Dream, Build, Create Evaluation Report

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PREPARED FOR

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Background

Through *Project BUILD*, a STAR Library Network (*STAR Net*)program funded by the National Science Foundation, the American Society of Civil Engineers (ASCE) and the Space Science Institute's National Center for Interactive Learning (NCIL) offered the *Dream, Build, Create* program which consisted of (1) the award-winning documentary, *Dream Big: Engineering Our World* and (2) five panels of engineers (*Dream Team*s) who shared their personal stories of what it means to be an engineer. For more information about STAR Net and *Dream Big*, including resources used in *Project BUILD*, see www.starnetlibraries.org, and http://www.discovere.org/dreambig, and teachengineering.org.

This program was created in response to the COVID-19 pandemic which resulted in many libraries across the country closing their doors to in-person programming. Libraries often turned to virtual programming to continue engaging their patrons, resulting in the need for high-quality, engaging virtual programs that could be easily implemented. At the same time, schools and caregivers were also looking for online resources to engage youth.

Dream Big: Engineering Our World was made available for free in English, Spanish, and Closed Captioning through private Vimeo links for four different 24-hour periods in November 2020. Hour-long Engineer Panels (*Dream Team*s) were also streamed live at various times in November 2020. These panels, conducted via YouTube Live, focused on different topics featuring diverse sets of engineers including women, Black, and Latinx engineers. Additionally, one panel, *El Futuro se Diseña/The Future is Designed* was conducted in Spanish. Although the topics varied, each *Dream Team* had a similar format. Engineers talked about what led them to engineering, what they love about their work, and how engineering involves creativity and problem solving. They also demonstrated a hands-on engineering activity that could be done at home. *Dream, Build, Create* activities are summarized in **Table 1** below.

Table 1. Overview of *Dream, Build, Create* activities

Activity	Title	Date(s)/Time(s)	Description
Film	*Dream Big: Engineering Our World*	Available for 24 hours on: Tuesday November 10 Saturday November 14 Tuesday November 17 Tuesday November 24	Produced by ASCE, the purpose of *Dream Big* is to increase interest in engineering as a profession.
Engineer Panel (*Dream Team*)	*Women in Engineering*	Tuesday November 10, 1 p.m. ET	A panel featuring women engineers
	Cities of the Future	Tuesday November 10, 7 p.m. ET	Engineers talked about what the world might look like in the future, showcasing engineering as a creative, problem solving profession.
	Black Engineers	Wednesday November 18, 5:30 p.m. ET	A panel featuring Black engineers
	El Futuro se Diseña/The Future is Designed	Thursday November 19, 3 p.m. ET	A Spanish language panel featuring Latinx engineers
	Engineering Extravaganza	Tuesday November 24, 4 p.m. ET	Showcased a variety of civil engineering disciplines and engaging activities.

Participants registered for the program through an online system and then received a log-in URL and password for the private Vimeo viewings of *Dream Big* that could be shared with others. For example, library staff could register and share the information with library patrons, or a teacher could register and share the information with students. Registrants also received the list of *Dream Team Panels* and the log-in URLs. After registering, participants received follow up emails with reminders about the upcoming events. There were over 1,000 screenings of *Dream Big: Engineer Our World* during the four days it was available. Additionally, as of December 2, 2020, *Dream Team Panels* had been viewed over 500 times (live or recorded) and continue to be available on YouTube.

The external evaluation of the *Dream, Build, Create* program was conducted by Education Development Center (EDC). The evaluation aimed to examine how participants experienced the program and how they benefited from the experience. It also sought to understand registrants' thoughts and experiences with the program, including who they shared the link with and any insights they had into how these individuals felt about or benefited from the program. Feedback was also gathered about what engineering-related activities they would be interested in in the future. Because the *Dream Big* film had previously been evaluated[1], this evaluation focused more on the *Dream Team* panels and the benefits of offering these alongside the film.

This report is organized into two main sections: (1) an overall summary of findings and (2) conclusions and areas of consideration. Detailed results from individual data collection instruments can be found in **Appendix A**.

Methods

Evaluators sought to gather feedback about the program through four methods. At the conclusion of each panel, a link to an online survey was provided to viewers. Unfortunately, not many individuals completed the survey despite the link being shown on screen and the panel facilitator specifically asking for feedback. Additionally, the limitations of the YouTube Live platform and the desire to not pull focus away from the panel itself meant that other forms of data collection (e.g., live polls during the program, post-event focus groups with participants) were not feasible. Evaluators were able to gather more robust feedback from individuals who registered for the program (i.e., registered ahead of time to receive links to view the engineering panels and the *Dream Big* film). These individuals consented to receive a survey when they registered for the program and were sent a survey link following the final *Dream Team* panel that asked them about their previous experience with engineering-related activities and reflections on the panel. The survey also asked if they would be willing to participate in a focus group and evaluators followed-up with those indicating interest to gather more in-depth feedback about their thoughts and experiences with the program. Evaluators also observed each *Dream Team* panel to gain an understanding of what happened and the types of questions asked by the audience. An overview of evaluation methods is shown in **Table 2** below. Evaluation instruments can be found in **Appendix B**.

Table 2. Overview of Evaluation activities

Method	Audience	Administration	Response
Program Registration Form	Individuals who completed a registration form	Online registration administered by the project team.	**881 total registrants:** (370 library staff, 150 teachers, 159 parents/caregivers, 202 Other)
Post-panel Survey	*Dream Team* panel viewers	Online survey; link provided following each panel on a slide and in chat. Available in Spanish for the Spanish language panel.	**12 total respondents over five programs[2]**
Program Registrant Survey	Individuals who completed a registration	Online survey; link sent out after the final panel to all library staff, teachers, and parents/caregivers who indicated on their registration form that they would be willing to receive a survey (n=622).	**151 total respondents** (112 library staff, 21 teachers, 14 parents/ caregivers) **Response rate = 24%**
Program Registrant Focus Groups	Individuals who completed a registration	Virtual focus groups; participants expressed interest in participating in the focus group on the Program Registrant Survey.	4 Focus Groups with a total of **10 participants** (8 library staff, 2 teachers)
Observations	N/A	Evaluators attended each *Dream Team* panel to learn about the events, information shared by engineers, and questions asked by participants.	N/A

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[1] Paulsen, C.A. (2018). Dream Big Evaluation Report. Concord, MA: Concord Evaluation Group.
[2] True attendance of the panels cannot be determined since presenters did not know if individuals or multiple people were watching off one device. Thus, the response rate cannot be determined.

Summary of Findings

Dream Team panels and viewer feedback

Evaluators attended each of the five *Dream Team* panels to learn about the events, information shared by engineers, and questions asked by participants.

Panel content

Summary
- Overall, *DreamTeam* panels communicated the message that engineers are creative problem solvers and provided the audience with background on panelists' educational and career trajectories and interests. Some interaction with the audience through Q&A was also observed.

There were five panels, each with a different theme. There were between three and four engineers on each panel, and one engineer acted as a moderator. A common theme across all of the panels was that engineering requires creative problem solving. Engineers shared background on their careers and how they became involved in engineering. Each panel also featured a demonstration of an interactive activity that could be done at home. For example, a panelist demonstrated a water filtration activity where viewers could make their own filter at home.

Individuals viewing the panel asked some questions in the chat. An ASCE staff member forwarded these questions to panelists so they could address them specifically. The number of questions ranged from 1-7 per panel, with an average of about four questions per panel. This demonstrates that viewers were engaged and interested in learning more, and provided a sense of interaction despite the panel being virtual. For example, viewers asked:
- "What are some more examples of social justice projects that engineers work on?"
- "How do you convince people that may be reluctant that public transportation is worth investing in?"
- "Who are the engineers along your path that inspired you the most? Why?"

Viewer feedback

A post-panel audience survey was administered following each panel. Attendees could access the survey link via a link provided in the chat or by copying the URL from a PowerPoint slide shown at the end of each panel. There were 12 responses to the survey.[3]

Summary
- Survey respondents had experiences with engineers and engineering before watching the panel. Most had heard an engineer speak about their work (83%), attended a program about engineering (75%), and/or met an engineer (75%). Despite these prior experiences, most respondents indicated that they learned new things, including something about what engineers do (75%) and how they make a difference in our world (83%).
- Survey respondents thought favorably of the engineering panels. All felt that the engineers were interesting and many reported that it was a memorable experience (67%) and that they connected personally to the engineers' stories (67%).

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[3] These data should be approached with caution as the size of the sub-population is small.

