



National Federation of the Blind STEM2U

Regional Program - Arizona

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Introduction

As part of a grant from the National Science Foundation, the National Federation of the Blind (NFB) is conducting regional STEM workshops in partnership with local science museums, entitled NFB STEM2U, for blind youth [youth], grades 3 – 6 and 9-12 [mentors]. During the fourth regional workshop in Phoenix, AZ, the NFB operated three different programs simultaneously: one program for youth, a second program for their parents/caregivers, and a third program for teachers of the visually impaired. A fourth program, for Arizona Science Center staff, was conducted earlier to prepare the museum staff to assist with the youth program. This report will focus on the impact of the youth and parent programs. Separate reports will focus on the teacher and teen mentors (grade 9 – 12). Due to the limited response of the Arizona Science Center staff, there is nothing to report from the Arizona Science Center staff training.

The youth program involved small groups of youth working with blind teen mentors to complete STEM-related activities. The parent/caregiver program focused on STEM resources that could help their children, connecting parents to the NFB network and the resources it offers, and sharing ideas on how parents/caregivers could advocate for their child's rights in the school and community setting.

The evaluation questions for this program were:

1. What happens in the regional programs for each of the audiences?
2. What are perceptions of each audience in terms of appropriateness, value, and intentions emerging from the regional program?
3. How does this experience affect the individual and their understanding of blind youth and STEM?

The Lifelong Learning Group was contracted to conduct an evaluation for the grant, focusing on the affective outcomes of the project through youth and adult perceptions of the efficacy and value of the training and experience from their perspective.

Methods

Data for this program evaluation were collected from two different audiences using three methods. Data for the youth program were collected from the youth and their parents/caregivers. Data for the parent/caregiver program were collected from the parents/caregivers.

During each program, evaluators did pulse interviews, asking participants questions in order to determine if participants were realizing the desired program outcomes. At the conclusion of the program, the younger participants were invited to respond to questions about the program using an oral questioning route. The adult participants were invited to respond to computer-based questionnaires tied to their program both at the final program meeting and via e-mail from the NFB staff.

Data were analyzed collectively. During analysis, categories of participant responses about their knowledge were developed inductively through the coding process (i.e., they emerged from the data itself rather than being prescribed). Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS); descriptive statistics were used to present overall patterns in the data.

Findings

The NFB STEM2U regional workshop in Phoenix consisted of two separate, but interwoven, programs. In this section, findings will be discussed for the Phoenix workshop by program and audience. Similarities and differences between this workshop and prior workshops will be made where applicable.

To better understand the youth program, data were collected from 14 of the 15 youth participants (one did not attend the program on Saturday when youth data were collected), and 11 of the 15 parents/caregivers (73% response rate).

All of the youth participants were good students (either A or B students in science) in grades 3 – 6. Over half favor science and math classes (9 of 14). None of the parents/ caregivers considered themselves blind. No additional demographic data were obtained for the parents who attended the Phoenix program.

Youth Program

Like youth in prior programs, Arizona youth enjoyed attending NFB STEM2U because it was fun, science-based, included opportunities to interact with other blind children, and a visit to a museum. The youth participating in the Phoenix program liked exploring the museum, the STEM activities, and working in teams with new friends to accomplish tasks. All of the Arizona youth participants interviewed (100%) would participate in another NFB STEM2U program and the majority would tell a friend they really liked the NFB STEM2U program (93% or 13 of 14). Additional ratings can be found in Appendix B.

During the program, youth stated they enjoyed flying discs, building cars out of recycled materials, and learning about the digestive system. They also explored the Arizona Science Center in their small groups with their mentors and again with their parents/caregivers. Additionally, youth said they learned life skills, especially how to work with others in a group to complete a task.

The youth participants believed they improved their skills or content knowledge in the following areas:

- Engineering and the engineering process
- Teamwork
- Building cars with recycled materials

These participants gave examples of having learned a variety of STEM content, including life, earth, and physical science, through their workshops and museum exploration. They also believe the teamwork skills they acquired at NFB STEM2U will help them with their schoolwork. One child shared, what s/he did at NFB STEM2U will “help with projects where you have to build things with other people.” Finally one youth also learned to overcome challenges due to his/her blindness, sharing s/he was able to use the elevator even though it didn’t have braille.

The parents/caregivers who attended the Phoenix workshop appear to be more motivated than parents from the previous workshops; they noted a strong motivation for bringing their child to the workshop was the focus on science and social skills (4.45 on a 5 point scale). The summated means of the four regional programs indicate that parents bring their children to these workshops to develop their science and social skills, in addition to the skills their child needs to be successful in society. Parents’ at all four programs indicated they were least concerned with the development of their child’s blindness skills when compared to science, social and skills necessary to be successful in society. See Table 1.

Table 1 Parent’s ratings of program skill elements, on a 5 point scale at the four sites

	Baltimore Parents’ Mean	Boston Parents’ Mean	Columbus Parents’ Mean	Phoenix Parents’ Mean	Summated Means
	N=11	N=14	N=12	N=11	
Blindness skills	3.91	3.64	3.75	4.09	3.85
Science skills	4.09	3.86	4.17	4.45	4.14
Social skills	4.00	4.21	3.83	4.45	4.12
Skills to be successful in society	4.20	4.07	4.00	4.27	4.14

1(Strongly Disagree) to 5 (Strongly Agree)

Parents/caregivers in all four programs believed their children found this as an opportunity to have fun with other blind children. Additionally, Phoenix parents believe their child valued the time they spent with their teen mentors. These beliefs, as well as learning science content and visiting a science museum, were revealed in both on-site pulse interviews and in post-experience questionnaires.

