

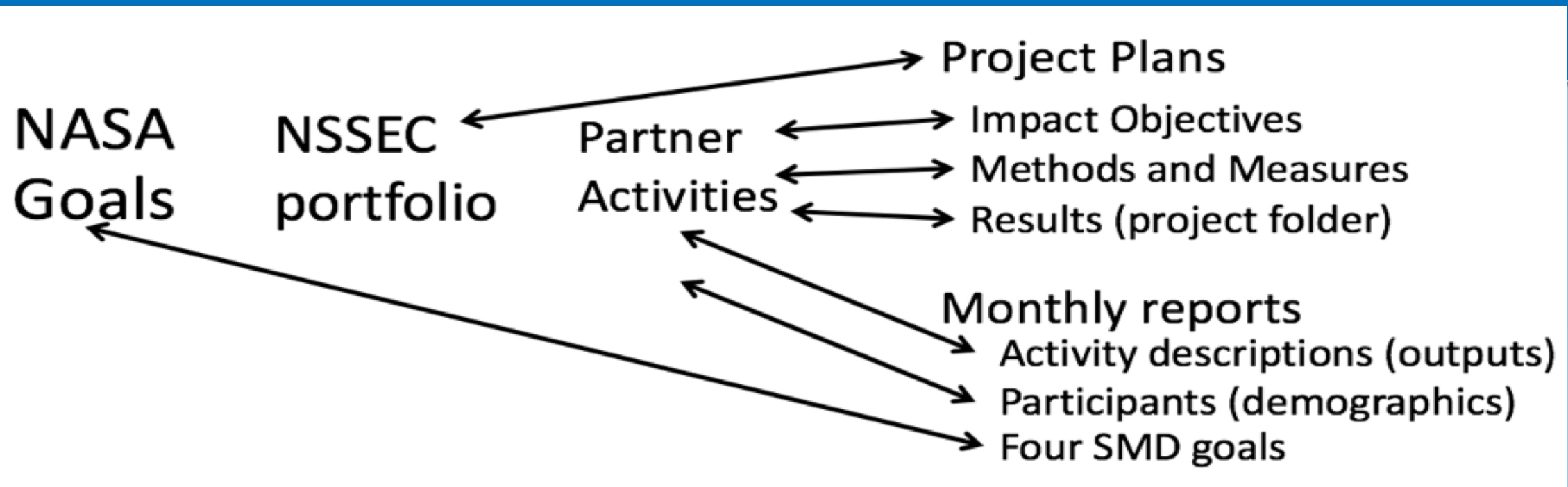
ED31D-1082 Measuring Effects Across NASA Space Science Education Consortium Activities Using NSF Impact Categories

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21 NSSEC Members

- To track and report on the activities of the 21 members of the NSSEC, each project developed a project plan with impact objectives, methods and measures. Detailed results are also posted in the project folder. When activities are completed, a form is completed to report on demographics and outputs and relate them to the overall SMD goals.



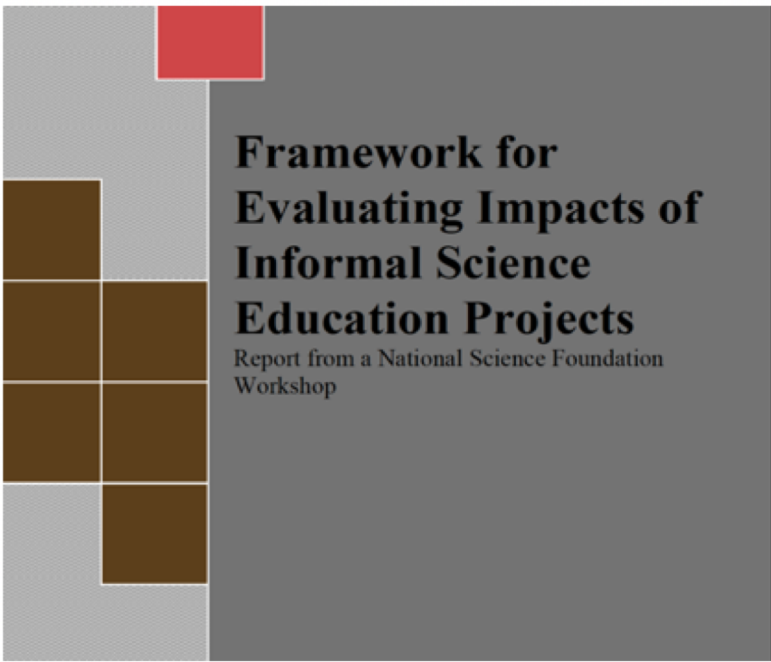
Methods and Measures

- What methods and measures can evaluators use to provide activity managers with evidence of effects that can be aggregated across activities? How rigorous can the different methods and measures be?

