Afterschool & STEM System Building Evaluation

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TEXAS TECH UNIVERSITY
Institute *for* Measurement, Methodology, Analysis & Policy™

Common Instrument Suite

Student Survey Guide - 2016

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Introduction

The Afterschool and Science, Technology, Engineering, and Math (STEM) System Building Evaluation is a nation-wide capacity-building project that aspires to change the quantity and quality of STEM offerings to young people in afterschool programs. The initiative not only aims to increase the level and diversity of STEM offerings in more afterschool programs, but also aims to evaluate youth outcomes in STEM and 21st Century skills. The premise is that if programs increase offerings of STEM activities conducted with strong informal science and youth development techniques, they can strengthen such outcome areas as engagement in science, career knowledge and interest, activities in STEM in other parts of life, and skills in teamwork, perseverance and critical thinking.

Your state afterschool network is partnering with research experts at The Partnerships in Education and Resilience (PEAR) Institute at McLean Hospital and Harvard University and the Institute for Measurement, Methodology, Analysis, and Policy (IMMAP) at Texas Tech University in a nationwide study on the impact of afterschool STEM System building in states by examining program quality and youth outcomes in STEM and 21st Century skills.

This evaluation will be conducted March 15 - May 31, 2016 in about 10 states. The evaluation will have about 150 afterschool STEM programs that reflect the demographic diversity of the United States. This initiative is made possible with funding and assistance from the C.S. Mott Foundation and STEM Next at University of San Diego (formerly the Noyce Foundation). Thank you for participating this year!

Getting Started

This guide was designed to provide afterschool STEM program facilitators with more information on how to administer a student STEM interest survey called the PEAR Common Instrument Suite (CIS). This self-report survey will be administered to your students once at the end of the program, and it takes about 10 minutes to complete. The survey will be administered electronically using tablets provided by the state networks - data collection is easy and there is no data entry to worry about!

Note that this student self-report survey is one of three components of the Afterschool & STEM System Building Evaluation 2016. The other two components of the evaluation are:

1. A facilitator self-report survey
2. Program quality observations using the Dimensions of Success (DoS) tool.

If you would like more information about this evaluation, please feel free to contact Dr. Patty Allen at The PEAR Institute/Harvard (pallen@mclean.harvard.edu) and Dr. Eriko Fukuda at IMMAP/TTU (eriko.fukuda@ttu.edu).

To help you prepare for the administration of the CIS survey, please carefully read through this survey instruction guide. Also, to complement this written guide, the PEAR Institute and IMMAP teams will be hosting a live webinar to provide an overview of the CIS survey and to discuss best practices for survey administration (please contact your state network lead for scheduling details!). Lastly, if you have questions about the survey, please do not hesitate to contact the PEAR Institute or IMMAP experts (see directory at the end of this guide). No question is too big or too small. Thank you very much for partnering with us in this national evaluation. We hope that through this collective effort we will have strong data to tell the stories of impact of OST STEM on outcomes at the state, program and youth levels. Best wishes and happy assessing!

Background on the Common Instrument Suite (CIS)

You may find yourself wondering: What is the Common Instrument Suite (CIS) Survey? When do you administer it, and what does it measure? Here is a quick guide to answer these questions.

The CIS is a self-report survey that measures a variety of attitudes related to outcomes such as STEM interest, STEM career knowledge, and STEM identity. It was specifically developed with informal/outside-of-school time (OST) STEM programs in mind. The purpose of the survey is to help understand how informal STEM programming impacts students' perceptions/attitudes towards STEM.

Thanks to funding from the STEM Next at the University of San Diego (formerly the Noyce Foundation), the CIS was first developed in 2009 by Dr. Gil Noam (director of the PEAR Institute) and OST practitioners from major organizations like Girls Inc. and 4-H. It has been administered over 30,000 times to students enrolled in informal science programs across the U.S.