While Phoenix parents believed that learning was important, the critical element of this program that they believed their child valued most was “learning with other blind children.” Providing opportunities for “problem solving with other blind children” led to a “sense of belonging” their children don’t typically feel in their school. One parent shared, “my child learned it was okay to be herself.” The importance of the teen mentors was highlighted by one parent who stated that his/her child “builds confidence that he CAN accomplish anything he chooses to pursue, because he sees other blind role models.”

Table 2 (below) includes mean scores for parent’s/caregiver’s beliefs of what their child felt were the most important elements of the program for the four programs to date, as well as the summated means from all four programs.

Table 2. Parent’s belief of what children found important, on a 5 point scale at the four sites

	Baltimore Parents’ Mean	Boston Parents’ Mean	Columbus Parents’ Mean	Phoenix Parents’ Mean	Summated Means
	N=11	N=14	N=12	N=11	
Have fun	4.82	4.79	4.92	4.90	4.86
Spend time with other blind children	4.36	4.43	4.33	4.73	4.46
Learn science content	4.27	4.21	4.42	4.45	4.34
Spend time with teen mentors	4.18	4.14	4.17	4.55	4.26
Visit a Science Museum	4.09	4	4.58	4.40	4.27
National Federation of the Blind Reputation	3.45	3.14	3.75	4.09	3.61

1 (Not At All Important) to 5 (Extremely Important)

Parents/caregivers who attended one of the four regional workshops valued each of the elements that comprised the youth program of the NFB STEM2U workshop, as evidenced by mean ratings of 4 point or higher on a 5 point scale. In Phoenix, parents/caregivers valued the program for providing their child an opportunity to spend time with other blind youth, learn science content, and have fun. This is similar to parents at the previous regional workshops as illustrated by the summated means for the four regional programs. Table 3 (below) details parents’ ratings of the importance of workshop elements; parents’ at all three programs wanted their children who attended the program to:

- Spend time with other blind children
- Learn science content
- Have fun

Table 3. Parent’s rating of the importance of NFB STEM2U workshop elements at the three sites

	Baltimore Parents’ Mean	Boston Parents’ Mean	Columbus Parents’ Mean	Phoenix Parents’ Mean	Summated Means
	N=11	N=14	N=12	N=11	
Child learn science content	4.82	4.71	4.83	4.82	4.795
Child had fun	4.64	4.93	4.92	4.73	4.805
Child spent time with other blind children	4.64	4.93	4.67	5.00	4.81
Child develop independence	4.55	4.64	4.83	4.45	4.6175
Child spent time with teen mentors	4.55	4.50	4.50	4.55	4.525

1 (Not At All Important) to 5 (Extremely Important)

Parents/Caregivers Program

Phoenix parents attending the NFB STEM2U were satisfied with the NFB STEM2U program. Parents believe they learned alternative techniques their child could use to succeed in STEM learning. They also valued the opportunity to network with other parents of blind youth. One parent said it was more than she expected. She felt like she was “getting parent development.” A parent who had attended a previous NFB STEM2U program believed the Phoenix program was “much more informative.”

Of the 15 parents who attended the Phoenix program for parents/caregivers, 11 completed the web-based questionnaire (73% response rate). Post-program mean scores were determined for several program elements, including staff, schedule, and meals. These statements were typically rated above 4 on a 5 point scale; mean scores for each element can be found in Appendix B. As with the other two programs, parents/caregivers who attended the Phoenix workshop had high praise for the NFB Staff (5 on a 5 point scale). One parent shared, “Everyone was very helpful.”

The IEP session in Phoenix was especially valuable to the parents. Parents “learned how to better advocate for [their child] during IEP meetings.” One parent stated she appreciated “hearing about other parent’s problems and successes in their IEPs.” Another parent shared she didn’t realize her daughter’s IEP did not include STEM until she studied the IEP during the workshop session.

In the on-site interviews and post-workshop questionnaires, parents revealed they were very interested in support/network opportunities (See Table 4). One parent shared, “the fellowship and discussion among parents of blind children was enlightening, and it is always good to be able to share/compare experiences with people who live with similar circumstances.” The two parent volunteers leading sessions were especially appreciated. One parent participant stated, “I learned a lot from the [two parent volunteers leading sessions] in what they did right and wrong, yet as their daughter became 20, she was successful. It gave me the confidence that I can make mistakes and my child will turn out all right!”

Table 4. Parent’s rating of the importance of NFB STEM2U workshop elements at the four sites

	Baltimore Parents’ Mean	Boston Parents’ Mean	Columbus Parents’ Mean	Phoenix Parents’ Mean	Summated Means
	N=11	N=14	N=12	N=11	
National Federation of the Blind Reputation	4.45	4.50	4.67	4.73	4.59
Opportunity to network with parents of blind youth	4.09	4.57	4.67	4.73	4.52

1 (Not At All Important) to 5 (Extremely Important)

It appears the NFB staff continue to learn from prior regional programs, as evidenced by augmenting efforts to increase parent understanding of alternative techniques the parents could use to help their child succeed in STEM learning. Staff change efforts were evident in Phoenix.

Parents/caregivers at the Phoenix program were more likely than parents at any prior program to report they were more aware of alternative techniques their child could use to succeed in STEM learning (4.45 on a 5 point scale). Table 5 illustrates how parent perception of what they learned at the NFB STEM2U parent program has changed. The parent who had attended a prior STEM2U program with her child credited the two parent volunteers assisting with the program in “making it more science.” At her previous program, the parent volunteers were able to “make things tactile, but not science.” The hands-on activities facilitated by the parent volunteers in Phoenix “made it clear what I need to do.” Another shared the program helped her understand, “there are ways to complete school projects, despite lack of vision,” and another shared, “the most valuable aspect of the NFB STEM2U program was learning all of the different ways science can be made tactile.”

