Multi-Scale Evaluation in STEM Education Webinar Series

Evaluation Summary Report
October 2018

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Introduction

The National Science Foundation (NSF) created the Inclusion across the Nation Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES) program to improve access to STEM education and career pathways for people in underserved populations. As part of their initiative to develop a STEM workforce that represents diversity across the U.S., NSF awarded 37 INCLUDES Design and Development Launch projects and 11 supporting conferences in September 2016.

One of these supporting conferences was the NSF INCLUDES Conference on Multi-Scale Evaluation in STEM Education, awarded to the University of Tennessee's National Institute for Mathematical and Biological Synthesis (NIMBioS) and National Institute for STEM Evaluation and Research (NISER). The award included multiple components (webinar, tutorial, and conference) to support NSF INCLUDES projects to gain additional knowledge regarding the use of evaluation through program planning and development. The goals of the project were to (i) enhance the knowledge of the participants about evaluation methods; (ii) present the experiences of individuals who have successfully developed alliances and carried out evaluation efforts for these; and (iii) provide advice regarding evaluation methods for those planning to participate in future requests for INCLUDES Alliances and/or the National Network.

A no-cost extension was granted for Sept 2017-August 2018 to develop and present five live follow-up webinars focused on issues in evaluating broadening participation projects. Topics were selected based upon evaluation feedback from the preceding webinar, conference, and tutorial. Louis Gross moderated each of the webinars, and NISER staff Pamela Bishop, Sondra LoRe, and Kevin Kidder developed content and delivered the webinars

Webinar Descriptions

Evaluating Social Media Impact in NSF INCLUDES Projects (February 1, 2018)

Social media are increasingly an integral part of grant-funded projects. Whether using Instagram, LinkedIn, Facebook, Twitter, Snapchat or another social media platform, project managers must determine what brings maximum impact to their project. Participants in this webinar had the opportunity to learn about online measurement and analytic tools as well as social media evaluation design plans to increase communication and engagement with stakeholders within their project, and to determine the most effective social media plans for their projects.

Program Models as a Tool for Scaling up NSF INCLUDES Projects (March 1, 2018)

Evaluation of projects often begins with a program model as a plan for successfully measuring activities, outcomes and impacts. When projects scale up to include multiple sites and projects, these models must also scale up. This webinar engaged participants with case study examples of evaluation design techniques than can be applied to the scaling up of INCLUDES projects. Communication strategies, program mapping techniques, and data sharing and analysis plans gave participants a tool kit for adaptation to their own project evaluations.

Engaging Diverse Populations in Evaluations of NSF INCLUDES Projects (April 5, 2018)

This webinar provided insight into the ways in which cultural competency can contribute to mindful evaluation of diverse populations. We addressed understanding of social and personal biases towards diverse populations and how we can we assure that we are not imposing our own beliefs into our research and evaluation. We also discussed ways to understand social norms of diverse cultures. Participants in this webinar explored approaches to identify potential barriers and opportunities for culturally responsive evaluation data collection.

Qualitative Data in Culturally Rich Evaluations of NSF INCLUDES Projects (May 3, 2018)

Evaluators often incorporate qualitative methods to understand the context through which participants from different backgrounds experience a program. Assembling knowledge from sources such as focus groups and interviews and layering them with methods such as observations, analytic memos, field notes, and reflective journaling, can help project leaders understand diverse perspectives. Participants in this webinar engaged with case study materials to code and analyze culturally rich data for program evaluation. We shared tools and methods for layering data in qualitative analyses with participants.

Evaluation Strategies for Measuring the Broader Impacts (BI) of NSF INCLUDES Projects (June 7, 2018)

Planning for the measurement of Broader Impacts (BIs) can feel overwhelming to project leaders. Some of the ways evaluators can encourage effective definition and measurement of BIs is through program and stakeholder mapping of outcomes related to BI goals, and through appropriate measurement tools. In this webinar, we examined different models for relating BIs to their project activities, and also tools for measuring progress towards BI goals.