Figure 1. Over three quarters of respondents had previously heard an engineer speak about their work (n=12)

Legend: No/Blank, Yes

Statement	No/Blank	Yes
I have heard an engineer speak about their work before	17%	83%
I have attended a program about engineering before today	25%	75%
I have met an engineer before	25%	75%
I am really interested in engineering	42%	58%
I have watched the Dream Big: Engineering Our World film	50%	50%
I have attended another Dream Team Engineering Panel program before today	67%	33%

Source: post-panel survey

Figure 2. All respondents thought the engineers were interesting (n=12)
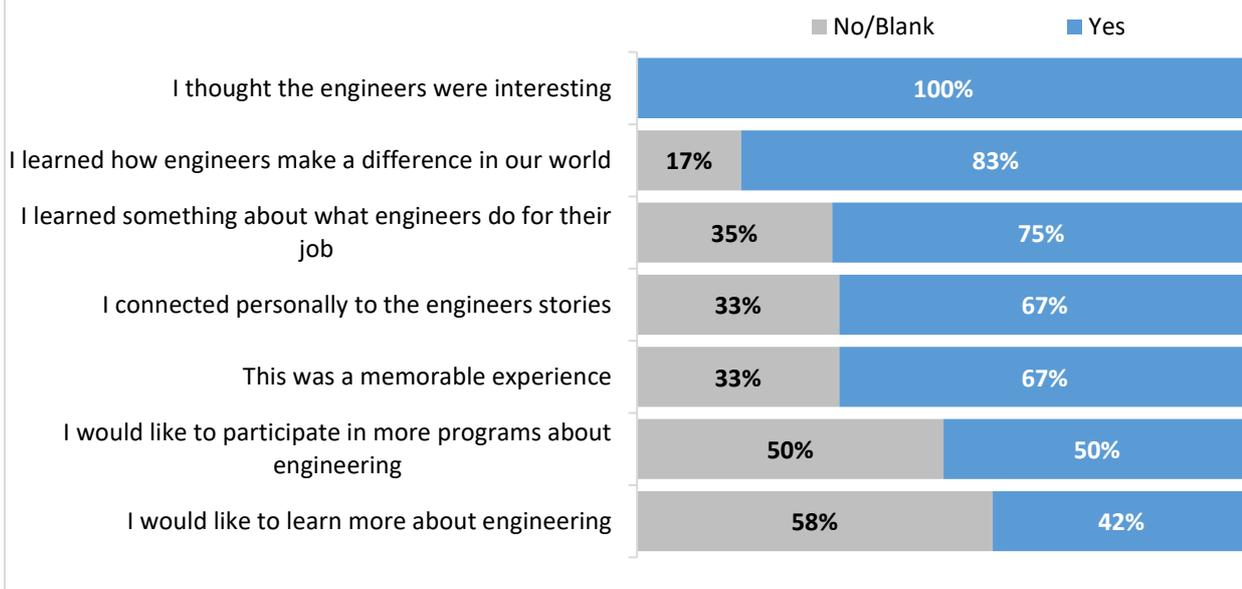
Legend: No/Blank, Yes

Statement	No/Blank	Yes
I thought the engineers were interesting		100%
I learned how engineers make a difference in our world	17%	83%
I learned something about what engineers do for their job	35%	75%
I connected personally to the engineers stories	33%	67%
This was a memorable experience	33%	67%
I would like to participate in more programs about engineering	50%	50%
I would like to learn more about engineering	58%	42%

Source: post-panel survey

Comments shared by respondents about what they found interesting or learned from the panel included:
- "The alternatives to reduce environmental impact."
- "To see that someone else has had experience working on the same type of internship work as me."
- "I liked hearing about the variety of projects they were working on."
- "Mentors are important to encourage students into fields where they are not represented."
- "I learned that engineering is more than just construction and can make a difference in the world."
- "Engineering can make use of simple, abundant substances to drastically change living environment."
- "I had never seen the water foil boat activity done with smaller, tinier boats."
- "Hearing about "indoor farms" was new!"
- "Arduino, math, science and engineering connectivity allows you to not have to choose one."
- "Inspiration can come for people or problems."

Feedback from program registrants (library staff, teachers, and parents/caregivers)

Library staff, teachers, and parents/caregivers who registered for the program and agreed to participate in data collection activities were sent an online survey (the Program Registrant Survey). Those selecting "Other" as their role on their registration form were not sent the follow-up survey unless they could be clearly identified as library or school staff. The results in the remaining sections will be broken down by the three main audience groups (library staff, teachers, and parents/caregivers) where appropriate. It should be noted, however, that library staff provided the vast majority of responses to the Program Registrant Survey, so results from teachers and parents/caregivers and any comparisons between the three groups should be taken as preliminary.

Eight library staff and two teachers indicating an interest in providing further feedback were also contacted about participating in a focus group and their feedback is incorporated in the remaining sections where applicable.

About program registrants

Summary
- Library staff represented the largest percentage of program registrants (42%), more than double the percentage of teachers (17%) and parents/caregivers (18%).
- Many library staff were from small libraries (58%) and served rural communities (65%).
- Teachers were mostly from small- and medium-sized schools (79%) and served a range of community types.

Figure 3. The majority of program registrants were from libraries (n=881)

Source: Program Registration Form

Others mainly included: engineers, other school staff (e.g., career and vocational counselor, STEM administrator), other informal educators, scout leaders, students
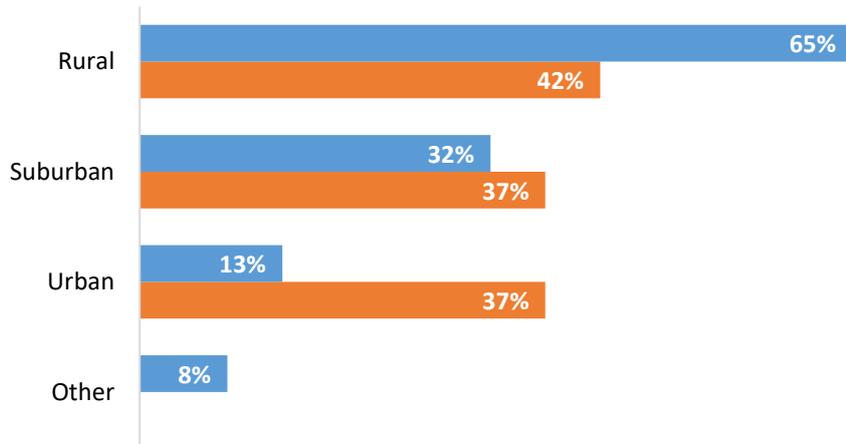
Figure 4. Most library and school staff were from small- or medium-sized institutions

Size of **library (n=111)** or **school (n=19)**
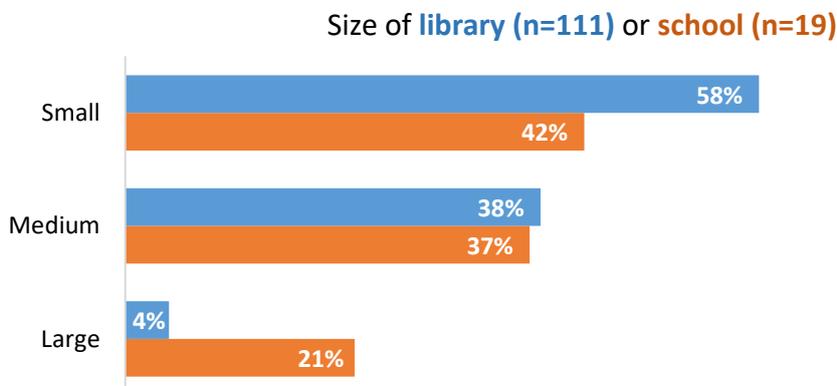
Source: Program Registrant Survey

Figure 5. The majority of libraries served rural communities, while schools served a wider range of communities

Primary communities served by **libraries (n=109)** or **schools (n=19)***

Source: Program Registrant Survey
*Sums to >100% because respondents could select >1 answer

Library audiences and promotion

Summary
- Most (84%) library staff reported using social media to promote the program to patrons. Other popular forms of promotion were the library's website/events calendar (41%), general patron email/newsletter (30%), and flyers (28%).
- The most common audience that libraries specifically promoted the program to were families (71%). At least one-third also specifically promoted to tweens (38%), teens (36%), and schools/school districts (33%).

Figure 6. Most libraries used social media to promote the program (n=109)
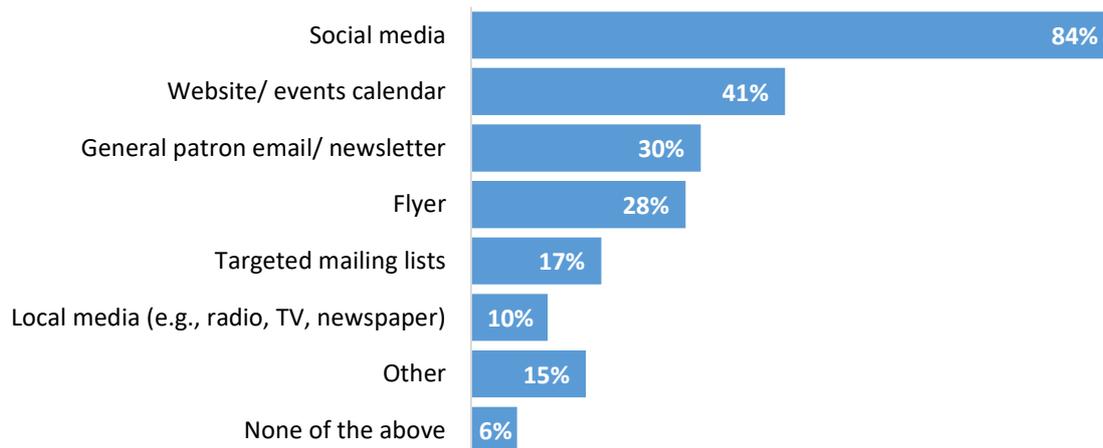
Source: Program Registrant Survey
Survey question: How did you promote the program to your patrons?
*Sums to >100% because respondents could select >1 answer

**Other types of promotion mentioned by at least two respondents included sharing with schools/school districts/homeschool groups (n=7) and word of mouth (n=2). Responses indicated as "Other" most often mentioned that the library promotes programs to all (n=5).