Table 5. Parents learning in NFB STEM2U parent program

	Baltimore Parents' Mean	Boston Parents' Mean	Columbus Parents' Mean	Phoenix Parents' Mean	Summated Means
	N=11	N=14	N=12	N=11	
How to connect with the NFB network to acquire information for myself and my child (ren).	4.64	4.21	4.08	4.64	4.39
Their rights and the rights of my child in the school setting	4.27	4.07	3.67	4.45	4.12
How to advocate for my child if their rights are violated in the school setting	4.18	4	3.58	4.00	3.94
Alternative techniques their child could use to succeed in STEM learning	3.64	4.21	4.25	4.45	4.14

1 (Strongly Disagree) to 5 (Strongly Agree)

When asked to suggest areas of improvement, suggestions from Phoenix parents' were limited to timing, i.e., starting later, happening on the weekend, etc. The majority of parents felt there was nothing that needed to be improved. The parent who had attended a previous workshop believes the program “has been perfected since the last one” she attended.

Conclusion and Recommendation

The NFB STEM2U workshop for youth and parents/caregivers in Phoenix, Arizona appears to be successful.

Parents and youth valued the youth program because the children were able to:

- Spend time with other blind children
- Have fun
- Learn science content

It appears the parent program met the needs of the parent participants. Parents believe they learned alternative techniques their child could use to succeed in STEM learning. They also valued the opportunity to network with other parents of blind youth. The IEP session in Phoenix was especially valuable to the parents; providing parents the opportunity to review their child's IEP seemed to be enlightening. The parent volunteers leading these sessions were able to share what they had learned and motivate the parent participants.

Recommendation

Consider exploring your relationship with the partner science centers. While the lack of data from the Arizona Science Center may be asymptomatic due to challenges at the individual science center; it may be indicative of the challenges of building and maintaining relationships between NFB and museum staff. Reflecting on the NFB staff interactions with two museum partners, the Museum of Science, which appeared to have strong staff support as evidenced by completed questionnaires, and the Arizona Science Center, which appeared to have had minimal staff support, as evidenced by completed questionnaires, could provide additional insight that could be useful when building future relationships.

Appendix A: Instruments

NFB STEM2U Youth Post-Evaluation Questions

I'm going to read you a series of questions and responses. First I'll read the question, then I'll read all the answers, so you know what choices you have. Then I'm going to read the answer choices one at a time and ask you to stand up (by your chair) when I read the answer you agree with. Does that make sense? When you stand up to answer the question, I need to count, so stay standing until I tell you to sit down. Do you have any questions about what we are going to do?

Demographics

1. OK, the first question is—What grade are you in? Your answer choices are First, Second, Third, Fourth, Fifth, Sixth, Seventh, and Eighth. Is there anyone who isn't sure what grade you are in?

Stand up if you are in first grade. Second. Third. Fourth. Fifth. Sixth. Seventh. Eighth.

2. That went well, the second question is What is your favorite subject? I'm only giving you four choices, so you need to pick your favorite from one of these four—English, Math, Science and Social Studies. Think about it for a moment.

OK, stand up if your favorite subject of the four is English. Math. Science. Social Studies. Now I need you to sit in your seat. The next set of questions may have longer answers and each of you may have a different answer. So after I ask the question, if you'd like to answer it, please say your name and I'll call on you. Does that make sense?

Skills

3. What skills (things you can do) are you better at because of activities you did here at the NFB STEM2U program?

Value/Intention

4. How will what you learned here help you in your science or math class?
5. How will what you learned here help you outside of school, in your everyday life?

Importance

6. What was most important about the time you spent at the NFB STEM2U program? (This can be open ended or like the multiple choice questions above based on children's experiences at the NFB STEM2U program; i.e., time at the museum, building the car?)

Satisfaction

7. What was the best part of the NFB STEM2U program? Why?
8. What was the worst part of the NFB STEM2U program? Why?

Now we are going to move again. Like I did when we started, I'll read the question, then I'll read all the answers, so you know what choices you have. Then I'm going to read the answer choices one at a time and ask you to stand up (by your chair) when I read the answer you agree with. I hope you are you still with me, we'll be finished soon. These questions

9. Did you like what you ate? Your answer choices are
- I really didn't like it and I would never eat it again
 - I didn't like it but I would eat it if there was nothing else
 - It was OK
 - I liked it and would eat it again
 - I really liked it and I want to eat it again soon

Stand up if you really didn't like it. Didn't like it. It was OK. You liked it. You really liked it.

10. Did you like where you slept?
- I really didn't like it, I didn't sleep well
 - I didn't like it, but I slept
 - It was OK
 - I liked it and I slept well
 - I really liked it and I want to come back and sleep here again

Stand up if you really didn't like it. Didn't like it. It was OK. You liked it. You really liked it.

11. How did you feel about the STEM activities (anything to do with designing your recycled racer)?
- I really didn't like the activities, I never want to do them again
 - I didn't like it
 - It was OK
 - I liked it
 - I really liked it and I want to do more STEM activities

Stand up if you really didn't like it. Didn't like it. It was OK. You liked it. You really liked it.

12. How did you feel about your time exploring the museum?
- I really didn't like it, I never want to do it again
 - I didn't like it
 - It was OK
 - I liked it
 - I really liked it and I want to go back to the museum tomorrow

Stand up if you really didn't like it. Didn't like it. It was OK. You liked it. You really liked it.