Webinar Promotion

All of the webinars were announced broadly to the INCLUDES and STEM education community through the American Associate for the Advancement of Science's (AAAS) Trellis platform, direct correspondence with the many attendees at previous activities supported by this award, and through the large NIMBioS contact network of interdisciplinary researchers and educators. Post-delivery, the recordings of the webinar, along with slides and transcription of participant chats, were made publicly available on the projects website: http://www.nimbios.org/IncludesConf/webinars

Webinar Participation

A total of 379 registrations from 113 unique institutions were received for the five webinars (246 unique individuals). Of the 379, 213 registrants attended the live webinars (157 unique individuals). In addition to the live attendees, webinar recordings were viewed 218 times as of September 9th, 2018.

Webinar Evaluation Summary

Evaluation surveys were sent to each of the 213 participants after attendance of the respective live webinars, of which 77 responded. Following are evaluation results disaggregated by webinar.

Evaluating Social Media Impact in NSF INCLUDES Projects Evaluation

A total of 100 people registered for the "Evaluating Social Media Impact in NSF INCLUDES Projects" webinar. Of these, 62 attended and were sent the evaluation survey. A total of 30 people responded to the survey. Their responses are summarized below.

Participant learning expectations for the webinar:

- ❝❝ I was hoping to gain knowledge about utilizing social media to gather data in research studies.

- ❝❝ How to validate use of social media in courses

- ❝❝ I'm active with social media. Very interested in the evaluating social media aspect of the webinar.

- ❝❝ Ways to use social media more effectively for increasing program visibility and engagement.

- ❝❝ More details on what is considered important to measure when promoting your program/findings via social media

- ❝❝ Basics regarding social media evaluation

- ❝❝ Best practices and methods to apply in order to increase social media presence and broaden the national visibility of our center

- ❝❝ How to use social media to promote BI programs

- ❝❝ Ideas for future NSF grant proposals

- ❝❝ Ways to evaluate effective use of social media on projects.

- ❝❝ Specific metrics and tips on using social media for NSF grants

- ❝❝ How to make more effective use of social media in my outreach and training programs

- ❝❝ Try to keep up with using social media for our projects

- ❝❝ What types of social media work well for communicating with and getting feedback from various demographic and program participants.

- ❝❝ I was hoping to learn about how social media data could be used effectively in evaluating the progress of a project.

- ❝❝ Evaluation strategies

Social Media

❝❝ To make sure our current approach to Social Media engagement is adequate, and to learn of other best practices currently being used by others

❝❝ How to use social media effectively

❝❝ Broad overview of analytics as I know little about them

❝❝ How to usefully assess social media impact

❝❝ We were hoping to learn about better social media strategies to make our future NSF proposals stronger

❝❝ Techniques for evaluating Social Media

❝❝ Learn how to use social media effectively and how to do social media evaluation

❝❝ How social media can impact the effectiveness of our grant work

❝❝ How to best assess whether our social media efforts are effective

❝❝ New evaluation models for social media projects

❝❝ How to better leverage social media to support an NSF INCLUDES project

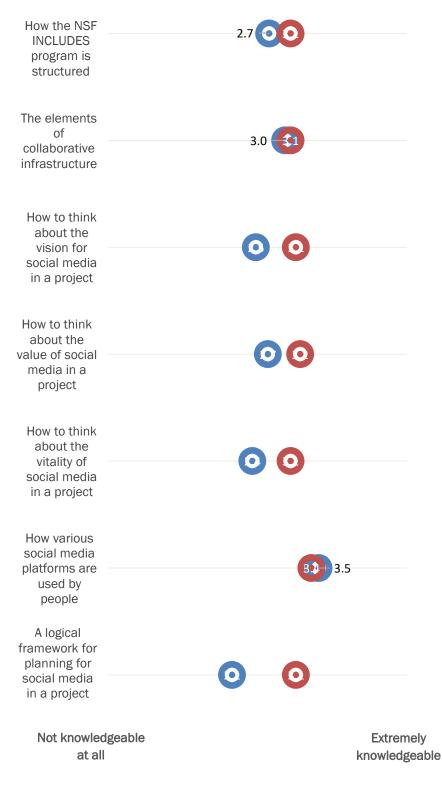**27** out of **30** respondents felt the webinar met their expectation

Comments about expectations:

❝❝ I thought it was very useful, primarily the framework provided. Thanks for that, Sondra!