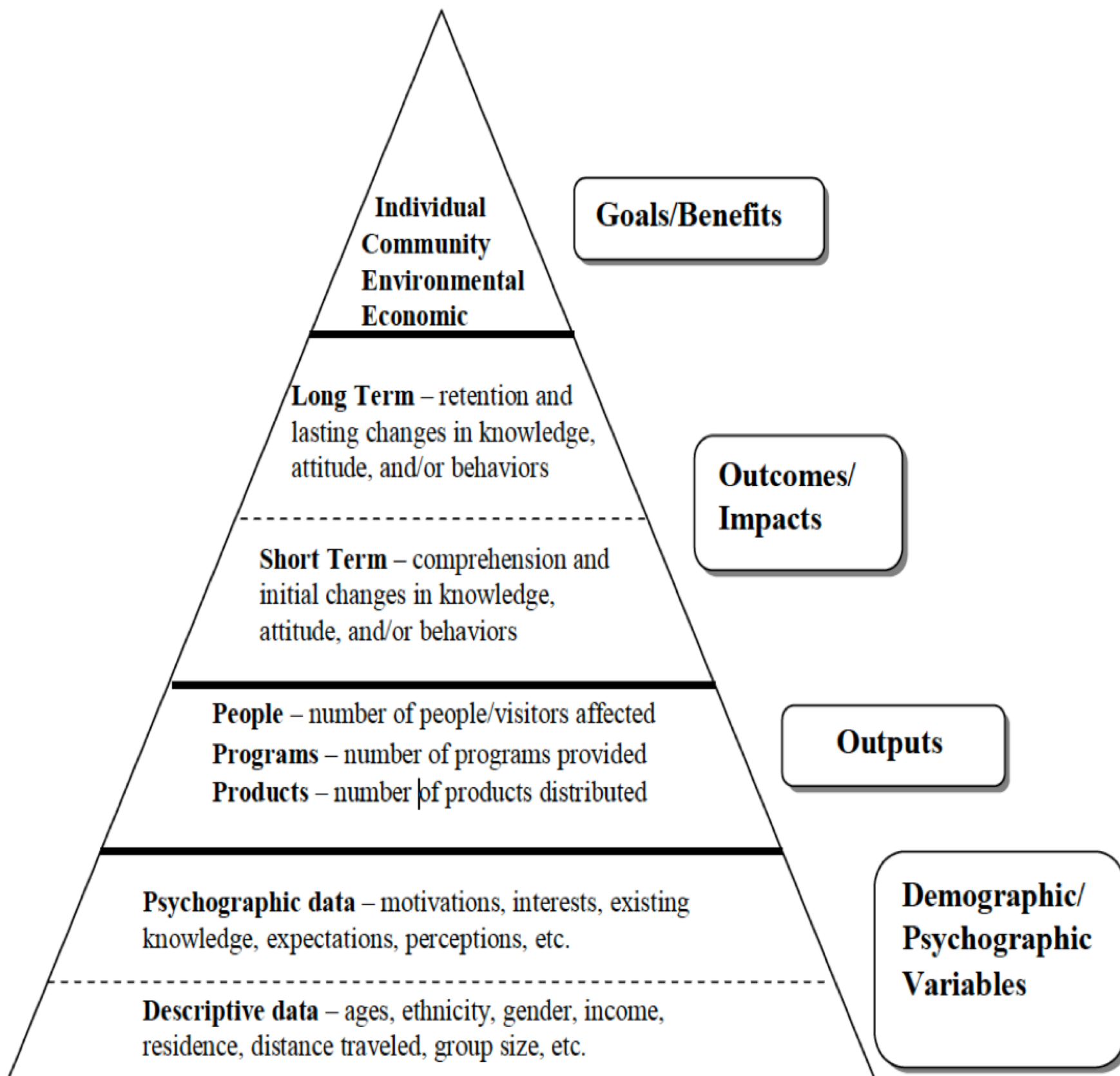
| Less rigorous → More rigorous | | | |
|--|--|---|---|
| Post only survey or reflection; Follow up survey or interview; Web stats; Anecdotes; Facilitator reports | External evaluator observes, or does case studies; Pre/post self-report survey, reflections; Post only measures (test, retrospective survey, task) | Pre/post measures (performance tasks, tests, observation); Pre/post follow-up | Comparison group studies (quasi-experimental); Experimental studies (random assignment) |

The summative evaluation included the National Science Foundation Framework (Friedman, 2008) impact categories of behavior, attitudes, skills, interest/engagement, and knowledge (BASIK).