13. Would you tell a good friend who is blind and likes science and math to sign up for this program?
- I really didn't like it, so I wouldn't tell a friend to sign up for it
 - I didn't like it
 - It was OK
 - I liked it
 - I really liked it and I think others will like it.

Stand up if you really didn't like it. Didn't like it. It was OK. You liked it. You really liked it.

14. Would you do it again?

- a. I really didn't like it, I never want to do it again
- b. I didn't like it, but I might do it again.
- c. It was OK
- d. I liked it, but I don't want to do it again
- e. I really liked it and I don't want to leave

Stand up if you really didn't like it. Didn't like it. It was OK. You liked it. You really liked it.

15. And for the last question, let's do this a little differently. This time, instead of standing, just raise your hand when you hear the answer you most agree with. And remember, like with all the other questions, if you feel uncomfortable answering, you can choose not to. Now I'd like to know the kind of grades you usually get in science? Once again, I need you to raise your hand to help me understand your answer. Your answer choices here are A, B, C, D. Is there anyone who doesn't get grades? Or gets grades by numbers instead of letters?

Raise your hand if you usually get an A in Science. B. C. D.

Thank you very much!

NFB STEM2U Parent Post-Program Evaluation

To help the organizers of the NFB STEM2U program better understand your experience, please take 10 minutes to answer the following questions.

The following set of questions deal with your satisfaction of various aspects of the NFB STEM2U program

How satisfied were you with the application process for the NFB STEM2U program? Enter a 1 if you were Very Dissatisfied, 2 for Dissatisfied, 3 for Neither Dissatisfied or Satisfied, 4 for Satisfied, and 5 for Very Satisfied.

- 1. I was very dissatisfied with the application process for the NFB STEM2U program
- 2. I was dissatisfied with the application process for the NFB STEM2U program
- 3. I was neither dissatisfied or satisfied with the application process for the NFB STEM2U program
- 4. I was satisfied with the application process for the NFB STEM2U program
- 5. I was very satisfied with the application process for the NFB STEM2U program

What did you think about the pre-visit information for the NFB STEM2U program? Enter a 1 if you were Very Dissatisfied, 2 for Dissatisfied, 3 for Neither Dissatisfied or Satisfied, 4 for Satisfied, and 5 for Very Satisfied.

- 1. I was very dissatisfied with the pre-visit information for the NFB STEM2U program
- 2. I was dissatisfied with the pre-visit information for the NFB STEM2U program
- 3. I was neither dissatisfied or satisfied with the pre-visit information for the NFB STEM2U program
- 4. I was satisfied with the pre-visit information for the NFB STEM2U program
- 5. I was very satisfied with the pre-visit information for the NFB STEM2U program

What did you think about the meals for the NFB STEM2U program? Enter a 1 if you were Very Dissatisfied, 2 for Dissatisfied, 3 for Neither Dissatisfied or Satisfied, 4 for Satisfied, and 5 for Very Satisfied.

- 1. I was very dissatisfied with the meals for the NFB STEM2U program
- 2. I was dissatisfied with the meals for the NFB STEM2U program
- 3. I was neither dissatisfied or satisfied with the meals for the NFB STEM2U program
- 4. I was satisfied with the meals for the NFB STEM2U program
- 5. I was very satisfied with the meals for the NFB STEM2U program

What did you think about the sleeping arrangements for the NFB STEM2U program? Enter a 1 if you were Very Dissatisfied, 2 for Dissatisfied, 3 for Neither Dissatisfied or Satisfied, 4 for Satisfied, and 5 for Very Satisfied

- 1. I was very dissatisfied with the sleeping arrangements for the NFB STEM2U program
- 2. I was dissatisfied with the sleeping arrangements for the NFB STEM2U program
- 3. I was neither dissatisfied or satisfied with the sleeping arrangements for the NFB STEM2U program
- 4. I was satisfied with the sleeping arrangements for the NFB STEM2U program
- 5. I was very satisfied with the sleeping arrangements for the NFB STEM2U program

What did you think about the schedule for the NFB STEM2U program? Enter a 1 if you were Very Dissatisfied, 2 for Dissatisfied, 3 for Neither Dissatisfied or Satisfied, 4 for Satisfied, and 5 for Very Satisfied.

- 1. I was very dissatisfied with the schedule for the NFB STEM2U program
- 2. I was dissatisfied with the schedule for the NFB STEM2U program
- 3. I was neither dissatisfied or satisfied with the schedule for the NFB STEM2U program
- 4. I was satisfied with the schedule for the NFB STEM2U program
- 5. I was very satisfied with the schedule for the NFB STEM2U program

What did you think about the social time activities during the NFB STEM2U program? Enter a 1 if you were Very Dissatisfied, 2 for Dissatisfied, 3 for Neither Dissatisfied or Satisfied, 4 for Satisfied, and 5 for Very Satisfied.

- 1. I was very dissatisfied with the social time activities for the NFB STEM2U program
- 2. I was dissatisfied with the social time activities for the NFB STEM2U program
- 3. I was neither dissatisfied or satisfied with the social time activities for the NFB STEM2U program
- 4. I was satisfied with the social time activities for the NFB STEM2U program
- 5. I was very satisfied with the social time activities for the NFB STEM2U program

What did you think of the staff for the NFB STEM2U program? Enter a 1 if you were Very Dissatisfied, 2 for Dissatisfied, 3 for Neither Dissatisfied or Satisfied, 4 for Satisfied, and 5 for Very Satisfied.