❝❝ Exceeded my expectations

❝❝ The webinar was a good introduction for those who have not yet started using social media. My project already has social media, so I was hoping for content related to evaluating and improving our effectiveness in engaging our audience.

❝❝ I enjoyed getting the model that you use but was hoping for more specifics

Social Media

❝❝ One of the best I've ever attended. Full of content, no fluff.

❝❝ The webinar provided a few examples of things that have worked well and haven't worked well, but it seems like a lot more data are needed.

❝❝ More or less. I came away thinking that no one has all the answers for this!

❝❝ I think the frameworks presented could prove to be useful, although I was expecting to learn techniques on gathering data from social media in an automated manner.

❝❝ It was helpful - would love as much detail as possible on methods used or follow up materials

❝❝ I found it very informative and liked the case examples

Figure 1. Participant learning gains from before and after the social media webinar (1 = Not knowledgeable at all to 5 – Extremely knowledgeable)

How the NSF INCLUDES program is structured — 2.7

The elements of collaborative infrastructure — 3.0 — 3.1

How to think about the vision for social media in a project

How to think about the value of social media in a project

How to think about the vitality of social media in a project

How various social media platforms are used by people — 3.4 — 3.5

A logical framework for planning for social media in a project

Not knowledgeable at all   Extremely knowledgeable

Social Media

100%

of respondents felt that there was sufficient opportunity for questions and comments from the webinar audience.

100%

of respondents felt the questions from the webinar audience were answered well

Topics of interest for future webinars:

❝❝ Defining benchmarks/goals for your metrics when there is no standard already established. What is considered adequate from NSF's perspective or is the process used for determining benchmarks more important.

❝❝ How to measure and evaluate the success of a social media program (what should growth look like over time, other ways to evaluate beyond platform-provided metrics)

❝❝ How to develop stronger metrics, for example instead of students reached, workshops held, etc.

❝❝ Communication and project data gathering platforms. How to communicate effectively and efficiently with program participants, especially K-12 teachers and K-12 students and share the communications among all participants

❝❝ How to boost participation rates in evaluation efforts when compensation is not an option!

❝❝ Maybe something about mixed methods approaches?

❝❝ Collective Impact resources such as models to follow, how to measure progress, how to structure membership, etc. To best align with INCLUDES agenda

❝❝ More on analytics of social media.

Additional comments:

❝❝ Great webinar! You don't hear much about social media evaluation and I think it is very important to consider

❝❝ The webinar would have been great for projects new to social media! The webinar did not deliver a thorough discussion of online measurement tools and evaluation plans as described in the program description, which would have been valuable for those projects already using social media.

Program Models as a Tool for Scaling up NSF INCLUDES Projects

A total of 46 people registered for the "Program Models as a Tool for Scaling up NSF INCLUDES Projects" webinar. Of these, 23 attended and were sent the evaluation survey. A total of 10 people responded to the survey. Their responses are summarized below.

Participant learning expectations for the webinar:

❝ More about the INCLUDES program and models used for projects

❝ Explanation of program models

❝ I was planning on learning at least the names of some specific models to use.

❝ More information about how we can expand our program and learn how NSF would like us to carry out our programs.

❝ Program evaluation and management

❝ Learn about models being used for scaling up projects

❝ New strategies/evaluation

❝ Program evaluation ideas for NSF grants

❝ More on successful scale models for outreach projects.

