees the importance of high quality PD that aligns with program goals and staff needs. **Program Level Considerations** • Continue to hire educated, experienced, and capable staff teams. • Use fall staff survey results to plan and implement PD. • Ensure that all staff members receive high quality PD that aligns with program goals. • Differentiate PD for staff members with varied roles and responsibilities. • Continue to offer support and resources so that staff maintain high levels of job satisfaction.

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To what extent did staff members provide quality afterschool programming?

Summary of Findings	Considerations for Improvement
• Most staff members reported that their programs used data to make programming decisions and based program choices on student need. • Reports of aligning afterschool experiences with school day experiences were mixed. • Most (80%) staff members reported that they collaborated with school day personnel, but one-third disagreed that they worked with teachers to coordinate school day and afterschool lessons. • About two-thirds of staff members reported that they attended meetings with school day personnel and about half of those attendees reported that they discussed student behavior, student disciplinary issues, and students' academic achievement with school day personnel often or every time they met. • More than a third (41%) of staff members reported they did not adjust their afterschool teaching based on data about student learning. • Most students reported that they had positive relationships with staff members and peers in their STEMLink programs. • Almost all students reported that they were having positive experiences in their STEMLink programs.	**State Level Considerations** • Encourage grantees and program administrators to use data for programmatic decision-making. Consider creating and sharing recommendations, resources, and standards for evidence-based programming. • Provide support for afterschool program providers to develop and maintain working relationships with school-day personnel. • Communicate the importance of afterschool programming as related to, and in support of, the school day. **Program Level Considerations** • Use all available sources of evidence to influence program design and implementation. • Collaborate with school day personnel and ensure that they are aware of your desire to support their efforts. • Increase efforts to identify and implement strategies to align academic support with school day curriculum. • Continue to focus on developing and maintaining high quality student-staff relationships and staff-staff relationships.

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To what extent did STEMLink programs provide STEM-related learning opportunities for participants?

Summary of Findings	Considerations for Improvement
• Half of staff members reported that they provided science lessons often or very often. • The most common STEM-related opportunities that staff members provided were opportunities to participate in STEM-related lessons or activities. • About one-quarter of staff members reported that they did not provide science lessons, STEM-related resources, or resources about STEM-related post-secondary education opportunities. • Reported average program attendance was lower than expected, with 60% of students attending fewer than 30 days. • Reported average participation in STEM interventions was lower than expected, with one-third of students receiving no science interventions.	**State Level Considerations** • Communicate to grantees the importance of providing program activities that align with grant purposes and goals. • Provide resources for implementing STEM-related learning opportunities. • Promote a 30-day program attendance minimum as a standard program dosage. **Program Level Considerations** • Continue to provide STEM-related program activities and look for opportunities to increase and expand STEM-related program offerings. • Train staff members to provide students with STEM learning resources and information about STEM-related post-secondary opportunities. • Ensure that all students receive opportunities to participate in STEM-related activities. • Work with school personnel, families, and students to increase program attendance rates. • Set attendance and participation goals; ensure that students receive a minimum of 30 attendance days.

To what extent did the STEMLink programs provide prevention education learning opportunities for participants?

Summary of Findings	Considerations for Improvement
• Overall, staff reported that they provided prevention-related activities infrequently. However, programs reported that most (89%) students participated in prevention interventions at least once. • Two-thirds of staff members reported that they provided opportunities to develop leadership skills and help students develop positive interpersonal relationships often or very often.	**Program Level Considerations** • Consider increasing prevention-related activities for students. • Offer a balance of academic and developmental supports; ensure that every student participates in prevention education activities. • Continue to provide opportunities for students to develop leadership skills and develop positive relationships.

To what extent did students' interest in STEM change?
To what extent did students' STEM skills (critical thinking and perseverance) change?
To what extent did students' awareness of and interest in STEM-related post-secondary opportunities and career information change?

Summary of Findings	Considerations for Improvement
• On average, students reported increased interest in science, technology, and engineering. • On average, students reported increased frequency of doing STEM activities. • On average, students reported increased perseverance and critical thinking. • On average, students reported increased interest in STEM-related postsecondary or career opportunities and increased awareness of STEM careers. • On average, students had greater interest in STEM opportunities than they had awareness.	**Program Level Considerations** • Continue to provide opportunities, activities, and resources for students to engage in STEM-related activities and activities that promote interest in STEM subjects. • Continue to offer opportunities for students to develop perseverance and critical thinking. • Continue to promote interest in STEM-related post-secondary and career opportunities. • Increase efforts to make students aware of possibilities and paths for pursuing future careers in STEM.