- 1. I was very dissatisfied with the staff for the NFB STEM2U program
- 2. I was dissatisfied with the staff for the NFB STEM2U program
- 3. I was neither dissatisfied or satisfied with the staff for the NFB STEM2U program
- 4. I was satisfied with the staff for the NFB STEM2U program
- 5. I was very satisfied with the staff for the NFB STEM2U program

In the next set of questions you will be asked to consider how important aspects of the NFB STEM2U program were to you.

How important is it to you that your child learn science content? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important.

- 1. It is Not At All Important for my child to learn science content
- 2. It is Unimportant for my child to learn science content
- 3. It is Neither Unimportant or Important for my child to learn science content
- 4. It is Important for my child to learn science content
- 5. It is Extremely Important for my child to learn science content

How important is it to you that your child experience independence by visiting a science museum? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important.

- 1. It is Not AT All Important that my child experience independence by visiting a science museum
- 2. It is Unimportant that my child experience independence by visiting a science museum
- 3. It is Neither Unimportant or Important that my child experience independence by visiting a science museum
- 4. It is Important that my child experience independence by visiting a science museum
- 5. It is Extremely Important that my child experience independence by visiting a science museum

How important Is it to you that your child experience fun activities as part of the program? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important..

- 1 It is Not At All Important for my child to experience fun activities as part of the program
- 2. It is Unimportant for my child to experience fun activities as part of the program
- 3. It is Neither Unimportant or Important for my child to experience fun activities as part of the program
- 4. It is Important for my child to experience fun activities as part of the program
- 5. It is Extremely Important for my child to experience fun activities as part of the program

How important is the NFB reputation to you when choosing programs for your child? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important..

- 1. The NFB reputation is Not At All Important when choosing a program for my child
- 2. The NFB reputation is Unimportant when choosing a program for my child
- 3. The NFB reputation is Neither Unimportant or Important when choosing a program for my child
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- 4. The NFB reputation is Important when choosing a program for my child
- 5. The NFB reputation is Extremely Important when choosing a program for my child

How important is it to you that your child participates in programs with other blind youth? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important..

- 1. It is Not At All Important that my child participates in programs with other blind youth
- 2. It is Unimportant that my child participates in programs with other blind youth
- 3. It is Neither Unimportant or Important that my child participates in programs with other blind youth
- 4. It is Important for my child to participate in programs with other blind youth
- 5. It is Extremely Important for my child to participate in programs with other blind youth

How important is it to you that you participate in programs with parents of blind youth? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important..

- 1. It is Not At All Important for me to participate in programs with parents of blind youth
- 2. It is Unimportant for me to participate in programs with parents of blind youth
- 3. It is Neither Unimportant or Important for me to participate in programs with parents of blind youth
- 4. It is Important for me to participate in programs with parents of blind youth
- 5. It is Extremely Important for me to participate in programs with parents of blind youth

How important is it to you that your child participates in programs with blind teens as group leaders? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important.

- 1. It is Not At All Important for me that my child participates in programs that have blind teens as group leaders
- 2. It is Unimportant for me that my child participates in programs that have blind teens as group leaders
- 3. It is Neither Unimportant or Important for me that my child participates in programs that have blind teens as group leaders
- 4. It is Important for me that my child participates in programs that have blind teens as group leaders
- 5. It is Extremely Important for me that my child participates in programs that have blind teens as group leaders

In the next set of questions you will be asked to consider how important aspects of the NFB STEM2U program were for your child.

How important do you think it is to your child that s/he learn science content? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important.

- 1. It is Not At All Important to my child that s/he learn science content
- 2. It is Unimportant to my child that s/he learn science content
- 3. It is Neither Unimportant or Important to my child that s/he learn science content
- 4. It is Important to my child that s/he learn science content
- 5. It is Extremely Important to my child that s/he learn science content

How important do you think it is to your child that s/he visit a science museum? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important.

- 1. It is Not At All Important to my child that s/he visit a science museum
- 2. It is Unimportant to my child that s/he visit a science museum
- 3. It is Neither Unimportant or Important to my child that s/he visit a science museum
- 4. It is Important to my child that s/he visit a science museum
- 5. It is Extremely Important to my child that s/he visit a science museum

How important do you think it is to your child that fun activities were part of the program? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important.

- 1. It is Not At All Important to my child that fun activities were part of the program
- 2. It is Unimportant to my child that fun activities were part of the program
- 3. It is Neither Unimportant or Important to my child that fun activities were part of the program
- 4. It is Important to my child that fun activities were part of the program
- 5. It is Extremely Important to my child that fun activities were part of the program

How important do you think the NFB reputation is to your child? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important.

- 1. The NFB reputation is Not At All Important to my child
- 2. The NFB reputation is Unimportant to my child
- 3. The NFB reputation is Neither Unimportant or Important to my child
- 4. The NFB reputation is Important to my child
- 5. The NFB reputation is Extremely Important to my child

How important do you think it is to your child that s/he participate in programs with other blind youth? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important.

- 1. It is Not At All Important to my child that s/he participate in programs with other blind youth
- 2. It is Unimportant to my child that s/he participate in programs with other blind youth
- 3. It is Neither Unimportant or Important to my child that s/he participate in programs with other blind youth
- 4. It is Important to my child that s/he participate in programs with other blind youth
- 5. It is Extremely Important to my child that s/he participate in programs with other blind youth

How important do you think it is to your child that s/he participates in programs with blind teens as group leaders? Enter 1 for Not At All Important, 2 for Unimportant 3 for Neither Unimportant or Important, 4 for Important, 5 for Extremely Important.