Figure 7. Most libraries specifically promoted the program to families (n=108)

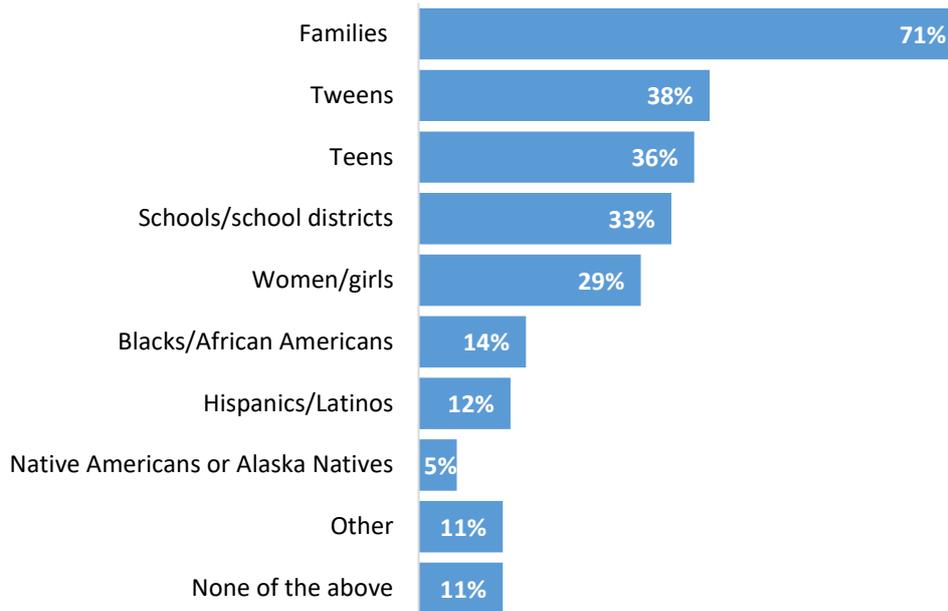| Audience	Percent
Families	71%
Tweens	38%
Teens	36%
Schools/school districts	33%
Women/girls	29%
Blacks/African Americans	14%
Hispanics/Latinos	12%
Native Americans or Alaska Natives	5%
Other	11%
None of the above	11%

Source: Program Registrant Survey

Survey question: What specific audiences did you reach out to when promoting this program?

*Sums to >100% because respondents could select >1 answer

Prior knowledge of and engagement with engineering-related activities

Summary

- Teachers and parents/caregivers were more likely to report that they are "familiar" or "very familiar" with civil engineering topics than library staff (teachers and parents/caregivers =57% each, library staff = 19%)
- Most library staff (71%) had previously offered hands-on engineering-related programs to their patrons; however, only about one-quarter featured engineers. They rarely offered other types of engineering-related activities and 23% reported that they did not offer any engineering-related programming to their patrons. Similarly, most teachers (72%) and parents/caregivers (69%) indicated that their students/children had the opportunity to participate in hands-on engineering-related activities, but fewer (38% or less) had the opportunity to participate in other engineering-related programs or events (festivals, virtual or in-person talks by engineers, screenings of engineering-related films, career fairs).

Figure 8. Teachers and parents/caregivers were more likely to be familiar with civil engineering

Percent selecting they are "familiar" or "very familiar" with civil engineering topics

Group	Percent
Library staff (n=370)	19%
Teacher (n=150)	57%
Parent/caregiver (n=159)	57%
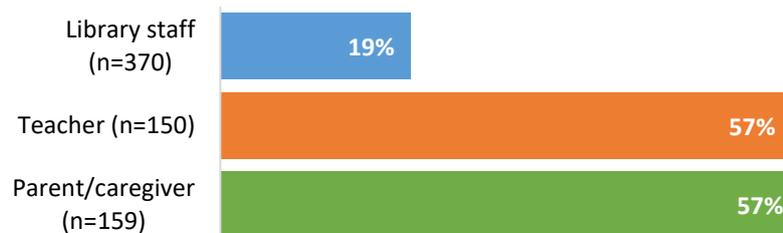
Source: Program Registration Form

Figure 9. Many registrants offered/participated in hands-on engineering-related programming before the program

	Library staff – library conducted (n=108)	Teachers – students had opportunity (n=18)	Parents/caregivers – children had the opportunity (n=13)
Hands-on engineering-related programming or events*	(71%*)	(72%)	(69%)
Community festivals featuring engineering activities	(14%)	(11%)	(23%)
In-person engineering-related talks presented by an engineer	(13%)	(28%)	(38%)
Screenings of engineering-related films or documentaries	(6%)	(22%)	(38%)
Virtual engineering-related talks presented by an engineer	(6%)	(11%)	(15%)
Career fairs featuring engineers	(4%)	(22%)	(31%)
None of the above	(23%)	(11%)	(8%)

Source: Program Registrant Survey
*For library staff, this combines programming conducted by library staff (69% of respondents) and programming conducted by engineers (28% of respondents).
**Sums to >100% because respondents could select >1 answer

Program experience and feedback

Summary
- Most teachers and parents/caregivers personally watched the film (89% and 92%, respectively), but only 40% of library staff watched the film. Few respondents reported attending a panel.
- Respondents who personally watched the panels had a positive experience. All but one agreed that the program demonstrated how engineers make a difference in our world. Most agreed that they are more aware of what engineers do (82%) and that the engineers were engaging (70%). In describing the *Dream Team* panels, respondents most often noted they were interesting, informative, eye-opening, and inspirational.
- Around three-quarters or more of respondents agreed that they would offer, participate in, and recommend similar programs in the future.
- Most (at least 80%) of respondents reported that the combination of the film and the panel was valuable.
- Some noted challenges accessing the program such as the timing of the film and panels and the length of time the film was available not being optimal. A few also noted difficulties accessing the program. They tended to be unaware that *Dream Team* panels were recorded and available to view and share.

Program attendance

Figure 10. Respondents were more likely to have watched the film than the panels

Library staff (n=109) ● Teacher (n=18) ● Parent/caregiver (n=13)

Personally watched the film
- Library staff: 40%
- Teacher: 89%
- Parent/caregiver: 92%

Personally attended at least one panel
- Library staff: 11%
- Teacher: 22%
- Parent/caregiver: 8%
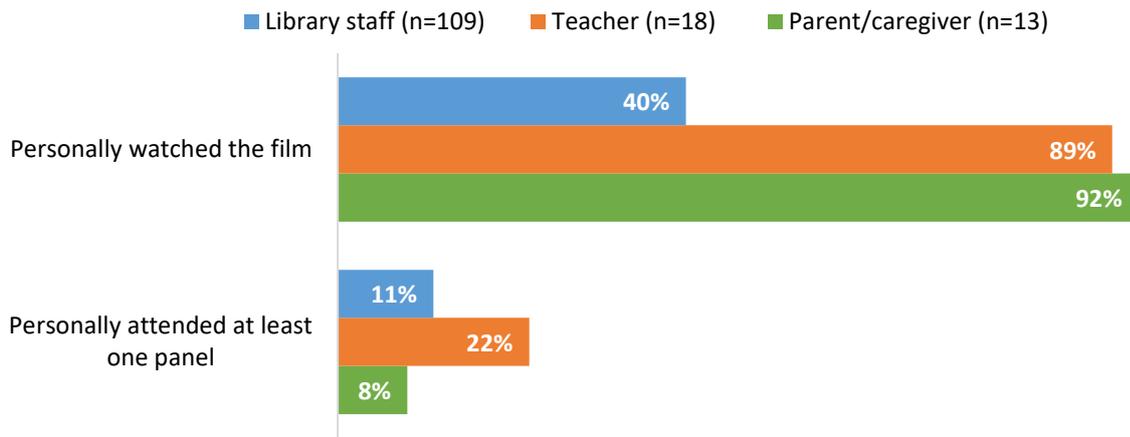
Source: Program Registrant Survey

Registrants' perception of the program

Figure 11. Respondents who attended panels had a positive experience (n=17*)

Strongly disagree/Disagree ● Neither agree nor disagree ● Strongly agree/agree

This program demonstrated how engineers make a difference in our world
- 6% | 94%

After this program, I am more aware of what engineers do
- 6% | 12% | 82%

The presentation by the engineers was engaging
- 12% | 18% | 70%
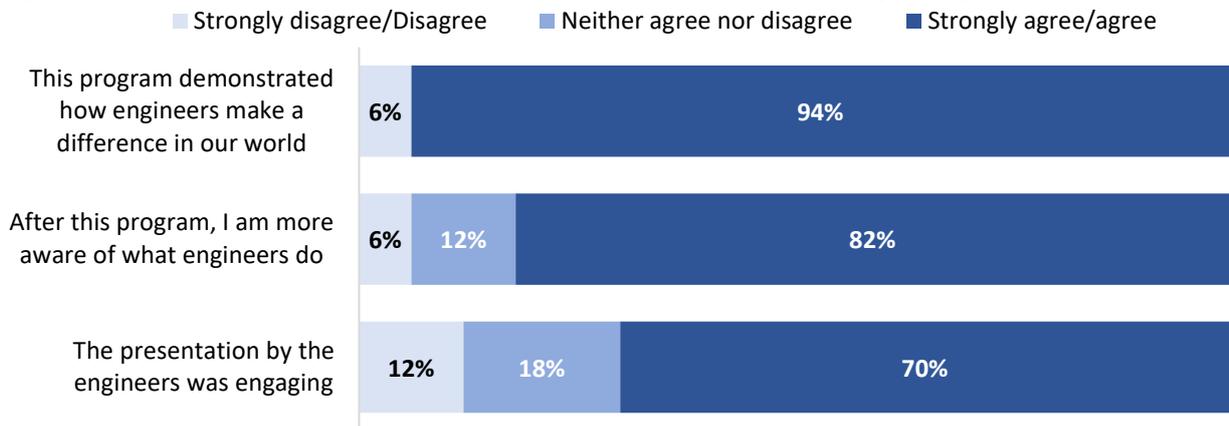
Source: Program Registrant Survey

*Asked only of respondents who attended at least one *Dream Team* panel. Due to low numbers, responses to this question were not disaggregated by type of attendee (library staff, teacher, parent/caregiver).