To what extent did students perceive change in social competencies, empathy and prosocial behaviors, academic behaviors, and work habits?

Summary of Findings	Considerations for Improvement
• On average, students perceived significant, positive increases in their social competency, empathy and prosocial behaviors, academic behaviors, and work habits,	**Program Level Considerations** • Continue to offer programming that promotes positive afterschool outcomes. • Ensure that program practices align with specific afterschool outcomes.

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What were the math, science, and English language arts proficiency rates of STEMLink participants?
What were the chronic absence rates of STEMLink participants?

Summary of Findings	Considerations for Improvement
• STEMLink student proficiency rates in science, math, and English language arts were lower than statewide averages, indicating the programs were serving students who could benefit from additional academic supports. • Rates of chronic absence for STEMLink students were similar to the state average for seventh and eleventh graders. • Rates of chronic absence for STEMLink students were higher than the state average for eighth and ninth graders.	**State Level Considerations** • Provide support and technical assistance to help program administrators access and use student assessment data to plan intervention strategies. **Program Level Considerations** • Facilitate studies of academic data with classroom teachers and afterschool staff to identify specific areas for targeted instructional support or interventions. • Use student assessment data to plan academic support interventions for participants. • Use student school day attendance data to plan interventions for specific students. • Work with school day personnel to plan attendance interventions.

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APPENDIX A. STAFF SURVEY OPEN-ENDED ITEMS RESPONSE SUMMARY

This appendix includes a summary of responses from open-ended response questions on the staff survey. Following each summarized theme is the number of times that particular topics appeared in the responses. There were four open-ended questions presented here in the following order:

1) Professional Development
2) Greatest Successes
3) Additional Support Needed
4) Program Quality

What topics would you like to learn more about through future professional development opportunities?

There was a total of 124 staff responses to this question.

Student	N
Working with diverse students	14
Working with students	8
Engaging students	8
Addressing emotional/mental needs of students	1

Class Environment/ Lesson Planning	N
Improving class behavior/management	8
Teaching strategies/ differentiation	5
Understanding student learning	4
Prevention training	4
Crisis management	3
Creating positive environment	3
Health and safety	3
Adolescent/ Teen workshop	2
Integrating common core	2
Techniques for homework help	2
Creating better quality activities	1
Creating culturally relevant classes	1
Lesson Planning	1
Stress management	1

STEM Specific	N
Specific STEM	6
Technology focused training	4
Increased access to STEM career	2
Increased knowledge of STEM Fields	2
Promoting equity in STEM fields	2

Communication and Partnerships	N
Involving	6
Building relationships	4
Partnerships with day	3
More or better community	1
Recruiting Volunteers	1
Entering and creating competitions	1
Service Learning	1
Improving athletic activities	1

Staff management	N
None required/ none	8
Staff development	3
Strategies for teaching personal development skills	3
Building staff engagement/ community	2
Improving staff management skills	2
Any professional development	1

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What has been your greatest success working in this afterschool program this year?

There was a total of 139 staff responses to this question.

Students	N
Building meaningful relationships with students	18
Helping to improve student academic performance	16
Seeing students succeed/ grow	8
Engaging students	7
Working with diverse groups	5
Empowering student leadership/ choice	4
Differentiating instruction for student needs	1
Developing solutions for data tracking	1
Attaining program and student success	1
Improving general student behavior	1
Preparing student for future endeavors	1
Promoting college and career readiness	1

Class Environment/ Lesson Planning	N
Fostering/ Observing positive developmental/ academic habits	12
Developing engaging and interactive activities/classes	9
Fostering social development	8
Increasing student enrollment	6
Fostering quality social interactions	4
Helping students with homework	4
Developing 21st century skills	3
Providing a positive program environment	3
Connecting school day/ program curriculum	2
Facilitating team building	2
Effective behavior management	1
Exposing students to new concepts and ideas	1
Integrating student feedback	1
Providing unique opportunities	1

STEM Specific	N
Student Learning/Continuing STEM skills	4
Teaching STEM	2

Communication and Partnerships	N
Working with parents	2
Service Learning Projects	1
Entering students into competitions	1
Exposing students to offsite experiences	1
Improving communication	1

Staff management	N
Non-response	2
Applying skills and knowledge	2
Building relationships with staff	1
Everything	1

What additional supports do you need to be most effective in your current role working for this afterschool program?