- 1. It is Not At All Important to my child that s/he participate in programs that have blind teens as group leaders
- 2. It is Unimportant to my child that s/he participate in programs that have blind teens as group leaders
- 3. It is Neither Unimportant or Important to my child that s/he participate in programs that have blind teens as group leaders
- 4. It is Important to my child that s/he participate in programs that have blind teens as group leaders
- 5. It is Extremely Important to my child that s/he participate in programs that have blind teens as group leaders

At the NFB STEM2U program, my child developed blindness skills (braille, cane travel, self-advocacy). Enter a 1 if you Strongly Disagree, 2 if you Disagree, 3 if you Neither Disagree or Agree, 4 if you Agree, and 5 if you Strongly Agree.

- 1. I strongly disagree with the statement: My child developed blindness skills at the NFB STEM2U program
- 2. I disagree with the statement: My child developed blindness skills at the NFB STEM2U program
- 3. I neither disagree or agree with the statement: My child developed blindness skills at the NFB STEM2U program
- 4. I agree with the statement: My child developed blindness skills at the NFB STEM2U program
- 5. I strongly agree with the statement: My child developed blindness skills at the NFB STEM2U program

At the NFB STEM2U program, my child developed science skills. Enter a 1 if you Strongly Disagree, 2 if you Disagree, 3 if you Neither Disagree or Agree, 4 if you Agree, and 5 if you Strongly Agree.

- 1. I strongly disagree with the statement: My child developed science skills at the NFB STEM2U program
- 2. I disagree with the statement: My child developed science skills at the NFB STEM2U program
- 3. I neither disagree or agree with the statement: My child developed science skills at the NFB STEM2U program
- 4. I agree with the statement: My child developed science skills at the NFB STEM2U program
- 5. I strongly agree with the statement: My child developed science skills at the NFB STEM2U program

At the NFB STEM2U program, my child developed social skills. Enter a 1 if you Strongly Disagree, 2 if you Disagree, 3 if you Neither Disagree or Agree, 4 if you Agree, and 5 if you Strongly Agree.

- 1. I strongly disagree with the statement: My child developed social skills at the NFB STEM2U program
- 2. I disagree with the statement: My child developed social skills at the NFB STEM2U program
- 3. I neither disagree or agree with the statement: My child developed social skills at the NFB STEM2U program
- 4. I agree with the statement: My child developed social skills at the NFB STEM2U program
- 5. I strongly agree with the statement: My child developed social skills at the NFB STEM2U program

At the NFB STEM2U program, my child developed skills to be successful in society. Enter a 1 if you Strongly Disagree, 2 if you Disagree, 3 if you Neither Disagree or Agree, 4 if you Agree, and 5 if you Strongly Agree.

- 1. I strongly disagree with the statement: At the NFB STEM2U program, my child developed skills to be successful in society.
- 2. I disagree with the statement: At the NFB STEM2U program, my child developed skills to be successful in society
- 3. I neither disagree or agree with the statement: At the NFB STEM2U program, my child developed skills to be successful in society
- 4. I agree with the statement: At the NFB STEM2U program, my child developed skills to be successful in society
- 5. I strongly agree with the statement: At the NFB STEM2U program, my child developed skills to be successful in society

At the NFB STEM2U program, I learned my rights and the rights of my child in the school setting. Enter a 1 if you Strongly Disagree, 2 if you Disagree, 3 if you Neither Disagree or Agree, 4 if you Agree, and 5 if you Strongly Agree.

- 1. I strongly disagree with the statement: At the NFB STEM2U program, I learned my rights and the rights of my child in the school setting.
- 2. I disagree with the statement: At the NFB STEM2U program, I learned my rights and the rights of my child in the school setting.
- 3. I neither disagree or agree with the statement: At the NFB STEM2U program, I learned my rights and the rights of my child in the school setting.
- 4. I agree with the statement: At the NFB STEM2U program, I learned my rights and the rights of my child in the school setting.
- 5. I strongly agree with the statement: At the NFB STEM2U program, I learned my rights and the rights of my child in the school setting.

At the NFB STEM2U program, I learned how to advocate for my child if their rights are violated in the school setting. Enter a 1 if you Strongly Disagree, 2 if you Disagree, 3 if you Neither Disagree or Agree, 4 if you Agree, and 5 if you Strongly Agree.

- 1. I strongly disagree with the statement: At the NFB STEM2U program, I learned how to advocate for my child if their rights are violated in the school setting.
- 2. I disagree with the statement: At the NFB STEM2U program, I learned how to advocate for my child if their rights are violated in the school setting.
- 3. I neither disagree or agree with the statement: At the NFB STEM2U program, I learned how to advocate for my child if their rights are violated in the school setting.
- 4. I agree with the statement: At the NFB STEM2U program, I learned how to advocate for my child if their rights are violated in the school setting.
- 5. I strongly agree with the statement: At the NFB STEM2U program, I learned how to advocate for my child if their rights are violated in the school setting.

At the NFB STEM2U program, I learned how to connect with the NFB network to acquire information for myself and my child (ren). Enter a 1 if you Strongly Disagree, 2 if you Disagree, 3 if you Neither Disagree or Agree, 4 if you Agree, and 5 if you Strongly Agree.

- 1. I strongly disagree with the statement: At the NFB STEM2U program, I learned how to connect with the NFB network to acquire information for myself and my child (ren).
- 2. I disagree with the statement: At the NFB STEM2U program, I learned how to connect with the NFB network to acquire information for myself and my child (ren).
- 3. I neither disagree or agree with the statement: At the NFB STEM2U program, I learned how to connect with the NFB network to acquire information for myself and my child (ren).
- 4. I agree with the statement: At the NFB STEM2U program, I learned how to connect with the NFB network to acquire information for myself and my child (ren).
- 5. I strongly agree with the statement: At the NFB STEM2U program, I learned how to connect with the NFB network to acquire information for myself and my child (ren).