Figure 12. Respondents would promote, attend, and recommend similar programs

Library staff (n=109) ● Teacher (n=18) ● Parent/caregiver (n=13)

Agree they would offer/participate in similar programs
- Library staff: 76%
- Teacher: 73%
- Parent/caregiver: 80%

Agree they would recommend programs like this to others
- Library staff: 73%
- Teacher: 73%
- Parent/caregiver: 80%
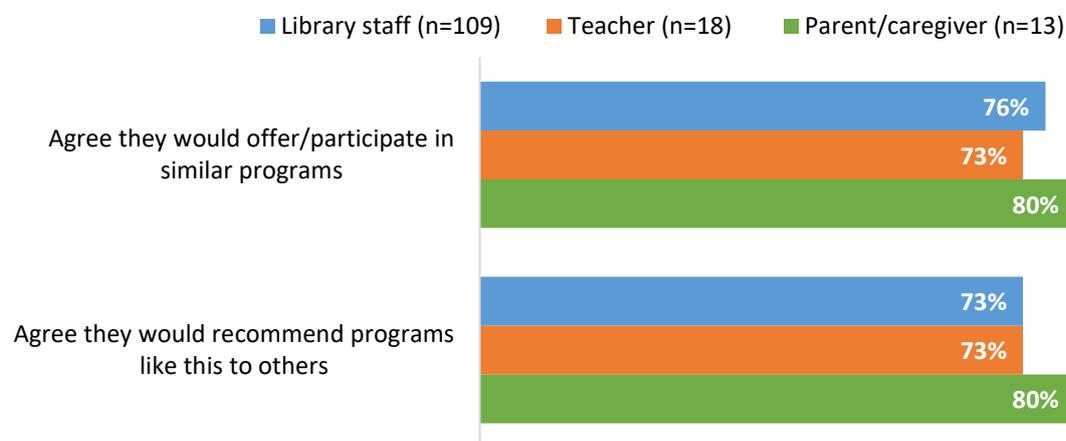
Source: Program Registrant Survey

Figure 13. Respondents saw value in offering the combination of the film and the panels

Percent indicating the combination of the film and panels was "valuable" or "very valuable"

Parent/caregiver (n=6)	100%
Teacher (n=12)	92%
Library staff (n=100)	80%
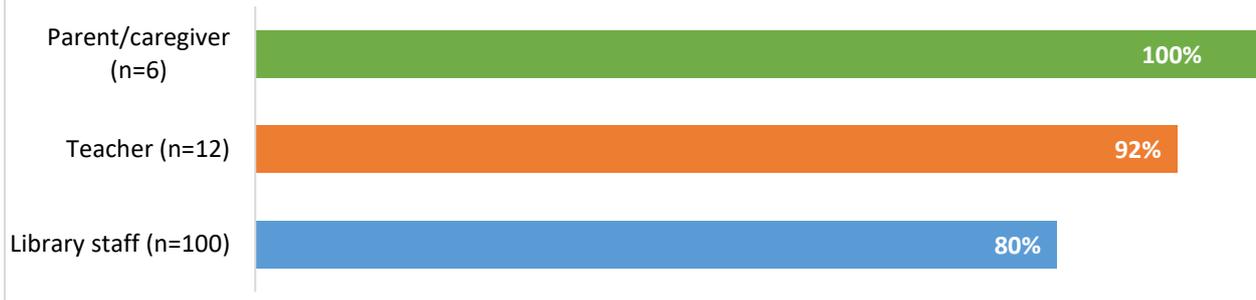
Source: Program Registration Form

On the Program Registrant Survey, respondents were asked to describe the *Dream Team* panels in five words or less. Overall, 43 respondents provided a description. Categories and examples are shown in **Table 3**. Overall, respondents most often noted that the *Dream Team* panels were interesting, informative eye-opening, and inspirational.

A few also mentioned challenges such as the timing not being optimal or difficulties accessing the program as is consistent with feedback from focus group participants. This mainly involved the film or panels not being available during times when their students or patrons were free, or not having enough time to incorporate it into programming or class time. For example, one library staff member described hearing from a teacher that their class periods are only 40 minutes in length, so they would have needed a full two days to view the film during class time. Furthermore, most focus group participants were unaware that the *Dream Team* panels were recorded and available to view and share following the program.

Table 3. When describing the program in five words or less, program registrants noted the *Dream Team* panels were interesting, eye-opening, and informative.

Category	# Respondents	% Respondents*	Examples
Informative, Educational, Eye-opening	13	30%	• "Intuitive insightful educational fun" • "Interesting and informational"
Interesting, Creative, Imaginative	12	28%	• "The sessions were educational and creative!" • "Excellent, Interesting, Informative, Imaginative, Inspiring"
Inspiring, encouraging, motivating	11	26%	• "Engaging, eye-opening, inspiring" • "I found them encouraging" • "Super inspirational"
Fun, Engaging, Entertaining	7	16%	• "Educational, Entertaining, Engaging, Cool, Wow"
Good, Great, Excellent	7	16%	• "Great, Awesome, Fun, Interesting" • "It was great!"
Challenge mentioned	5	12%	• "They did not occur when we had classes" • "Time/ link changes very difficult" • "Great, but panel dates and times were not good." • "Short notice" • "It wouldn't let me in, so I could not access any of the offerings."
Diversity, inclusion	4	9%	• "I loved the diversity of them" • "Inclusive, professional, interesting, inspiring, demystifying"
Good resource, Useful	2	5%	• "They were a great resource."

Source: Program Registrant Survey

*Sums to >100% because responses could fit into multiple categories

Benefits to library patrons and students

Summary
- Library staff and teachers saw two main benefits of the program for their patrons and students (1) it provided access to diverse engineers which showcased career possibilities they may not have otherwise been aware of, and (2) it provided youth with an understanding of what engineers do, especially that they help make a difference in our world.
- Since virtual programs provide access to engineers that youth may not otherwise be able to connect with, library staff and teachers noted that these virtual opportunities to connect with engineers would still be valuable after the COVID-19 pandemic.

Through the four Focus Groups and open-ended survey questions, library staff and teachers provided details about how they felt their patrons or students benefited from the program.

Library staff and teachers mentioned that both the documentary and panels helped provide access to and showcase passionate, diverse engineers. This not only helped youth learn about the work of engineers and how they are making the world a better place, but also sent an inspirational message which exposed youth to new possibilities. Those serving populations traditionally underrepresented in STEM especially valued the ethnic diversity present in the film and panels since these youth do not often see engineers that look like them. Additionally, those from rural areas valued the opportunity to showcase opportunities and connect with engineers that youth would not typically be exposed to in their local community. They noted that virtual programs would still be important following the COVID-19 pandemic because of the access they provide. A few example quotes are shown below. For additional quotes, see **Appendix C**.

- "I thought it was wonderful that the students and staff had the opportunity to experience different aspects such as Black and Spanish speakers." ~Teacher
- "Students were able to experience a new career field they may not have thought of before." ~Teacher
- "Kids need mirrors to see what their life is like where they live, but they also need windows to see what's out there. And I think having people talk to them that they might not the chance to talk to an engineer in a small town, that gives them the window to see what's out in the world and available." ~Library staff
- "I liked that there were panels that included minority people in engineering jobs because we have a lot of Hispanic people in our community. For STEM careers in the future, there's not a lot of students that feel confident that they're included in those kinds of careers because they don't see a lot of representation. So I appreciated that there was that minority representation so the kids could see themselves in the future in those kinds of jobs." ~Library staff
- "I think it's really, really valuable to see that this is a stepping stone that will allow you to get to hear where you can solve real world problems and find real world solutions...The other thing is to see how many different directions engineering can go. From micro engineering to building bridges and everything in between." ~Library staff

Interest in future engineering-related activities

Summary

- For Engineers Week February 2021, when library programs and schools are likely to still be virtual, library staff, teachers, and parents/caregivers would all be interested in at-home activities and virtual demonstrations of engineering-related activities (average interest greater than 3 out of 4). Teachers would also be highly interested in additional virtual screenings of *Dream Big*, potentially because they would have a different group of students in the spring or because virtual visits by engineers are more feasible for a school setting than in-person visits. Similar results were found when asking participants to look to the future when in-person activities are possible again. At-home activities and hand-on engineering-related activities were still of interest to all, and teachers were also slightly more interested than others in additional talks by engineers and screenings of *Dream Big*. Interestingly, there was little difference in interest based on whether these activities were offered in-person or virtually.
- On the post-panel survey, viewers were asked a similar question about what activity they would be most interested in joining in February 2021. Results were mixed, with one-third selecting that they would like ideas for at-home activities and one-quarter selecting additional virtual programs such as additional *Dream Team* panels or hands-on demos.