There was a total of 98 staff responses to this question.

Student	N
Working with diverse student populations	3
Increased student engagement	3
Developing positive relationships with students	1
Access to student and family information to better meet their needs	1

Staff management	N
None required	18
More staff/mentors	6
More professional development training	5
More communication between staff	4
More funding	4
More consistency	3
More hours for working	3
Non-response	2
Benefits Job stability	2
Clarified program goals/outcomes	2
More opportunities for staff meetings	2
More and better resources	2
More and better access to resources	2
More qualified staff	2
Greater support from organization Admin	1
More professionalism from staff	1
More flexibility	1
More full-time staff	1
Copy machine	1
Unsure	1

STEM Specific	N
More technology	3
Access to Wi-Fi/Internet	1

Class Environment/ Lesson Planning	N
More curricular/ instructional resources	3
More subject related training	2
More time to prepare	1
How to connect learning to real world	1
Greater variety of class offerings	1

Communication and Partnerships	N
Greater collaboration with school day staff	6
Improved partner relationships	3
Linguistic support	3
More field trips	1
More and better program marketing/advertising	1
More volunteers	1

What could be done here to improve the quality of programming and better meet students' needs?

There was a total of 101 staff responses to this question.

Students	N
Access to student data	2
Clear and rigorous expectations/ rules for students	2
More student engagement	2
More student empowerment/Leadership	2
More student enrollment	2

Class Environment/ Lesson Planning	N
More diverse activities	4
More or better facilities	3
More student choice/ freedom	3
More student-centered activities	3
Support for working with ESL populations	3
More prevention activities/Programs	2
Student surveys/input	2
More homework time	1
More time for prep	1

STEM Specific	N
More technology	1

Communication and Partnerships	N
More communication between day and afterschool	10
More or better advertising/marketing	4
More or better community partnerships	4
Increased family engagement/supporters	3
Program timing	2
Program continuation/stability	1

Staff management	N
None	13
More PD	5
Additional Staff	5
Additional funding	5
More staff meetings/communication	4
Better leadership/ administration	4
Additional learning/curricular resources	2
Higher pay for staff	2
I don't know	1
More organization	1
Reevaluation of program yearly	1
Reliable staff substitutes	1

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APPENDIX B. STUDENT SURVEY OPEN-ENDED ITEMS RESPONSE SUMMARY

This appendix includes a summary of responses from open-ended response questions on the student survey. Following each summarized theme is the number of times that particular topics appeared in the responses. There were three open-ended questions presented here in the following order:

1) Best Thing About the Program
2) What Should Be Different
3) Aspect of Program that Change Interest or Awareness

What is the best thing about attending this afterschool program?

There was a total of 384 student responses to this question.

Academics and Learning	N
Opportunities to learn new things	24
Homework help	22
College and Career awareness/readiness	10
Academic Improvement	8
Help provided	7
Acquiring knowledge and skills for future use	3
Problem solving/Creativity skills	3
Experiential development	1
Greater understanding of subject	1
Increased interest in STEM	1
Increased learning compared to regular classes	1
Learning STEM through activities	1
Opportunities for creativity	1
Productive use of time	1
Self-awareness	1

Relationships	N
Quality interactions with staff	37
Time with friends	28
Quality social interactions	18
Meeting new people	7
Social inclusion	7
Making friends	6
Collaboration	5
Socializing with peers	3

Programmatic	N
Participating in activities	28
Fun	26
Sports	21
Food	14
Positive program environment	9
Coding/Programming	8
Choice	6
Technology	6
Building or making things	5
Safe program environment	5
Engineering	4
Games	4
Robotics	4
Science	4
Program is free	3
Absence of academic pressure	2
Art	2
Competitions	2
Field trips	2
Math	2
Music	2
Access to resources	1
Availability of various activities of interest	1
Being active	1
Cooking	1
Software programs	1

General	N
General like	6
Nothing	4
Time away from home	4
Access to opportunities that would be otherwise unavailable	3
Everything	3
Enjoyment	2
Non-response	1
Something to do	1

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What do you wish was different about this afterschool program?