At the NFB STEM2U program, I learned alternative techniques my child can use to succeed in STEM learning. Enter a 1 if you Strongly Disagree, 2 if you Disagree, 3 if you Neither Disagree or Agree, 4 if you Agree, and 5 if you Strongly Agree.

- 1. I strongly disagree with the statement: At the NFB STEM2U program, I learned alternative techniques my child can use to succeed in STEM learning
- 2. I disagree with the statement: At the NFB STEM2U program, I learned alternative techniques my child can use to succeed in STEM learning
- 3. I neither disagree or agree with the statement: At the NFB STEM2U program, I learned alternative techniques my child can use to succeed in STEM learning
- 4. I agree with the statement: At the NFB STEM2U program, I learned alternative techniques my child can use to succeed in STEM learning
- 5. I strongly agree with the statement: At the NFB STEM2U program, I learned alternative techniques my child can use to succeed in STEM learning

What was the most valuable aspect of the NFB STEM2U program for you, as a parent?

What do you think was the most valuable aspect of the NFB STEM2U program for your child?

If there was one thing you would change about the NFB STEM2U program, what would that be?

Are you blind or low vision?

Yes

No

One last question, is there anything else you would like to share about your experience with the NFB STEM2U program?

Thank you so much for answering our questions. Have a great day!

NFB STEM2U Museum Staff Post-Program Evaluation

To help the organizers of the NFB STEM2U program better understand your experience with the museum staff training, please take 10 minutes to answer the following questions.

The next two questions deal with your satisfaction of various aspects of the NFB STEM2U museum staff training program

Please rate your level of satisfaction with NFB STEM2U Museum Staff Training Program Schedule. Enter a 1 if you were Very Dissatisfied, 2 if you were Dissatisfied, 3 if you were Neither Dissatisfied or Satisfied, 4 if you were Satisfied, and a 5 for Very Satisfied.

- 1. I was very dissatisfied with the NFB STEM2U Program Schedule.
- 2. I was dissatisfied with the NFB STEM2U Program Schedule.
- 3. I was neither dissatisfied nor satisfied with the NFB STEM2U Program Schedule.
- 4. I was satisfied with the NFB STEM2U Program Schedule
- 5. I was extremely satisfied with the NFB STEM2U Program Schedule.

Please rate your level of satisfaction with Staff and Volunteers of the NFB STEM2U Museum Staff Training Program. Enter a 1 if you were Very Dissatisfied, 2 if you were Dissatisfied, 3 if you were Neither Dissatisfied or Satisfied, 4 if you were Satisfied, and a 5 for Very Satisfied.

- 1. I was very dissatisfied with Staff for the NFB STEM2U Program.
- 2. I was dissatisfied with Staff for the NFB STEM2U Program.
- 3. I was neither dissatisfied nor satisfied with Staff for the NFB STEM2U Program.
- 4. I was satisfied with Staff for the NFB STEM2U Program.
- 5. I was very satisfied with Staff for the NFB STEM2U Program.

What was the most important aspect of the NFB STEM2U Museum Staff Training program for you?

In the next set of questions, you will be asked to reflect on the NFB STEM2U programs impact on your work at the museum.

To what extent, if at all, do you believe the NFB STEM2U Museum Staff Training Program changed your comfort level with blind visitors in your museum? Enter a 1 if it had no impact, 2 if it had little impact, 3 if it had some impact, 4 if it had a great deal of impact, and a 5 if it completely changed your comfort level with blind visitors in your museum.

- The NFB STEM2U Program had no impact on my comfort level with blind visitors in my museum.
- The NFB STEM2U Program had little impact on my comfort level with blind visitors in my museum
- The NFB STEM2U Program had some impact on comfort level with blind visitors in my museum
- The NFB STEM2U Program had a great deal of impact on my comfort level with blind visitors in my museum
- The NFB STEM2U Program completely changed my comfort level with blind visitors in my museum

To what extent, if at all, do you believe the NFB STEM2U Museum Staff Training Program altered your confidence level in working with blind visitors in your museum? Enter a 1 if it had no impact, 2 if it had little impact, 3 if it had some impact, 4 if it had a great deal of impact, and a 5 if it completely altered your confidence level in working with blind visitors in your museum.

- The NFB STEM2U Program had no impact on my confidence level in working with blind visitors in my museum.
- The NFB STEM2U Program had little impact on my confidence level in working with blind visitors in my museum.
- The NFB STEM2U Program had some impact on my confidence level in working with blind visitors in my museum.
- The NFB STEM2U Program had a great deal of impact on confidence level in working with blind visitors in my museum.
- The NFB STEM2U Program completely altered my confidence level in working with blind visitors in my museum.

To what extent, if at all, do you believe the NFB STEM2U Museum Staff Training Program expanded your knowledge of accessibility and universal design and how it pertains to museums? Enter a 1 if it had no impact, 2 if it had little impact, 3 if it had some impact, 4 if it had a great deal of impact, and a 5 if it completely expanded your knowledge of accessibility and universal design and how it pertains to museums.

- The NFB STEM2U Program had no impact of my knowledge of accessibility and universal design and how it pertains to museums.
- The NFB STEM2U Program had little impact on my knowledge of accessibility and universal design and how it pertains to museums.
- The NFB STEM2U Program had some impact on my knowledge of accessibility and universal design and how it pertains to museums.
- The NFB STEM2U Program had a great deal of impact on my knowledge of accessibility and universal design and how it pertains to museums.
- The NFB STEM2U Program completely changed my knowledge of accessibility and universal design and how it pertains to museums.