7 out of **10** respondents felt the webinar met their expectation
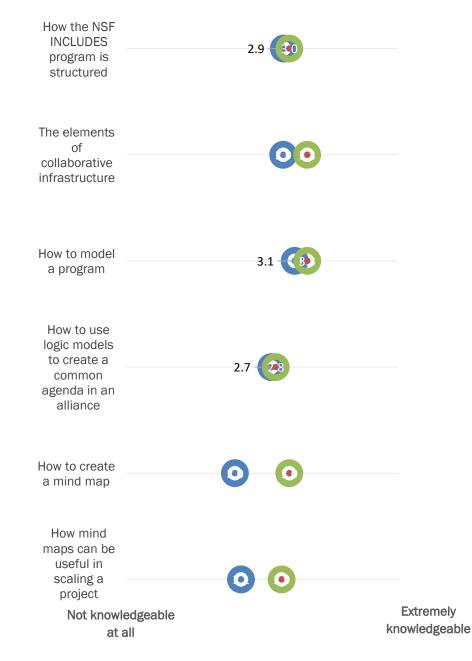
Comments about expectations:

❝ The information was intended for individuals working in multi-site projects. I think the upcoming evaluation webinars look more useful for me.

❝ The entire presentation seemed to be well you could do this or you could do something else - no rules - just do whatever you want

❝ I think this is based on my experience and research on NSF includes on my own, but I knew most of the info provided already.

Figure 2. Participant learning gains from before and after the program models webinar (1 = Not knowledgeable at all to 5 – Extremely knowledgeable)

How the NSF INCLUDES program is structured
2.9 — 3.0

The elements of collaborative infrastructure

How to model a program
3.1 — 3.3

How to use logic models to create a common agenda in an alliance
2.7 — 2.8

How to create a mind map

How mind maps can be useful in scaling a project

Not knowledgeable at all   Extremely knowledgeable

Topics of interest for future webinars:

❝❝ I would like NSF to show us a real life example of a project and how they scaled up. The theory is readily available with a google search, so having an actual use would be much more valuable.

Engaging Diverse Populations in Evaluations of NSF INCLUDES Projects

A total of 58 people registered for the "Engaging Diverse Populations in Evaluations of NSF INCLUDES Projects" webinar. Of these, 37 attended and were sent the evaluation survey. A total of 6 people responded to the survey. Their responses are summarized below.

Participant learning expectations for the webinar:

❝ Resources on how to engage diverse populations

❝ Inclusive assessment strategies

❝ More about the includes projects

❝ Tips/best practices for engaging diverse populations in the evaluation process

❝ Information that will help me with an evaluation i have that works with the Hispanic community

❝ Improve the evaluation process

❝ Specific practices i might be able to use in project evaluation that would better protect/represent diverse participants and their perspectives.
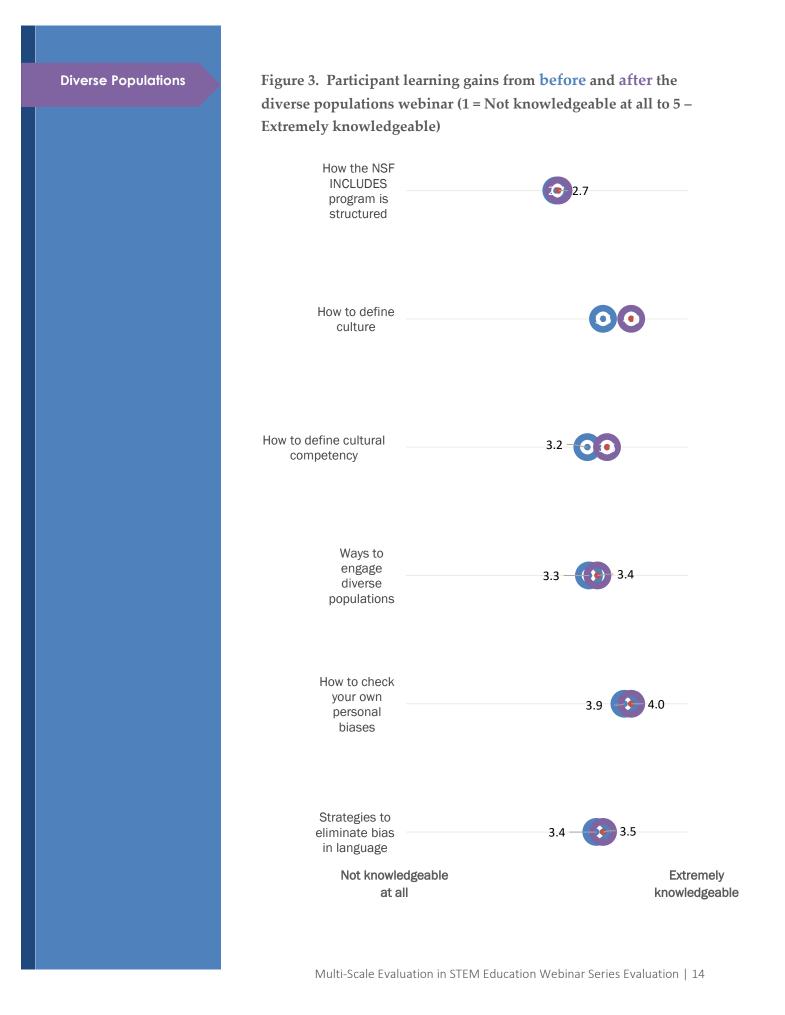
❝ More specifics on the topic