Table 4. During Engineers week February 2021, respondents would be most interested in hands-on and at-home activities

Activity Type	Average interest (1-4, where 4 = highest interest)		
	Library staff (n~100*)	Teachers (n~16*)	Parents/ caregivers (n~10*)
Take-home activities (prepared)	3.44	3.63	3.25
Ideas for at-home activities	3.42	3.31	3.25
Virtual engineering-related demos	3.20	3.50	3.18
Virtual talks by engineers	2.81	3.00	2.30
Virtual screenings of Dream Big	2.98	3.69	2.44

Source: Program Registrant Survey

*The number of respondents ranged from 99-102 library staff, 15-16 teachers, and 9-12 parents/caregivers based on activity type

Table 5. In the future, respondents would be most interested in hands-on and at-home activities

Activity Type	Format	Average interest (1-4, where 4 = highest interest)		
		Library staff (n~100*)	Teachers (n~16*)	Parents/ caregivers (n~10*)
Take-home activities (prepared)	N/A	3.45	3.75	3.45
Ideas for at-home activities	N/A	3.43	3.50	3.20
Hands-on engineering-related activities	Virtual	3.11	3.80	3.20
	In-person	3.38	3.56	3.20
Talks by engineers	Virtual	2.91	3.06	2.30
	In-person	2.89	3.13	2.10
Screenings of Dream Big	Virtual	2.88	3.56	2.40
	In-person	2.95	3.13	2.40

Source: Program Registrant Survey

*The number of respondents ranged from 98-103 library staff, 15-16 teachers, and 10-11 parents/caregivers based on activity type
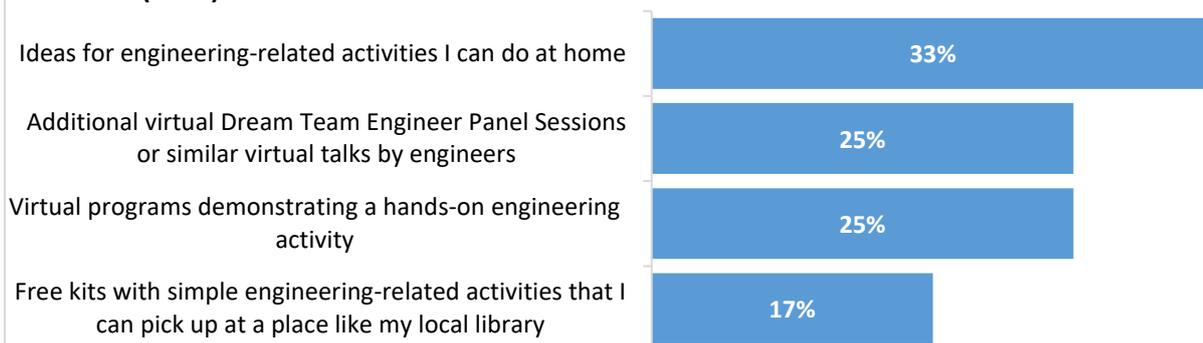
Figure 14. This February, *Dream Team* panel attendees were most interested in at-home activities (n=12)

Ideas for engineering-related activities I can do at home	33%
Additional virtual Dream Team Engineer Panel Sessions or similar virtual talks by engineers	25%
Virtual programs demonstrating a hands-on engineering activity	25%
Free kits with simple engineering-related activities that I can pick up at a place like my local library	17%

Source: post-program survey

Conclusions and Areas of Consideration

Dream, Build, Create was generally well-received. The audience felt the engineers were interesting and engaging and reported that they learned about the field of engineering and what engineers do. Most library staff, teachers, and parents/caregivers who registered for this program agreed that they would be interested in similar programs in the future and would recommend them to others.

Program registrants felt that *Dream, Build, Create* provided a valuable opportunity to connect viewers with diverse engineers. It highlighted the variety of roles that engineers take on, including that they are creative problem solvers and help make the world better. It also showcased diversity in the engineering profession, providing an inspiring and eye-opening opportunity for youth so that they could see future possibilities that they may not have previously known about or considered. This was especially important for participants from groups traditionally underrepresented in STEM who may not have previously seen people who look like them in the engineering profession. Additionally, rural communities, which made up a large percentage of program registrants, benefited from access to engineers that are less likely to be located in their local communities.

Although many library staff, teachers, and parents/caregivers had previously offered or participated in hands-on engineering activities in the past, these rarely involved direct interaction with engineers. They would be interested in additional engineering-related activities, especially at-home activities and virtual demonstrations, to participate in during the February 2021 Engineers Week. However, they would also value virtual programs post-COVID because of the access it provides to engineers that they may not otherwise be able to engage with. Teachers especially would be interested in additional *Dream Team* panels and screenings of *Dream Big.*

The main challenge expressed by program registrants was the timing of the film and panels. Since the film was only available for a 24-hour period on non-consecutive days, some had trouble incorporating it into their class time or programming schedule. Similarly, since the panels were live, it was not always possible to arrange a group viewing and many focus group participants seemed unaware that the panels were recorded and available on YouTube. Some also noted technical challenges connecting to the program.

Based on the findings in this report, the team may wish to consider:

- ❖ Making the *Dream Big* film available for longer periods of time (i.e., at least 48 hours) so that it is more likely it can be incorporated into teachers' class time or library programs.
- ❖ Making it more clear to program registrants that *Dream Team* panels will be recorded and available following the program, including information about where to find the recordings. For example, a follow-up communication to registrants could include links to the panel videos and suggestions for how they could be shared and used.

Appendix A: Detailed Results

Where questions were targeted at a specific audience group, table headings are color coded as follows: **blue = library staff**, **orange = teachers**, **green = parents/caregivers**

Registration Form Data:

Registration Form Question: Are you a:		
	N	**%**
Library staff	370	42%
Parent/caregiver	159	18%
Teacher	150	17%
Other*	202	23%
Total	881	

Others include: engineers, other school staff (e.g., career and vocational counselor, STEM administrator), other informal educators, scout leaders, students

Registration Form Question: How familiar are you with civil engineering topics?				
Respondent Type	**Not familiar**	**Somewhat familiar**	**Familiar**	**Very Familiar**
Library staff (n=370)	123 (33%)	174 (47%)	53 (14%)	20 (5%)
Teacher (n=150)	17 (11%)	47 (31%)	35 (23%)	51 (34%)
Parent/caregiver (n=159)	26 (16%)	43 (27%)	33 (21%)	57 (36%)
Other (n=202)	15 (7%)	35 (17%)	47 (23%)	105 (52%)
Total (n=881)	181 (21%)	299 (34%)	168 (19%)	233 (26%)

Post-panel Survey:

Survey Question: Tell us about yourself! Check all that apply.		
	Yes	**No/Blank**
I have heard an engineer speak about their work before	10 (83%)	2 (17%)
I have attended a program about engineering before today	9 (75%)	3 (25%)
I have met an engineer before	9 (75%)	3 (25%)
I am really interested in engineering	7 (58%)	5 (42%)
I have watched the Dream Big: Engineering Our World film	6 (50%)	6 (50%)
I have attended another *Dream Team* Engineering Panel program before today	4 (33%)	8 (67%)
None of the above	0	0

*Sums to >100% because respondents could select >1 answer

Survey Question: What did you think about today's program? Check all that are true.		
	Yes	**No/Blank**
I thought the engineers were interesting	12 (100%)	0
I learned how engineers make a difference in our world	8 (83%)	4 (17%)
I learned something about what engineers do for their job	9 (75%)	3 (35%)
I connected personally to the engineers stories	10 (67%)	2 (33%)
This was a memorable experience	5 (67%)	7 (33%)
I would like to participate in more programs about engineering	6 (50%)	6 (50%)
I would like to learn more about engineering	8 (42%)	4 (58%)

*Sums to >100% because respondents could select >1 answer

Survey Question: Engineers Week will be taking place in February 2021. Which of these would you be most interested in doing during Engineers Week this coming February?		
	N	**%**
Ideas for engineering-related activities I can do at home	4	33%
Additional virtual *Dream Team* Engineer Panel Sessions or similar virtual talks by engineers	3	25%
Virtual programs demonstrating a hands-on engineering activity	3	25%
Free kits with simple engineering-related activities that I can pick up at a place like my local library	2	17%

Post-program Survey:

Program Registrant Survey:

Survey Question: Did you register for this program as a:		
	N	**%**
Library staff member	112	74%
Teacher or other school staff	21	14%
Parent/caregiver	14	9%
Other • ASCE Outreach • Girl Scout Troop Leader • University faculty • Student	4	3%
Total	151	