Outcome Measures for the CIS		
STEM-Related Attitudes	*STEM Interest*	How interested and enthusiastic a student is about STEM and STEM-related activities
	STEM Identity	How much a student sees themselves as a STEM person
	STEM Career Interest	How motivated a student is to get a career in STEM
	STEM Career Knowledge	How knowledgeable a student is about obtaining a career in STEM
	STEM Enjoyment	How much a student enjoys participating in STEM-related activities
	STEM Activities	How often a student seeks out STEM activities
21st Century Skills / Socio-Emotional Learning (SEL)	*Relationships with Adults*	Positive connections and attitudes toward interactions with adults
	Relationships with Peers	Positive and supportive social connections with friends and classmates
	Perseverance	Persistence in work and problem-solving despite obstacles
	Critical Thinking	Examination of information, exploration of ideas, and independent thought

The CIS takes about 10 minutes to complete, and it is administered just once at the end of the program using what is called a retrospective design. This means the survey is administered once during the last week or so of the program, and it asks students to reflect on how much they feel they have changed as a result of participating in the program. Students are randomly assigned to complete one of two kinds of retrospective surveys: (1) retrospective pre/post, or (2) retrospective change.

    1. The **retrospective pre-post** method is similar to a traditional pretest/posttest, a survey design in which students complete one survey at the beginning of the program and then the same survey at the end of the program. However, this retrospective design asks students about "then" and "now" during the

same administration. In other words, students answer each question twice with two different frames of reference: "before the program" and "at this time."

2. The **retrospective change** method also asks students how much they feel they have changed, except that students only need to answer each question once. Students are asked to think back to the beginning of the program and rate whether they do/feel things less or more because of the program.

The retrospective method has two major strengths:

➢ First, it requires less time for the students to take the survey and there is only one data collection period.
➢ Second, it minimizes a phenomenon called "response-shift bias." This typically occurs after students have participated in the program and the students' perception of themselves has changed due to their experience in the program.
  o For instance, imagine that a student completes a survey about problem-solving. At the beginning, perhaps the student thinks they have excellent problem-solving ability (rating a 4 out of 4), but then after the program they realize they needed extra help and had to work hard, but by the end became very good at problem-solving (again rating a 4 out of 4). This results in a net-change of zero even though the student felt they learned a lot!

Survey Administration

When you administer the CIS survey, please keep a few things in mind:
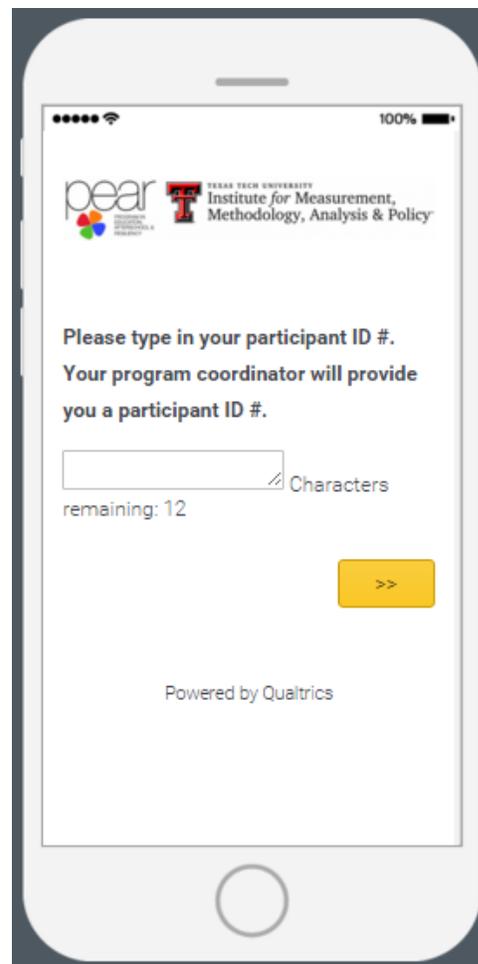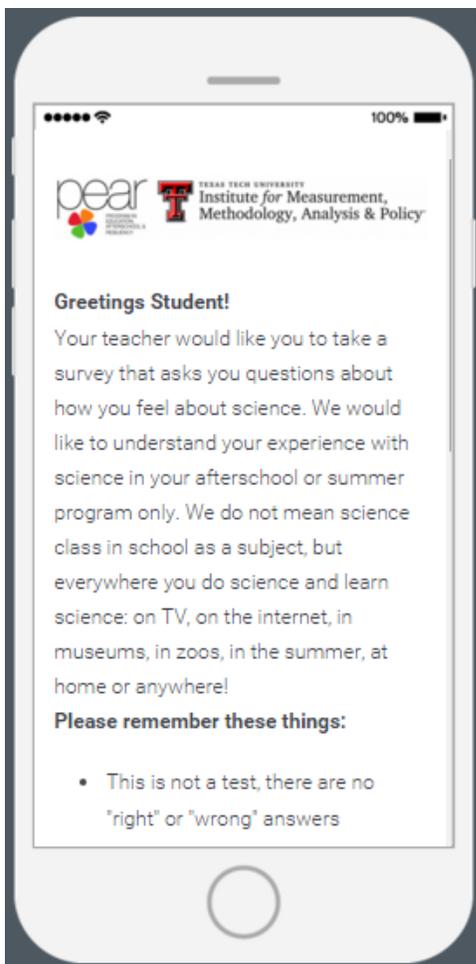
- *The survey is voluntary.*
  o While it is our hope that every student will complete the survey, it is not required and students can stop at any time.