❝ Particular aspects of inclusion and diversity that are relevant to the NSF includes progra**m**

7 out of **10** respondents felt the webinar met their expectation

Comments about expectations:

❝ I would have like to webinar to have gone into more detail as opposed to just an introduction but it did provide the minimum amount of info I was expecting

❝ Some of the information I knew already. But there were some things that I did not know. The whole he, she, they topic is challenging. I'm not comfortable with "they" and would like to find out how to either become comfortable or at least not come across as dated when I interact with people who feel strongly about it.

❝ I also wanted to hear more about the current way of thinking on these issues because my formal training in intercultural communications was many years ago. It seems that what is acceptable, recommended, changes often. Language issues are also important and seem to have changed a lot.

❝ Thanks so much for your efforts to put on this webinar. While the 10,000-foot-view presented was well aligned with what I already knew, specific examples of how these ideals play out in a few different contexts or studies could have really brought the ideas to life in ways that could help participants be more prepared to apply them. After walking through a few case studies together, perhaps participants could break into small groups and troubleshoot/plan around a few different, new cases? Just ideas for next time!

❝ I wish it had given more specifics rather than staying at the more general level geared toward people who were just beginning to think about the topic

❝ The information presented on culture and cultural awareness was quite basic. For me as an experienced sociologist it was nothing new at all.

Diverse Populations

Figure 3. Participant learning gains from before and after the diverse populations webinar (1 = Not knowledgeable at all to 5 – Extremely knowledgeable)

How the NSF INCLUDES program is structured — 2.7

How to define culture

How to define cultural competency — 3.2

Ways to engage diverse populations — 3.3 — 3.4

How to check your own personal biases — 3.9 — 4.0

Strategies to eliminate bias in language — 3.4 — 3.5

Not knowledgeable at all

Extremely knowledgeable

Diverse Populations

100%

Of respondents felt that there was sufficient opportunity for questions and comments from the webinar audience.

100%

Of respondents felt the questions from the webinar audience were answered well

Topics of interest for future webinars:

❝ Inclusive interview methods

❝ Building instruments to assess programs

❝ Perhaps a more in depth discussion surrounding this topic

❝ How to work with participants when low SES is a primary barrier

❝ Evaluation design and evaluation models

❝ A deeper treatment of inclusive research/evaluation would be wonderful!

❝ Evaluation as an integral aspect of projects rather than an add-on

Qualitative Data in Culturally Rich Evaluations of NSF INCLUDES Projects

A total of 98 people registered for the "Qualitative Data in Culturally Rich Evaluations of NSF INCLUDES Projects" webinar. Of these, 55 attended and were sent the evaluation survey. A total of 18 people responded to the survey. Their responses are summarized below.