There was a total of 227 student responses to this question.

General	N
Nothing	67
Indifferent	5
Lack of positive experience	1

Activities and Learning	N
More variety in activities	12
More opportunities for learning	7
Less homework time	6
More fun activities	4
Better activity or class design	4
More choice	3
More opportunities for teamwork	3
More homework help	2
More homework time	2
More computer programming	2
More time dedicated to particular activities and classes	1
More/better guest speakers from STEM fields	1
Better teaching techniques	1
More opportunities for creativity	1
More art	1
Incorporating college and career readiness	1
Usage of windows program	1
More personalized/differentiated	1
More opportunity to share work/shows	1

Relationships	N
More peers participating	6
More understanding staff	4
More socializing with peers	3
Better quality of social interactions	3
More or better staff	2
More participant diversity	1

Programmatic	N
More or better food/snacks/drinks	11
More field trips of interest	10
Program frequency: More often	10
Program length: longer	9
More freedom	8
Better/Improved scheduling	4
More sports	3
Program length: Shorter	3
Better location	3
Offered in the school breaks	3
Better program design	3
Access to more or better resources	2
More organization	2
More games	2
More break time	2
More physical activity	1
Program schedule: Begins too early	1
Better or more efficient use of time	1
Better program environment	1
More funding	1
Transportation Issues	1

What aspect of this program changed your interest in or awareness of science, technology, engineering, or math (STEM)?

There was a total of 173 student responses to this question.

Activities and Learning	N
Technology courses	19
Increased Learning in STEM subjects and skills	17
Increased interest in STEM	17
Engineering courses	13
College and career awareness	10
Hands-on and building activities	10
Math courses	8
Greater appreciation of STEM subjects	4
Sports	3
Learning computer programming	2
Awareness of future career path	2
Academic improvement	2
STEM courses	2
New/different opportunities to learn	2
Greater enjoyment of subject	1
Homework help	1
Increased creativity	1
Music courses	1
Career speakers	1
Homework time	1
Art courses	1
Academic advancement	1
Real-world relevance	1
Robotics	1

General	N
Nothing	21
Everything	9
Lack of a positive experience	3

Relationships	N
Making friends	4
Staff	4

APPENDIX C: SUMMARY OF RETROSPECTIVE PRETEST AND POSTTEST STUDENT SURVEY ANALYSIS

Two hundred eighty-two students opened the retrospective pretest and posttest survey at the end of the academic year (2016-17). After cleaning the data, the final sample for the retrospective pretest and posttest included 196 students.

We used paired sample t tests to compare differences between retrospective pretest and posttest mean scores. Table 18 displays retrospective pretest and posttest mean scores and results of the paired samples t tests for each tested construct in the student survey.

Table 13. Retrospective Pretest and Posttest Summary

Student Survey Outcomes	Retro-Pre Mean	Posttest Mean	Difference	SD	*t*	*df*	*p*
Interest and Engagement in Science	2.986	3.112	0.126	0.679	2.581	192	0.011
Science Interest	2.827	2.974	0.148	0.688	2.976	192	0.003
Technology Interest	3.002	3.173	0.171	0.699	3.383	190	0.001
Engineering Interest	2.912	3.020	0.108	0.709	2.119	193	0.035
Math Interest	2.638	2.720	0.082	0.699	1.639	194	0.103
Awareness of STEM Fields	2.215	2.470	0.256	0.772	4.62	194	0.000
Interest in a Future in STEM Fields	2.776	2.964	0.189	0.763	3.455	194	0.001
STEM Activities	1.969	2.092	0.124	0.714	2.419	195	0.016
Perseverance	2.988	3.232	0.244	0.661	5.147	194	0.000
Critical Thinking	3.033	3.284	0.251	0.695	5.052	195	0.000
Work Habits	2.872	3.040	0.168	0.651	3.61	195	0.000
Academic Behaviors	2.975	3.211	0.236	0.635	5.208	195	0.000
Social Competence	2.881	3.054	0.173	0.572	4.208	193	0.000
Empathy & Prosocial Behavior	3.051	3.252	0.201	0.563	4.985	194	0.000

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APPENDIX D: STUDENT PROFICIENCY AND CHRONIC ABSENSE RATES

UEPC evaluators used matched participation data and student education data to calculate proficiency and chronic absence rates. We used the following procedures and data cleaning rules:

- When the data had multiple records in the same year, we applied the following rules:
  - Race and grade level were reported as missing if records were different.
  - The student record with the highest score was used if there were multiple test scores recorded for a single student.
  - The student record with the highest total membership was reported if there were multiple membership day totals recorded.
- STEMLink participants are included in statewide totals.
- We identified students as chronically absent if they missed school at least 10% of their total membership days and had at least 60 total calendar days of enrollment.
- The tables in this appendix provide additional detail about the number of students represented in Figure 29 through Figure 33 in the report.