Library Size	N	%
Small	64	58%
Medium	42	38%
Large	5	4%
Total	111	

Primary communities your library serves (Check all)	N	%*
Rural	71	65%
Suburban	35	32%
Urban	14	13%
Other • Small city/town (3) • Military (2) • High poverty (1) • Statewide (1) • College town (1) • School (1)	9	8%
Total	109	

*Sums to >100% because respondents could select >1 answer

School Size	N	%
Small	8	42%
Medium	7	37%
Large	4	21%
Total	19	

Primary communities your school serves (Check all)	N	%*
Urban	8	42%
Rural	7	37%
Suburban	7	37%
Other	-	-
Total	19	

*Sums to >100% because respondents could select >1 answer

Survey Question: How did you promote the program to your patrons? (check all)		
Promotion Type	N	%
Social media	92	84%
Website/events calendar	45	41%
General patron email/newsletter	33	30%
Flyer	31	28%
Targeted mailing lists	19	17%
Local media (e.g., radio, TV, newspaper)	11	10%
Other • Shared with schools/ districts/ homeschool groups (7) • Word of mouth (2) • Unable to participate due to COVID (2) • Activity Kits (1) • Outreach to library staff (1) • In-house (1) • Newsletter (1) • Representative from ASCE (1)	16	15%
None of the above	6	6%
Total	109	

Survey Question: What specific audiences did you reach out to when promoting this program? (check all)		
Promotion Type	**N**	**%**
Families	77	71%
Tweens	41	38%
Teens	39	36%
Schools/school districts	36	33%
Women/girls	31	29%
Blacks/African Americans	15	14%
Hispanics/Latinos	13	12%
Native Americans or Alaska Natives	5	5%
Other • All (5) • Social media viewers (2) • Attendees from previous robotics programs (1) • Homeschool families (1) • Library staff working with youth (1) • Unsure (1) • Unable to participate due to COVID (1)	12	11%
None of the above	12	11%
Total	108	

Survey Question: Did you personally watch the Dream Big: Engineering Our World film?			
Respondent Type	**Yes**	**No**	**Unsure**
Library staff member (n=107)	43 (40%)	63 (59%)	1 (1%)
Teacher or other school staff (n=18)	16 (89%)	2 (11%)	-
Parent/caregiver (n=13)	12 (92%)	1 (8%)	-
Total (n=143)	76 (53%)	66 (46%)	1 (1%)

Survey Question: Did you personally attend a *Dream Team* Engineer Panel Session?				
Respondent Type	**Yes – I attended one session**	**Yes – I attended more than one session**	**No**	**Unsure**
Library staff member (n=109)	9 (8%)	3 (3%)	96 (88%)	1 (1)
Teacher or other school staff (n=18)	4 (22%)	-	14 (78%)	-
Parent/caregiver (n=13)	1 (8%)	-	12 (86%)	-
Total (n=143)	14 (10%)	5 (3%)	125 (81%)	1 (1%)

Survey Question: Prior to this program, what types of engineering-related activities had your library conducted? (check all)		
Activity Type	N	%
Hands-on engineering-related programming or events facilitated by library staff	74	69%
Hands-on engineering-related programming or events facilitated by an engineer	26	24%
Community festivals featuring engineering activities	15	14%
In-person engineering-related talks presented by an engineer	14	13%
Virtual engineering-related talks presented by an engineer	6	6%
Screenings of engineering-related films or documentaries	6	6%
Career fairs featuring engineers	4	4%
Other • Non-engineering STEM/STEAM programs (2) • Engineering exhibit (1) • Books and a display (1) • Specific engineering instructor (1) • STEM programming facilitated by a library partner (1) • Summer Reading Programs (1)	7	6%
None of the above	25	23%
Total	108	

Survey Question: Prior to this program, what types of engineering-related activities did students at your school have the opportunity to participate in? (check all)		
Activity Type	N	%
Hands-on engineering-related programming or events	13	72%
In-person engineering-related talks presented by an engineer	5	28%
Screenings of engineering-related films or documentaries	4	22%
Career fairs featuring engineers	4	22%
Community festivals featuring engineering activities	2	11%
Virtual engineering-related talks presented by an engineer	2	11%
Other • Some hands-on STEM activities (1) • STEM family nights (1)	2	11%
None of the above	2	11%
Total	18	

Survey Question: Prior to this program, what types of engineering-related activities did your family/children have the opportunity to participate in? (check all)		
Activity Type	N	%
Hands-on engineering-related programming or events	9	69%
In-person engineering-related talks presented by an engineer	5	38%
Screenings of engineering-related films or documentaries	5	38%
Career fairs featuring engineers	4	31%
Community festivals featuring engineering activities	3	23%
Virtual engineering-related talks presented by an engineer	2	15%
Other • With a family member who was an engineer (1)	1	8%
None of the above	1	8%
Total	13	

Survey Question: Please indicate your level of agreement with the following statements about the virtual *Dream Team* Engineer Panel Sessions* (n=17)						
Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Average (1-5)
The presentation by the engineers was engaging	2 (12%)	-	3 (18%)	6 (35%)	6 (35%)	3.82
After this program, I am more aware of what engineers do	1 (6%)	-	2 (12%)	9 (53%)	5 (29%)	4.00
This program demonstrated how engineers make a difference in our world	1 (6%)	-	-	9 (53%)	7 (41%)	4.24

Asked only of respondents who attended at least one Dream Team panel

Survey Question: Please indicate your level of agreement with the following statements about the virtual *Dream Team* Engineer Panel Sessions						
Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Average (1-5)
I would promote similar programs to my patrons in the future (n=92)	4 (4%)	-	18 (20%)	37 (40%)	33 (36%)	4.03
I would recommend that other libraries promote programs like this to their patrons (n=93)	4 (4%)	-	20 (22%)	33 (36%)	36 (39%)	4.04

Survey Question: Please indicate your level of agreement with the following statements about the virtual *Dream Team* Engineer Panel Sessions						
Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Average (1-5)
I would offer similar programs to my students in the future (n=11)	-	-	3 (27%)	2 (18%)	6 (55%)	4.27
I would recommend that other schools offer programs like this to their students (n=11)	-	-	3 (27%)	1 (9%)	7 (64%)	4.36

Survey Question: Please indicate your level of agreement with the following statements about the virtual *Dream Team* Engineer Panel Sessions						
Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Average (1-5)
My family/children would participate in similar programs in the future (n=5)	1 (20%)	-	-	2 (40%)	2 (40%)	3.80
I would recommend programs like this to others (n=5)	1 (20%)	-	-	1 (20%)	3 (60%)	4.00

Survey Question: How valuable do you think it was to offer the Dream Big film along with the *Dream Team* engineering panels					
Audience Type	Not at all valuable	Somewhat valuable	Valuable	Very valuable	Average (1-4)
Library staff member (n=100)	-	20 (20%)	52 (52%)	28 (28%)	3.08
Teacher or other school staff (n=12)	-	1 (8%)	6 (50%)	5 (42%)	3.33
Parent/caregiver (n=6)	-	-	3 (50%)	3 (50%)	3.50
Total (n=121)	-	22 (18%)	62 (51%)	37 (31%)	3.12

Survey Question: Engineers Week will be taking place in February 2021. How interested would you be in resources for providing the following activities for your patrons this coming February?					
Activity Type	Not at all interested	Somewhat interested	Interested	Very interested	Average (1-4)
Ideas for other engineering-related activities that could be facilitated virtually by library staff (n=102)	3 (3%)	18 (18%)	37 (36%)	44 (43%)	3.20
Materials lists and instruction sheets for my library to create engineering-related activity kits for patrons to take home with them (n=102)	-	15 (15%)	27 (27%)	60 (60%)	3.44
Material lists and instruction sheets for parents/caregivers describing engineering-related activities they can do with their children at home (n=103)	1 (1%)	14 (14%)	29 (28%)	59 (57%)	3.42
Additional virtual *Dream Team* Engineer Panel Sessions or similar virtual talks by engineers (n=100)	7 (7%)	29 (29%)	40 (40%)	24 (24%)	2.81
Additional virtual screenings of the Dream Big: Engineering Our World Film (n=99)	5 (5%)	27 (27%)	32 (32%)	35 (35%)	2.98

Survey Question: Engineers Week will be taking place in February 2021. How interested would you be in offering the following activities to your students this coming February?					
Activity Type	Not at all interested	Somewhat interested	Interested	Very interested	Average (1-4)
Virtual programs demonstrating a hands-on engineering-related activity (n=16)	1 (6%)	-	5 (31%)	10 (63%)	3.50
Free kits with simple engineering-related activities that could be picked up at a place like my local library (n=16)	1 (6%)	-	3 (19%)	12 (75%)	3.63
Ideas for engineering-related activities that can be done at home (n=16)	1 (6%)	2 (13%)	4 (25%)	9 (56%)	3.31
Additional virtual *Dream Team* Engineer Panel Sessions or similar virtual talks by engineers (n=15)	2 (13%)	1 (7%)	7 (47%)	5 (33%)	3.00
Additional virtual screenings of the Dream Big: Engineering Our World Film (n=16)	-	1 (6%)	3 (19%)	12 (75%)	3.69