Participant learning expectations for the webinar:

❝ Tangible techniques in qualitative research; how to analyze qualitative data

❝ New knowledge or tips for qualitative data in evaluation or considerations for qualitative data collection/analysis that are specifically suggested/sought for includes grants

❝ I have been an evaluator for many years. I was interested in learning about new techniques and perspectives.

❝ Use of qualitative methods in evaluation

❝ I'm on an evaluation team for NSF grant and wanted to learn more about assessment.

❝ Having to evaluate and create metrics for k-12 outreach programs I run, I am always looking for as much further knowledge. My own background is in social sciences (education research), and so, the topic of being culturally sensitive was something for which i was highly familiar. It was a great refresher.

❝ First, to ensure i was on the right path with my current qualitative initiatives and to see what other options there are.

❝ If there is something unique about culturally rich data that i need to consider in qualitative data

❝ Gain a better idea, more concrete actionable ideas about how to be culturally aware working with the diverse populations i deal with

❝ A better understanding of qualitative methods

❝ The role qualitative approaches might play in evaluations

❝ Creative approaches to collecting qualitative data

❝ How to use qualitative research in a research design that is acceptable to NSF
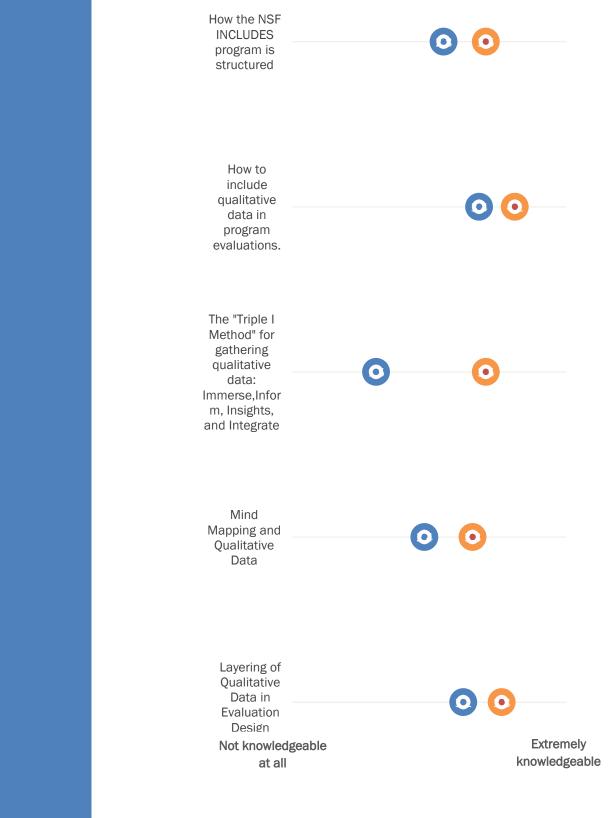
❝ More about evaluating programs

12 out of 17 respondents felt the webinar met their expectation

Comments about expectations:

❝❝ The webinar was too theoretical in nature. It would have been more useful to learn specific qualitative techniques and analysis procedures. More hands-on demonstrations! More takeaway tools!

❝❝ The information was useful but was not appropriate for my level of experience with qualitative data collection and analysis. The webinar was for novices, and I have experience, although I would not call myself an expert.

❝❝ I appreciated the references to books with which I was unfamiliar.

❝❝ Great resources! Have bought two of the books mentioned. I attended the webinar to hear about valid stuff - anyone can make up some cute sounding stuff."

❝❝ I didn't learn anything that I didn't already know about evaluations using qualitative data

❝❝ The speaker was excellent and provided good examples.

❝❝ I didn't realise it was specific to INCLUDES initiatves - my mistake!t I still found a lot of the information useful.

❝❝ I liked the ability to go online to view the webinar. It was very convenient.

Figure 4. Participant learning gains from before and after the qualitative data webinar (1 = Not knowledgeable at all to 5 – Extremely knowledgeable)

How the NSF INCLUDES program is structured

How to include qualitative data in program evaluations.