- *The survey is designed for students in Grades 5 and above.*
  o For programs that may need to survey students in Grade 4 and below, we require a read aloud protocol to ensure students understand the instructions and items.

- *The survey is to be completed electronically – over the internet.*
  o IMMAP will provide you with a survey link so that students can access the survey electronically using <u>any</u> wi-fi enabled electronic device (in addition to provided Kindles).

- *A participant ID# is required to start and complete the survey.*
  o Participant ID#s will be provided to you by your network contact or IMMAP.
  o These ID#s allow us to ensure high quality data while avoiding the collection of identifying information like student names.
  o Program facilitators will also be provided a program ID# by the network or IMMAP.

- *Excite the students about taking the survey!*
  o Students are more likely to think deeply about their answers and complete the survey when they understand the importance of why they are taking it.

- *Questions should be encouraged.*
  o Make yourself available to answer questions at all times.
  o If students do not understand, they may not complete the survey or may provide information that is inaccurate.

- *The survey takes about 10 minutes to complete.*
  o Please allow for time to get students organized and settled with the survey.

| One administration: At the end of program **Start of the day** | 10 minutes (No more than 20) | Mobile Monitoring. Facilitator needs to be available to help students |

The CIS student survey should be administered once at the end of the program (within the last week). Here is what the survey will look like on the tablets.
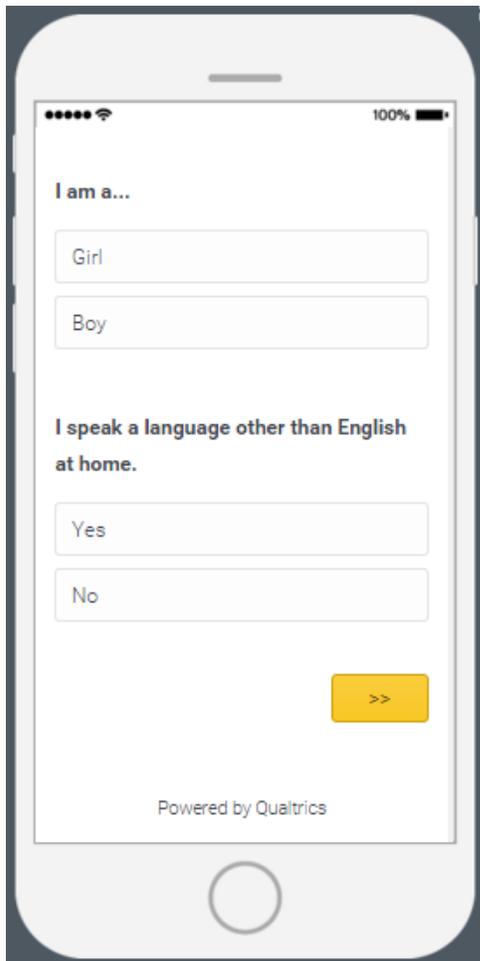
1. **Introduction screen, student assent, and participant ID#:**