Survey Question: Engineers Week will be taking place in February 2021. How interested would you be in the following activities for your family/children to participate in this coming February?					
Activity Type	**Not at all interested**	**Somewhat interested**	**Interested**	**Very interested**	**Average (1-4)**
Virtual programs demonstrating a hands-on engineering-related activity (n=11)	1 (9%)	-	6 (55%)	4 (36%)	3.18
Free kits with simple engineering-related activities that could be picked up at a place like my local library (n=12)	1 (8%)	-	6 (50%)	5 (42%)	3.25
Ideas for engineering-related activities that can be done at home (n=12)	-	2 (17%)	5 (42%)	5 (42%)	3.25
Additional virtual *Dream Team* Engineer Panel Sessions or similar virtual talks by engineers (n=10)	1 (10%)	6 (60%)	2 (20%)	1 (10%)	2.30
Additional virtual screenings of the Dream Big: Engineering Our World Film (n=9)	3 (33%)	2 (22%)	1 (11%)	3 (33%)	2.44

Survey Question: In the future, when we are able to hold more in-person programs again, how interested would you be in resources for providing the following activities for your patrons?					
Activity Type	**Not at all interested**	**Somewhat interested**	**Interested**	**Very interested**	**Average (1-4)**
Ideas for other engineering-related activities that could be facilitated **virtually** by library staff (n=101)	3 (3%)	23 (23%)	35 (35%)	40 (26%)	3.11
Ideas for other engineering-related activities that could be facilitated **in-person** by library staff (n=102)	2 (2%)	12 (12%)	33 (32%)	55 (36%)	3.38
Materials lists and instruction sheets for my library to create engineering-related activity kits for patrons to take home with them (n=103)	1 (1%)	14 (14%)	26 (25%)	62 (60%)	3.45
Material lists and instruction sheets for parents/caregivers describing engineering-related activities they can do with their children at home (n=103)	1 (1%)	13 (13%)	30 (29%)	59 (57%)	3.43
Additional virtual *Dream Team* Engineer Panel Sessions or similar **virtual** talks by engineers (n=100)	4 (4%)	31 (31%)	35 (35%)	30 (30%)	2.91
In-person *Dream Team* Engineer Panel Sessions or other similar in-person talks by engineers (n=98)	6 (6%)	26 (27%)	39 (40%)	27 (18%)	2.89
Additional **virtual** screenings of the Dream Big: Engineering Our World Film (n=100)	7 (7%)	29 (29%	33 (33%)	31 (31%)	2.88
In-person screenings of the Dream Big Film (n=99)	5 (5%)	24 (24%)	41 (41%)	29 (29%)	2.95

Survey Question: In the future, when we are able to hold more in-person programs again, how interested would you be in offering the following activities to your students?					
Activity Type	**Not at all interested**	**Somewhat interested**	**Interested**	**Very interested**	**Average (1-4)**
Virtual programs demonstrating a hands-on engineering-related activity (n=15)	-	-	3 (20%)	12 (80%)	3.80
In-person programs demonstrating a hands-on engineering activity (n=16)	1 (6%)	-	4 (25%)	11 (69%)	3.56
Free kits with simple engineering-related activities that could be picked up at a place like my local library (n=16)	-	-	4 (25%)	12 (75%)	3.75
Ideas for engineering-related activities that can be done at home (n=16)	-	1 (6%)	6 (38%)	9 (56%)	3.50
Additional **virtual** *Dream Team* Engineer Panel Sessions or similar virtual talks by engineers (n=16)	1 (6%)	3 (19%)	6 (38%)	6 (38%)	3.06
In-person *Dream Team* Engineer Panel Sessions or similar in-person talks by engineers (n=16)	2 (13%)	2 (13%)	4 (25%)	8 (50%)	3.13
Additional **virtual** screenings of the Dream Big: Engineering Our World Film (n=16)	-	2 (13%)	3 (19%)	11 (69%)	3.56
In-person screenings of the Dream Big: Engineering Our World Film (n=16)	2 (13%)	2 (13%)	4 (25%)	8 (50%)	3.13

Survey Question: In the future, when we are able to hold more in-person programs again, how interested would you be in the following activities for your family/children to participate in?					
Activity Type	**Not at all interested**	**Somewhat interested**	**Interested**	**Very interested**	**Average (1-4)**
Virtual programs demonstrating a hands-on engineering-related activity (n=10)	1 (10%)	-	5 (50%)	4 (40%)	3.20
In-person programs demonstrating a hands-on engineering activity (n=10)	1 (10%)	1 (10%)	3 (30%)	5 (50%)	3.20
Free kits with simple engineering-related activities that could be picked up at a place like my local library (n=11)	-	-	6 (55%)	5 (46%)	3.45
Ideas for engineering-related activities that can be done at home (n=10)	-	1 (10%)	6 (60%)	3 (30%)	3.20
Additional **virtual** *Dream Team* Engineer Panel Sessions or similar virtual talks by engineers (n=10)	2 (20%)	4 (40%)	3 (30%)	1 (10%)	2.30
In-person *Dream Team* Engineer Panel Sessions or similar in-person talks by engineers (n=10)	3 (30%)	3 (30%)	4 (40%)	-	2.10
Additional **virtual** screenings of the Dream Big: Engineering Our World Film (n=10)	3 (30%)	2 (20%)	3 (30%)	2 (20%)	2.40
In-person screenings of the Dream Big: Engineering Our World Film (n=10)	2 (20%)	3 (30%)	4 (40%)	1 (10%)	2.40

Appendix B: Evaluation Instruments

<u>Post-panel Survey</u>

Please take a moment to answer these five short questions so we can improve programs like these in the future. All questions are optional and your answers will be kept anonymous. We appreciate your feedback!

1. Tell us about yourself! Check all that apply.
   - ☐ I have watched the *Dream Big: Engineering Our World* film
   - ☐ I have attended another *Dream Team Engineering Panel* program
   - ☐ I have attended a program about engineering before today
   - ☐ I am really interested in engineering
   - ☐ I have heard an engineer speak about their work before
   - ☐ I have met an engineer before
   - ☐ None of the above

2. What did you think about today's program? Check all that are true.
   - ☐ I thought the engineers were interesting
   - ☐ I connected personally to the engineers' stories
   - ☐ I learned something about what engineers do for their job
   - ☐ I learned how engineers make a difference in our world
   - ☐ I would like to learn more about engineering
   - ☐ I would like to participate in more programs about engineering
   - ☐ This was a memorable experience
   - ☐ None of the above

3. Engineers Week will be taking place in February 2021. Which of these would you be Engineers Week will be taking place in February 2021. Which of these would you be **most interested** in doing during Engineers Week this coming February?
   - Additional virtual *Dream Team Engineer Panel Sessions* or similar virtual talks by engineers
   - Virtual programs demonstrating a hands-on engineering activity
   - Ideas for engineering-related activities I can do at home
   - Free kits with simple engineering-related activities that I can pick up at a place like my local library

4. In a few words, what was something you learned today that was interesting or surprising?

5. Evaluators from Education Development Center (EDC) are interested in hearing more about what families thought about this program.

   If you attended this program with a child or children that you care for and are age 18 or older, would you be interested in being contacted in the next few week about a short (15 minute) focus group about engineering-related activities for children and families?
   - Yes
   - No

   Please provide contact email address. Note that this will not be used for any reason beyond organizing the focus group.

   Thanks for your feedback!

Program Registrant Survey

Introduction

As part of the National Science Foundation-funded *Project BUILD* program, Education Development Center (EDC) is evaluating the *Dream-Build-Create* program, which includes the screenings of the *Dream Big: Engineering Our World* film and the *Dream Team Engineer Panel Sessions*. We would like to ask you a few questions about your experience with and opinions of these virtual engineering programs.

The survey should take about 10 minutes to complete. Your honest feedback will help shape future programs so they can be as rewarding as possible for participants. Your responses will be summarized and shared with the *Dream-Build-Create* project team. We will not use your name or, if applicable, your organization's name in anything that we share with the project team or in any other publications.

Thank you for your time and feedback!