To what extent, if at all, do you believe the NFB STEM2U Museum Staff Training Program will alter your everyday museum program and exhibit experiences? Enter a 1 if it had no impact, 2 if it had little impact, 3 if it had some impact, 4 if it had a great deal of impact, and a 5 if it will completely change the way your everyday museum program experiences.

- The NFB STEM2U Program had no impact on our everyday museum program experience.
- The NFB STEM2U Program had little impact on our everyday museum program experience.
- The NFB STEM2U Program had some impact on our everyday museum program experience.
- The NFB STEM2U Program had a great deal of impact on our everyday museum program experience.
- The NFB STEM2U Program completely changed our everyday museum program experience.

To what extent, if at all, do you believe the NFB STEM2U Museum Staff Training Program changed your ability to describe STEM content to blind visitors? Enter a 1 if it had no impact, 2 if it had little

impact, 3 if it had some impact, 4 if it had a great deal of impact, and a 5 if it completely changed your ability to describe STEM content to blind visitors.

- The NFB STEM2U Program had no impact on my ability to describe STEM content to blind visitors.
- The NFB STEM2U Program had little impact on my ability to describe STEM content to blind visitors.
- The NFB STEM2U Program had some impact on my ability to describe STEM content to blind visitors.
- The NFB STEM2U Program had a great deal of impact on my ability to describe STEM content to blind visitors.
- The NFB STEM2U Program completely changed how I describe STEM content to blind visitors.

To what extent, if at all, do you believe the NFB STEM2U Museum Staff Training Program changed your ability to describe STEM content to all visitors? Enter a 1 if it had no impact, 2 if it had little impact, 3 if it had some impact, 4 if it had a great deal of impact, and a 5 if it completely changed your ability to describe STEM content to all visitors.

- The NFB STEM2U Program had no impact on my ability to describe STEM content to all visitors.
- The NFB STEM2U Program had little impact on my ability to describe STEM content to all visitors.
- The NFB STEM2U Program had some impact on my ability to describe STEM content to all visitors.
- The NFB STEM2U Program had a great deal of impact on my ability to describe STEM content to all visitors.
- The NFB STEM2U Program completely changed how I describe STEM content to all visitors.

To what extent, if at all, do you believe the NFB STEM2U Museum Staff Training Program changed your ability to determine if assistance is needed by a blind visitor? Enter a 1 if it had no impact, 2 if it had little impact, 3 if it had some impact, 4 if it had a great deal of impact, and a 5 if it completely changed my ability to determine if assistance is needed by a blind visitor.

- The NFB STEM2U Program had no impact on my ability to determine if assistance is needed by a blind visitor.
- The NFB STEM2U Program had little impact on my ability to determine if assistance is needed by a blind visitor.
- The NFB STEM2U Program had some impact on my ability to determine if assistance is needed by a blind visitor.
- The NFB STEM2U Program had a great deal of impact on my ability to determine if assistance is needed by a blind visitor.
- The NFB STEM2U Program completely changed my ability to determine if assistance is needed by a blind visitor.

To what extent, if at all, do you believe the NFB STEM2U Museum Staff Training Program changed your ability to properly offer assistance to a blind visitor? Enter a 1 if it had no impact, 2 if it had

little impact, 3 if it had some impact, 4 if it had a great deal of impact, and a 5 if it completely changed my ability to properly offer assistance to blind visitors.

- The NFB STEM2U Program had no impact on my ability to properly offer assistance to a blind visitor.
- The NFB STEM2U Program had little impact on my ability to properly offer assistance to a blind visitor.
- The NFB STEM2U Program had some impact on my ability to properly offer assistance to a blind visitor.
- The NFB STEM2U Program had a great deal of impact on my ability to properly offer assistance to a blind visitor.
- The NFB STEM2U Program completely changed my ability to properly offer assistance to a blind visitor.

Identify and explain 2 examples of tools, resources, services and/or environmental features that currently exist at your museum that can facilitate full participation by blind visitors.

Identify and explain at least one tool, resource, or service that you believe your museum is considering adding that can facilitate full participation by blind visitors.

Will anything you observed or learned during the NFB STEM2U Museum Staff Training Program change your work at your museum? If so, please share specific examples.

Finally, we'd like to find out a little bit about you and your museum environment. With which museum do you work?

- Arizona Science Center
- Exploratorium
- Science Museum of Minnesota

Are you blind or low vision?

- Yes
- No

How would you describe your role at your museum (check all that apply)

- Educator
- Exhibits Design/Development
- Marketing
- Finance
- Visitor Services

Including this year, how long have you worked in the informal learning/museum field?

- This is/was my first year
- 2-5 years
- 6-10 years
- 11-15 years
- More than 15 years

Is there anything else you would like to share about your experience with the NFB STEM2U program?

Thank you for answering our questions. Have a great day!

Appendix B: Phoenix Participant Satisfaction Ratings

Mean satisfaction ratings on a 5 point scale
1 (Very Unsatisfied) to 5 (Very Satisfied)

	Youth	Parents/ Caregivers
Meals	3.75	4.55
Sleeping Accommodations*	4.77	4.64
STEM Activities	4.64	N/A
Museum Visit	5.0	N/A
Staff	N/A	5.0
Application Process	N/A	4.45
Pre-Visit Materials	N/A	4.64
Social Opportunities	N/A	4.55
Program Schedule	N/A	4.50

Youth n varies between 8 - 14

Parent n varies between 10 - 11

*1 youth did not stay at the hotel