Table 14. Science Proficiency Rates for STEMLink Students and Statewide Students (2016-17)

Science Level	STEMLink (N)	STEMLink Proficient (N)	STEMLink Proficient (%)	Statewide (N)	Statewide Proficient (N)	Statewide Proficient (%)
7th Grade Science	371	171	46.09%	45,388	21,580	47.55%
8th Grade Science	317	141	44.48%	44,458	21,469	48.29%
Biology	138	47	34.06%	40,511	17,224	42.52%
Chemistry	35	n<10		19,570	9,589	49.00%
Earth Science	54	27	50.00%	22,499	9,430	41.91%
Physics	65	15	23.08%	14,914	6,416	43.02%
Total	**980**	**410**	**41.84%**	**187,340**	**85,708**	**45.75%**

Table 15. Math Proficiency Rates for STEMLink Students and Statewide Students (2016-17)

Math Level	STEMLink (N)	STEMLink Proficient (N)	STEMLink Proficient (%)	Statewide (N)	Statewide Proficient (N)	Statewide Proficient (%)
7th Grade Math	340	143	42.06%	43,838	20,872	47.61%
8th Grade Math	324	120	37.04%	43,908	18,738	42.68%
Secondary Math I	184	73	39.67%	43,074	17,595	40.85%
Secondary Math II	85	26	30.59%	37,990	14,422	37.96%
Secondary Math III	47	14	29.79%	10,176	4,838	47.54%
Total	**980**	**376**	**38.37%**	**178,986**	**76,465**	**42.72%**

Table 16. English Language Arts Proficiency Rates for STEMLink Students and Statewide Students (2016-17)

English Language Arts Level	STEMLink (N)	STEMLInk Proficient (N)	STEMLink Proficient (%)	STEMLink (N)	Statewide Proficient (N)	Statewide Proficient (%)
7th Grade English Language Arts	371	160	43.13%	45,392	20,277	44.67%
8th Grade English Language Arts	317	117	36.91%	44,391	18,396	41.44%
9th Grade English Language Arts	150	53	35.33%	41,425	16,194	39.09%
10th Grade English Language Arts	58	12	20.69%	38,234	15,707	41.08%
11th Grade English Language Arts	45	11	24.44%	9,999	3,119	31.19%
Total	**941**	**353**	**37.51%**	**179,441**	**73,693**	**41.07%**

Table 17. Average Proficiency Rates for STEMLink Students and Statewide Students (2016-17)

Subject	STEMLink (N)	STEMLink Proficient (N)	STEMLink Proficient (%)	Statewide (N)	Statewide Proficient (N)	Statewide Proficient (%)
Science	980	410	41.84%	187,340	85,708	45.75%
Math	980	376	38.37%	178,986	76,465	42.72%
English Language Arts	941	353	37.51%	179,441	73,693	41.07%

Table 18. Chronic Absence Rates of STEMLink Students and Statewide Students (2016-17)

Grade level	STEMLink (N)	STEMLink Chronic Absence (N)	STEMLink Chronic Absence (%)	Statewide (N)	Statewide Chronic Absence (N)	Statewide Chronic Absence (%)
7th	406	38	9.36%	50,917	4,662	9.16%
8th	338	31	9.17%	50,174	5,448	10.86%
9th	181	16	8.84%	49,186	5,562	11.31%
10th	72	n<10		48,529	5,273	10.87%
11th	82	11	13.41%	47,397	6,056	12.78%
12th	63	n<10		45,549	6,555	14.39%
Total	**1,007**	**96**	**9.53%**	**197,674**	**21,728**	**10.99%**

*10th and 12th grade excluded due to low N size (N<10) of chronically absent STEMLink students.