- Introduce survey to students: You are welcome to read the introduction screen to students as a group (this is especially important if students are taking the surveys at different times if there are not enough tablets or other electronic devices). Students can complete them independently after you introduce them to the purpose of the survey.
    - o Please make sure students understand the bulleted items about how this is not a test, that the survey is voluntary, and that we do not share student answers with anyone.
- Assign participant ID#s: participant ID#s will be provided to each program by your state network contact or IMMAP. We ask that you give one ID# to each student. It's a key to unlock the survey!
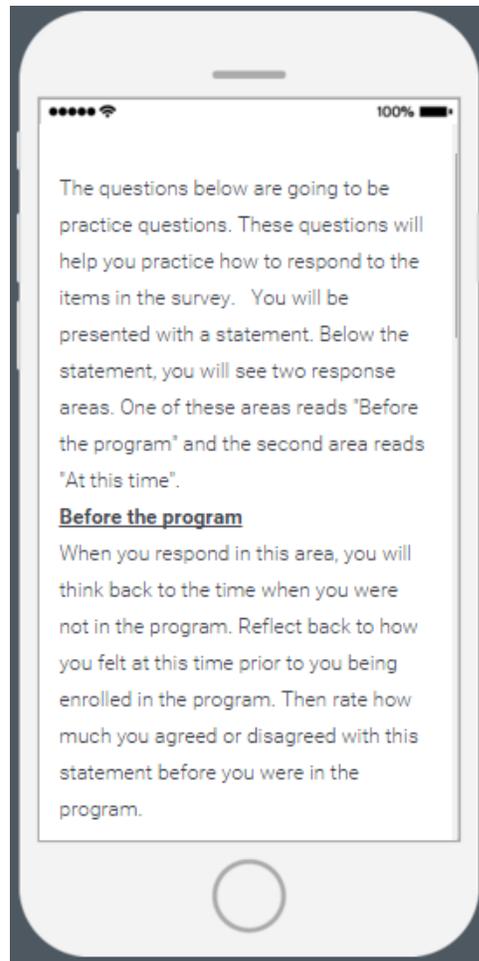

Greetings Student!

Your teacher would like you to take a survey that asks you questions about how you feel about science. We would like to understand your experience with science in your afterschool or summer program only. We do not mean science class in school as a subject, but everywhere you do science and learn science: on TV, on the internet, in museums, in zoos, in the summer, at home or anywhere!

Please remember these things:

- This is not a test, there are no "right" or "wrong" answers

Please type in your participant ID #.
Your program coordinator will provide you a participant ID #.

Characters remaining: 12

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Powered by Qualtrics

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2. Demographic and instruction screens:

- <u>Demographic questions</u>: After the participant ID# is entered, students may be asked demographic questions. (Note: These items may not appear until the end of the survey, as they are randomized).
- <u>Survey instructions</u>: Students will also be shown a practice screen that will help them understand that this survey is asking them to think from two different frames of reference: BEFORE THE PROGRAM and AT THIS TIME.
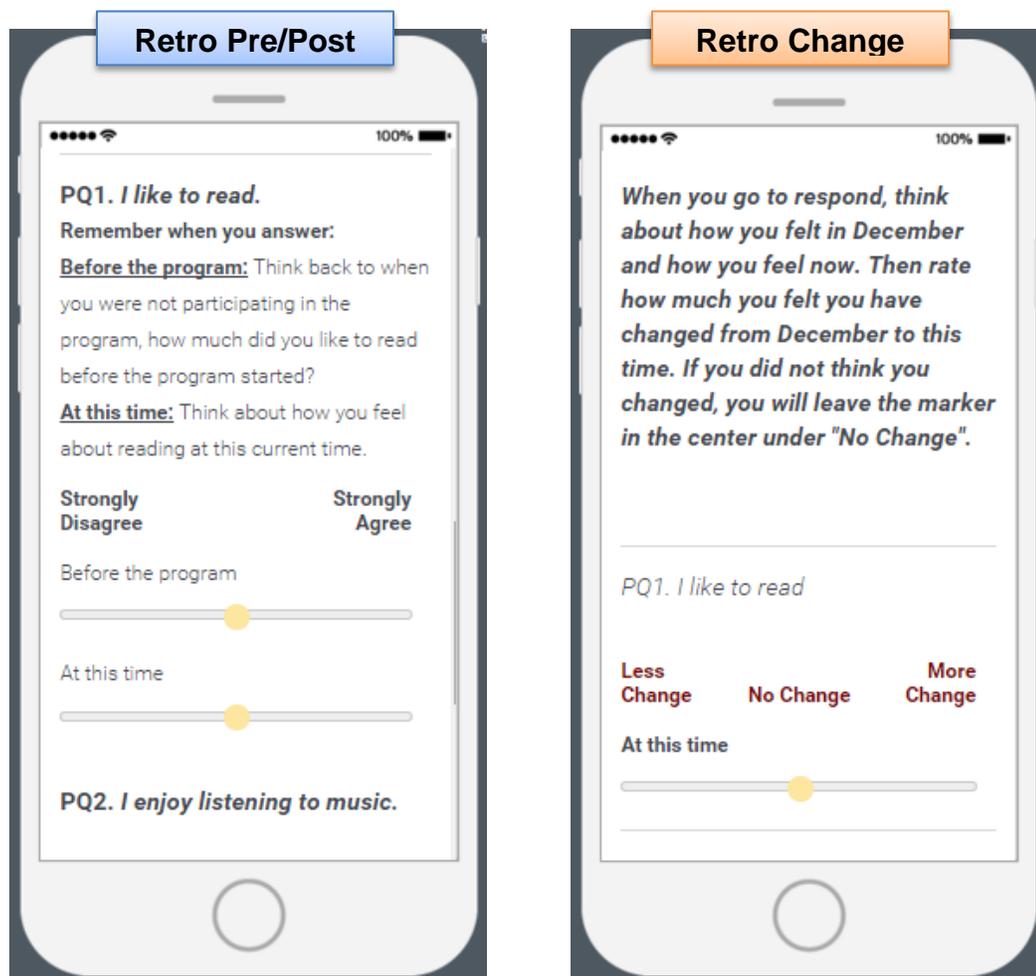
3. Practice questions and survey questions:

- Practice questions: To ensure students understand how to answer each survey item using slides, students will be asked to answer two neutral practice questions. As described above, students will be randomly assigned to answer questions on one of two kinds of retrospective survey forms: retrospective pre/post, or retrospective change.
- The images below show an example of each type of retrospective survey. *For the retrospective pre/post* design, students will first be prompted to rate how they felt BEFORE the program, and then will have to rate how they feel AT THIS TIME (two slider, left). For the *retrospective change* design, there is only one slider and students will rate whether they feel about the same or different (right).
    - If students are completing the survey all at once as a group, you can read the instructions all together and have the students walk through the practice test together.
    - If students are taking the surveys individually (if the number of electronic devices is limited), please make sure you are still available and encourage questions.
- Survey questions: Once the practice items are completed, students will move forward with the actual survey items. We estimate the survey will take about 10 minutes to complete.
    - It is important to note that once an answer is submitted, there is no going back! Students should read each question carefully and submit when they are sure of their answer.
    - The survey seems short because we are using what is called a planned missing data design.
        - This means that students are asked a subset of the total number of questions on the survey. Some students will have questions that others will not see and vice versa.
        - This ensures high quality data while minimizing fatigue that can occur during long surveys.

Retro Pre/Post

PQ1. *I like to read.*

Remember when you answer:

<u>Before the program:</u> Think back to when you were not participating in the program, how much did you like to read before the program started?

<u>At this time:</u> Think about how you feel about reading at this current time.

Strongly Disagree   Strongly Agree

Before the program

At this time

PQ2. *I enjoy listening to music.*

Retro Change

When you go to respond, think about how you felt in December and how you feel now. Then rate how much you felt you have changed from December to this time. If you did not think you changed, you will leave the marker in the center under "No Change".