About Your Library/School

1. (for library staff only) Library size:
   - Small
   - Medium
   - Large
2. (for teachers only) School size:
   - Small
   - Medium
   - Large

3. (For library staff only) Primary communities your library serves (Check all):
   - ☐ Urban
   - ☐ Rural
   - ☐ Suburban

4. (For teachers only) Primary communities your school serves (Check all):
   - ☐ Urban
   - ☐ Rural
   - ☐ Suburban

About the Virtual Program

5. (For library staff only) How did you promote the program to your patrons? (Check all):
   - ☐ Social media
   - ☐ General patron email/newsletter
   - ☐ Targeted mailing lists
   - ☐ Website/events calendar
   - ☐ Local media (e.g., radio, TV, newspaper)
   - ☐ Flyer
   - ☐ Other (please describe):
   - ☐ None of the above

6. (For library staff only) What <u>specific audiences</u> did you reach out to when promoting this program? (Check all):
   - ☐ Women/Girls

- ☐ Blacks/African Americans
- ☐ Hispanics/Latinos
- ☐ Native Americans or Alaskan Natives
- ☐ Tweens
- ☐ Teens
- ☐ Families
- ☐ Schools/School districts
- ☐ Other (please describe):
- ☐ None of the above

7. (Asked of all) Did <u>you personally</u> watch the *Dream Big: Engineering Our World* film
   - Yes
   - No
   - Unsure

8. (Asked of all) Did <u>you personally</u> attend a *Dream Team Engineer Panel Session*?
   - Yes – I attended one session
   - Yes – I attended more than one session
   - No
   - Unsure

9. (For library staff only) Prior to this program, what types of <u>engineering-related activities</u> had your library conducted? (Check all):
   - ☐ Hands-on engineering-related programming or events facilitated by library staff
   - ☐ Hands-on engineering-related programming or events facilitated by an engineer
   - ☐ In-person engineering-related talks presented by an engineer
   - ☐ Virtual engineering-related talks presented by an engineer
   - ☐ Screenings of engineering related films or documentaries
   - ☐ Career fairs featuring engineers
   - ☐ Community festivals featuring engineering activities
   - ☐ Other (please describe)
   - ☐ None of the above

10. (For teachers only) Prior to this program, what types of <u>engineering-related activities</u> did students at your school have the opportunity to participate in? (Check all)
    - ☐ Hands-on engineering-related programming or events
    - ☐ In-person engineering-related talks presented by an engineer
    - ☐ Virtual engineering-related talks presented by an engineer
    - ☐ Screenings of engineering related films or documentaries
    - ☐ Career fairs featuring engineers
    - ☐ Community festivals featuring engineering activities
    - ☐ Other (please describe)
    - ☐ None of the above

11. (For parents/caregivers only) Prior to this program, what types of <u>engineering-related activities</u> did your family/children participate in? (Check all)
    - ☐ Hands-on engineering-related programming or events
    - ☐ In-person engineering-related talks presented by an engineer

- ☐ Virtual engineering-related talks presented by an engineer
- ☐ Screenings of engineering related films or documentaries
- ☐ Career fairs featuring engineers
- ☐ Community festivals featuring engineering activities
- ☐ Other (please describe)
- ☐ None of the above

12. (For all) Using five words or less, how would you describe the virtual *Dream Team* Engineer Panel Session(s)?

13. Please indicate your level of agreement with the following statements about the virtual *Dream Team* engineer panel sessions.

	Strongly disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly agree (5)
*The presentation by the engineers was engaging.					
*After this program, I am more aware of what engineers do.					
*This program demonstrated how engineers make a difference in our world.					
(for library staff) I would promote similar programs to my patrons in the future. (for teachers) I would offer similar programs to my students in the future. (for parents/caregivers) My family/children would participate in similar programs in the future.					
(for library staff) I would recommend that other libraries promote programs like this to their patrons. (for teachers) I would recommend that other schools offer programs like this to their students. (for parents/caregivers) I would recommend programs like this to others.					

*Ask only if they report having attended the panel session

14. If you have a sense of how your patrons/students/children benefited from the *Dream Team Engineering Panel Sessions*, please describe in a few words how they benefited.

15. (Asked of all) How valuable do you think it was to offer the *Dream Big* film along with the *Dream Team* engineering panels?
   - Not at all valuable
   - Somewhat valuable

- Valuable
- Very valuable

Looking Ahead

16. (For library staff) Engineers Week will be taking place in February 2021. How interested would you be in resources for providing the following activities for your patrons **this coming February**?
(For teachers) Engineers Week will be taking place in February 2021. How interested would you be in offering the following activities to your students **this coming February**?
(For parents/caregivers) Engineers Week will be taking place in February 2021. How interested would you be in the following activities for your family/children to participate in **this coming February**?

	Not at all interested	Somewhat interested	Interested	Very interested
(for library staff) Ideas for other engineering-related activities that could be **facilitated virtually** by library staff (for teachers and parents/caregivers) **Virtual programs** demonstrating a hands-on engineering activity				
(for library staff) Materials lists and instruction sheets **for my library** to create engineering-related activity kits for patrons to take home with them (for teachers and parents/caregivers) Free kits with simple engineering-related activities that could be picked up at a place like my local library				
(for library staff) Materials lists and instruction sheets **for parents/caregivers** describing engineering-related activities they can do with their children at home (for teachers and parents/caregivers) Ideas for engineering-related activities that can be done at home				
(for all) Additional **virtual *Dream Team Engineer Panel Sessions*** or similar virtual talks by engineers				
(for all) Additional **virtual screenings** of the *Dream Big: Engineering Our World* film				

17. (for library staff) **In the future, when we are able to hold more in-person programs again**, how interested would you be in resources for providing the following activities for your patrons?
(for teachers) **In the future, when we are able to hold more in-person programs again**, how interested would you be in offering the following activities to your students?
(for parents/caregivers) **In the future, when we are able to hold more in-person programs again**, how interested would you be in the following activities for your family/children to participate in?

	Not at all interested	Somewhat interested	Interested	Very interested
(for library staff)Ideas for engineering-related activities that could be **facilitated virtually** by library staff (for teachers and parents/caregivers) **Virtual programs** demonstrating a hands-on engineering activity				
(for library staff)Ideas for other engineering-related activities that could be **facilitated in-person** by library staff (for teachers and parents/caregivers) **In-person programs** demonstrating a hands-on engineering activity				
(for library staff)Materials lists and instruction sheets **for my library** to create engineering-related activity kits for patrons to take home with them (for teachers and parents/caregivers) Free kits with simple engineering-related activities that could be picked up at a place like my local library				
(for library staff)Materials lists and instruction sheets **for parents/caregivers** describing engineering-related activities they can do with their children at home (for teachers and parents/caregivers) Ideas for engineering-related activities that can be done at home				
(for all) Additional **virtual *Dream Team Engineer Panel Sessions*** or similar virtual talks by engineers				
(for all) **In-person *Dream Team Engineer Panel Sessions*** or other similar in-person talks by engineers				
(for all) Additional **virtual screenings** of the *Dream Big* film				
(for all) **In-person screenings** of the *Dream Big* film				

18. We're interested in hearing more about how you felt about this program and your thoughts on similar programs that could be done in the future. Would you be willing to potentially be contacted about participating in a short (15-20 minute) focus group sometime in the next month or so?
    - Yes, (please enter your email address here:_____)
    - No

Program Registrant Focus Group Protocol

Introduction:

Thanks for taking the time to join me today! My name is <name> and I work at Education Development Center. We've been hired by the people who created the Dream, Build, Create program to gather feedback to inform future activities. We know that now everyone was able to participate in the way they wanted to, which is completely fine and expected! We still really want to hear your overall thoughts about this type of program, your interest in similar engineering-related programs and resources, and any challenges or considerations the program should be aware of that could inform how they approach this type of program in the future.

Your answers will be kept anonymous – we won't use your name or your organization's name in anything we write or publish. You can feel free to skip any questions that you don't want to answer or end the focus group at any time.

Is it ok if I record this call? **If yes, start recording. If no, say:** *No problem. I'll take written notes during our discussion to record your thoughts.*

Questions:

1. What value did you see in the program (i.e., the film and the panel)? Why did you decide to register?
    a. What did you hope your students/patrons would get from the program?
    b. What value do you see in participants being able to hear from real engineers?

2. Did you like that the program offered a combination of the *Dream Big* film and the *Dream Team* engineering panels? Why or why not?

3. (for those who attended a panel) What did you like about the *Dream Team* engineering panel?
    a. What did you find especially interesting or engaging?

4. If you were to register for or attend a program like this again, how could it be better?
    a. Were there any barriers to participation for either you and/or your students/patrons?
    b. Did you watch as a class/with your patrons? If no, why not and would you have wanted to?

5. What do you think your patrons/students got out of the program (e.g., something they learned or found especially interesting or engaging)?
    a. Do you have any specific stories that you'd like to share?

6. The project team is interested in offering more resources and programs (e.g., additional virtual programs, activity resources or activities) to support you during Engineers Week (an annual nation-wide, week-long event to call attention ways engineers impact society and to emphasize the importance of learning math, science, and technical skills), which will be taking place in February 2021. What considerations should the team keep in mind as they're thinking about what resources and programs to offer?

Is there anything else you'd like to share?

Appendix C: Additional Quotes from Library Staff and Teachers Regarding Benefits to Youth

- "I think it was helpful for our community, which is primarily Hispanic, to see minorities represented in engineering careers." ~Library staff
- "People respond very positively to something like this simply being available in the community -- it changes their perception of what kind of town we are and what opportunities are out there for their kids." ~Library staff
- "I had very positive feedback [from teachers]. [The program] opened the students' eyes to what engineers do and there are no limits on who can take part in a STEM career." ~Library staff
- "Thank you for offering this high-quality programming to smaller libraries that may not ordinarily have access to a diverse array of engineers for children to be inspired by!" ~Library staff
- "[Hearing engineers] say that this is what I can do for my community and I'm passionate about my community, I think that gets kids excited about their community and what they can do for their specific community. So those personal stories from the engineers." ~Library staff
- "Hearing from someone who's within 10 years or so from some of the students, it makes all of the difference hearing from a person that's close to their age talking about their profession and what they did to get where they are. I don't think it could be replicated in the same way if I would stand there and said becoming an engineer is great." ~Library staff
- "Our goal a lot of times at the library is to get an expert in here, and if it's a national expert, that's even better, because we just don't have those kinds of opportunities because we don't have any money. To do be able to do that virtually and let them engage in that is priceless." ~Library staff