The "Triple I Method" for gathering qualitative data: Immerse,Inform, Insights, and Integrate

Mind Mapping and Qualitative Data

Layering of Qualitative Data in Evaluation Design

Not knowledgeable at all

Extremely knowledgeable

Topics of interest for future webinars:

❝ Hands-on qualitative and quantitative data analysis

❝ Methods for evaluating equality/inequality, equity, and social justice

❝ 1-working with program researchers to develop evaluation plans; 2-developing evaluation questions to guide a program evaluation

❝ I'd like to see something on actor mapping and asset mapping.

❝ General guidelines for gathering and evaluating using quantitative methods. Connecting to what is evaluated back to original goals. How to handle longer-term data collection if programs we offer are short-term (there doesn't seem to be long-term buy-in with participants to continue cooperating with data collection long-term).

❝ Overall evaluation structures, what an acceptable report looks like, and dealing with small sample sizes

❝ Identifying indicators that have the power to clearly and specifically measure the outcomes we seek

❝ How to avoid the influence of confounding variables when it is not possible to use an experimental design and when a longitudinal study is not possible within the project funded period.

❝ Maybe dig in more deeply into specific methods and findings

❝ How to conduct interviews and focus groups for maximum effect.

❝ Not a webinar, but I really like the portion of these that you provide resources in specific areas. That would be great to have on the niser website.

❝ NSF qualitative research designs

❝ I think more about coding qualitative data and presenting results to stakeholders.

Additional comments:

❝ Try to provide more information about the contents of the webinars in the future so people will understand if it is relevant to their needs/interests.

94%

Of respondents felt that there was sufficient opportunity for questions and comments from the webinar audience.

94%

Of respondents felt the questions from the webinar audience were answered well

❝ I enjoyed the presentation. I felt that the presenter was enthusiastic and knowledgeable.

❝ For me the biggest thing was just affirming the approach that I am taking in using qualitative data in an INCLUDES evaluation. As well, I really liked the "triple I" approach, which is what I do and now I have a name for it.

❝ Thank you for making the series available.

❝ I really enjoyed this speaker. Her talk was interesting and informative with good clear agenda and excellent examples.

❝ Presenter did a great job answering questions.

❝ Thank you for the opportunity to participate.

Evaluation Strategies for Measuring the Broader Impacts (BI) of NSF INCLUDES Projects

A total of 77 people registered for the "Evaluation Strategies for Measuring the Broader Impacts (BI) of NSF INCLUDES Projects" webinar. Of these, 36 attended and were sent the evaluation survey. A total of 9 people responded to the survey (only five completed the survey). Their responses are summarized below.

Participant learning expectations for the webinar:

❝ More about how BI is evaluated

❝ Ideas for evaluation - methods

❝ New evaluation tools for INCLUDES projects

❝ How to measure broader impacts

❝ How to develop instruments to measure goal focused outcomes.

5 out of **6** respondents felt the webinar met their expectation

Comments about expectations:

❝ I still have a lot to learn, but it was a start.

❝ I think sharing the logic model and how to use it was a good opportunity for those who are just getting started with evaluation to learn. I am always surprised by how difficult this seems for people at the beginning.

❝ For me, this webinar increased my knowledge in the area of generating an evaluation model which is an important component of the assessment process.

Figure 5. Participant learning gains from before and after the broader impacts webinar (1 = Not knowledgeable at all to 5 – Extremely knowledgeable)

How the NSF
Includes
Program is
structured

Why the
Broader
Impacts (BIs)
criteria are
important

The different
types of BIs
outcomes

How to
evaluate BIs
outcomes

Not knowledgeable
at all

Extremely
knowledgeable

Topics of interest for future webinars:

❝ I would like to see an evaluation 102, and 103 webinars…beyond the logic model.

❝ These webinars have been a great introduction to some of these topics but I would like to get more detailed information on implementing some of these best practices

❝ More program element examples from assessment to evaluation

100%

of respondents felt that there was sufficient opportunity for questions and comments from the webinar audience.

100%

of respondents felt the questions from the webinar audience were answered well