PQ1. *I like to read*

Less Change   No Change   More Change

At this time

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Technology Tips

The CIS student survey can only be administered electronically. A few days before you plan to administer the survey, please be sure you have access to:

- A reliable internet connection (e.g., ethernet, wi-fi or hot spot)

- Internet-ready electronic devices (i.e., tablets, smart phones, laptop/desktop computers)

To help facilitate data collection, your state network will issue Kindle tablets for students in your program to use to complete the survey. These Kindle tablets will be provided with support from the C.S. Mott Foundation and STEM Next at University of San Diego (formerly the Noyce Foundation). Please contact your state network lead if you have questions about when and how to receive Kindle tablets.

In addition to the provided Kindle tablets, you are welcome to administer the survey to students using any other compatible electronic devices you may have available to you. For instance, if students have access to laptop or desktop computers at the program, you are welcome to use these devices to complete the survey as well. In addition, if students have smart phone devices, like an iPhone or Android phone, they may also log onto the survey using these devices. Please note that the PEAR-IMMAP teams are only able to provide trouble-shooting tips for the provided Kindle tablets and not for additional electronic devices.

If you have any issues or questions about the survey using Qualtrics, please contact Britt Gorrall, IMMAP, via email at britt.gorrall@ttu.edu or the IMMAP team at **806-834-2886.**

If you have any questions or issues with the Kindle tablets, please refer to PEAR-IMMAP's trouble-shooting guide (separate document) or email Luke Waggenspack, IMMAP at lwaggens@gmail.com.

Frequently Asked Questions (FAQs) from Students

Below is a compilation of the most frequently asked questions from students to facilitators. You are welcome to use this guide to help you respond to student questions.

Q: What are you using this information for?
A: The information we collect will be used to help programs like yours become more interesting and exciting.

Q: What if I don't know how I feel about a statement?
A: We encourage you to answer the question as best as you can and to give the answer that best describes how you feel. If you cannot decide the region of the slider, we suggest that you give the answer you prefer more. However, while we would like you to answer all of the questions, you can skip one if you are unsure.

Q: I feel uncomfortable answering this question, what should I do?
A: We would like you to answer all of the questions on the survey, but you do NOT have to answer each one, and you can skip some if they make you feel uncomfortable.

Q: Why are some of the questions/statements very similar?
A: Some of the questions/statements may sound similar, but each has a somewhat different focus that can be measured. The answers to these questions will help us gather a better understanding of this program and student interests.

Q: Why do you ask about science and technology or about career-related information?
A: We use these answers to better understand your interests and experiences, which will help make your program more interesting and create more opportunities for you.

Q: Why do you ask all about school and my grades in science, math, and arts?
A: Your answers to these help us better understand what is important to students, which we can use to improve your program.

Q: Why do you ask for my student information like gender, language, and ethnicity?
A: We use the student information to see which students tend to get involved in programs like yours, and how we can try to open them up to other students like you!

Q: Why do you need to know how old I am?
A: Your age/grade helps us compare the interests of students in your grade with the interests of students in other grades.

Q: Will others see my answers? Will they know they are mine?
A: No. The only people who will see your answers will be entering and analyzing the information. Your answers are private and we do NOT share your answers with your class.

Contact Information for Evaluation Team

Principal Investigators: Dr. Gil Noam, PEAR Institute, Gil_Noam@hms.harvard.edu
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Network Liaisons: Jill Riemer, jill@smarterlearninggroup.com
Victoria Wegener, victoria@mainspringconsulting.org

Evaluation Directory	
If you have questions or comments concerning…	*Please contact the following individual(s):*
Program requirements, administrative questions, or purchase/delivery of Kindle tablets	Your State Afterschool Network Lead
Evaluation timeline/progress completing CIS	Eriko, Hye-Ran (IMMAP)
Access to student/facilitator survey (Qualtrics)	Britt and Kayla (IMMAP)
Technology or tablet-related troubleshooting	Luke (IMMAP)
Common Instrument Suite (CIS) survey (general)	Patty (PEAR Institute)
Common Instrument Suite (CIS) data report	Britt, Eriko, Hye-Ran (IMMAP)
Dimensions of Success (DoS) observation schedule / coordination of program visits	Your State Afterschool Network Lead
Dimensions of Success (DoS) data report	Ashima and Becky (PEAR Institute)