- B** Behavior
- A** Attitude, aspirations, confidence
- S** Skills
- I** Interest, engagement
- K** Knowledge



Online Portfolio Results



Hierarchy of Anticipated Outcomes (Adapted from Wells, M & Butler, B. 2004 in Friedman, 2008)

Results

- Results from evaluations of projects are reported in an online portfolio by institution and summarized across projects for annual reporting. For example, Afterschool Universe workshops developed methods and measures for each impact objective. Total NSSEC output data is shown in the pyramid.

| Table of Specifications with Methods and Measures for Afterschool Universe | |
|---|---|
| Impact Objective | Methods/Measures |
| Behavior: Use the activities with their audiences | 1yr follow up survey on actual use |
| Attitude: Feel confident; Affect audiences' attitudes | During PD by educator reflection sheet <i>Rate your confidence level for doing this activity, 1-10=highest</i> 1yr follow up with educator <i>On a scale of 1-10, how much did AU affect your participants' attitude. What evidence do you have?</i> |
| Skills: Plan during; Audiences will develop skills | During PD Reflection sheet By session with "Tips and Tricks" and "Reminders" 1yr Follow up survey <i>On a scale of 1-10, how much did AU affect your participants' skills? What evidence do you have?</i> |
| Interest: Plan during PD; AU will interest audiences in space science | Post PD Survey <i>What do you plan to do with this training once you have completed it? When do you plan to do the sessions? With whom? Where?</i> 1yr follow up survey <i>On a scale of 1-10, how did AU affect your participants; interest? What evidence do you have?</i> |
| Knowledge AU PD participants will increase their knowledge of key concepts in the program | Pre/post PD knowledge questions Gains in content knowledge for each lesson 1yr follow up survey <i>On a scale of 1-10, how did AU affect your participants knowledge? What evidence do you have?</i> |

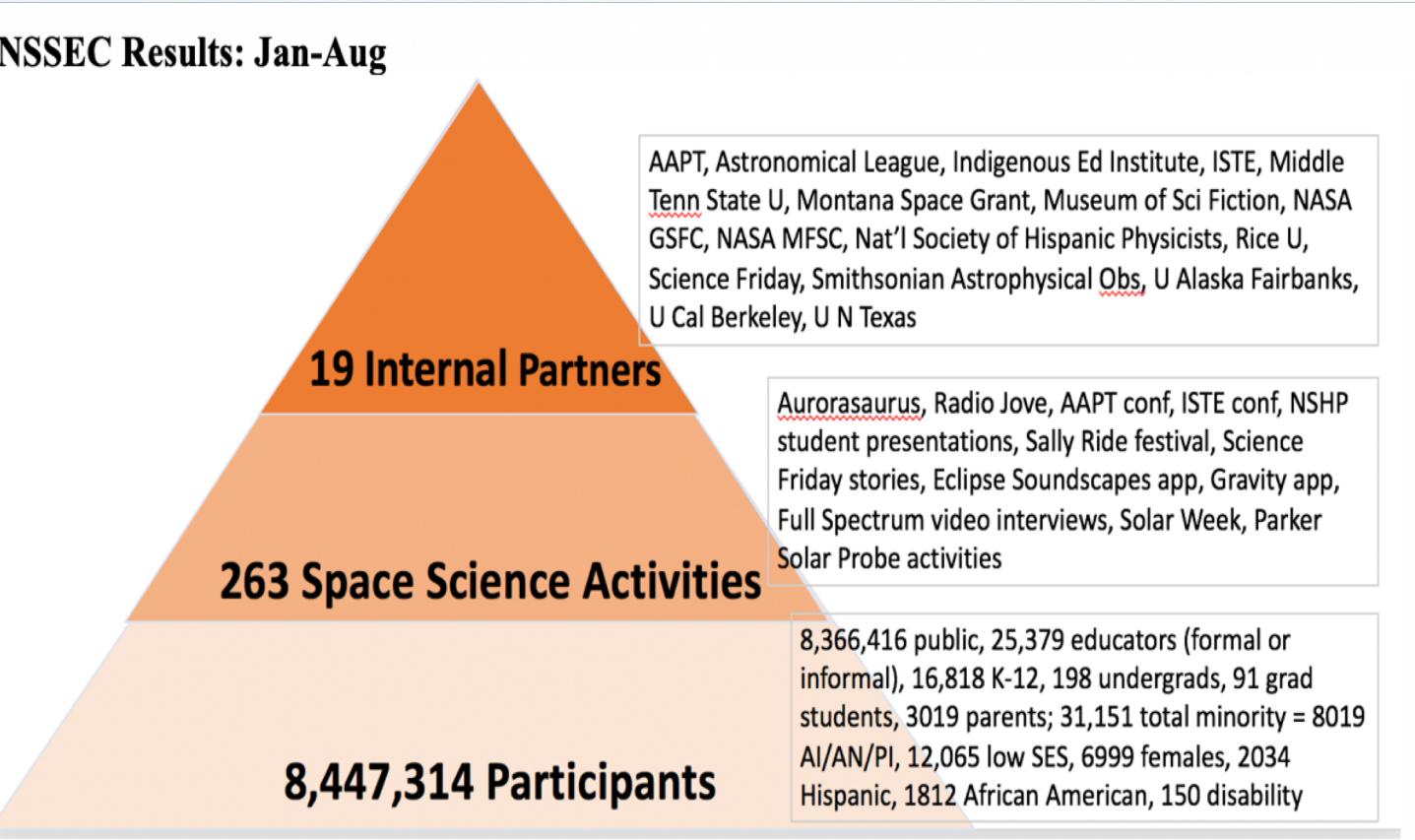
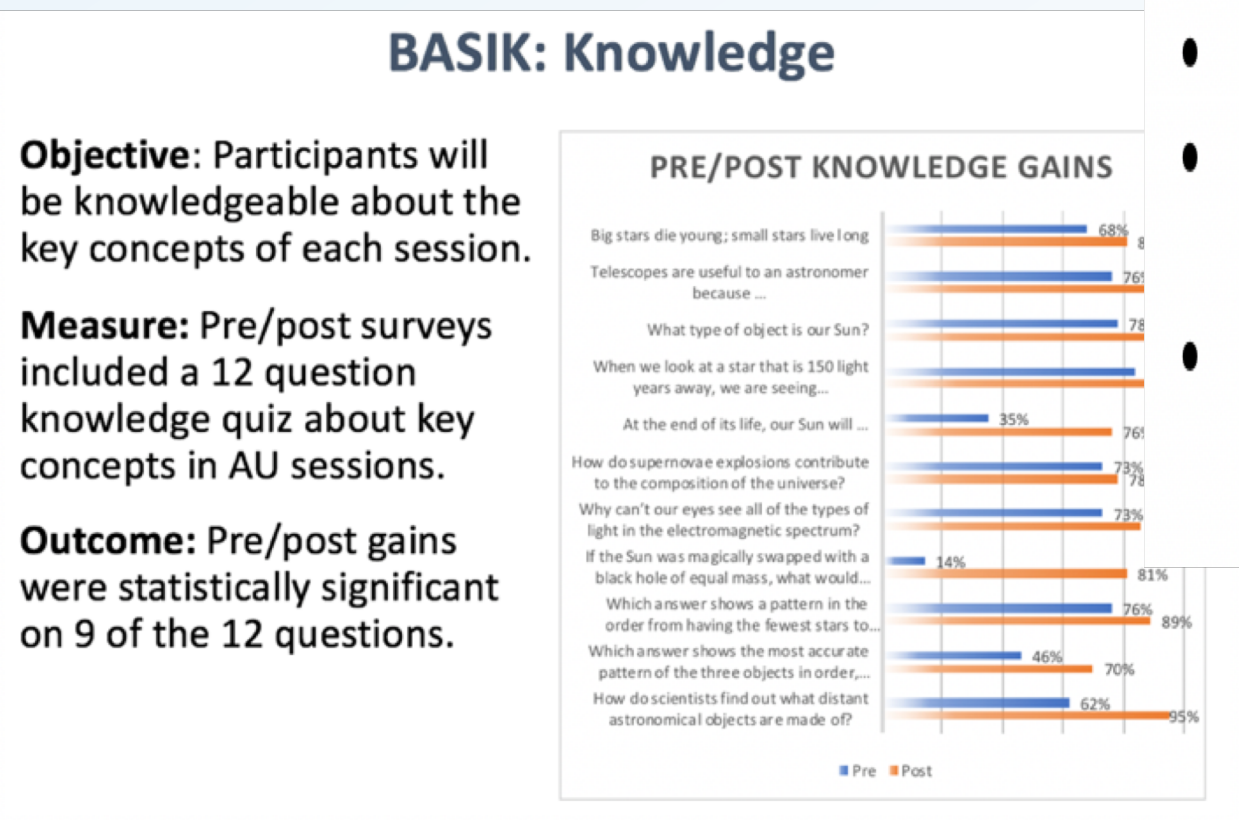
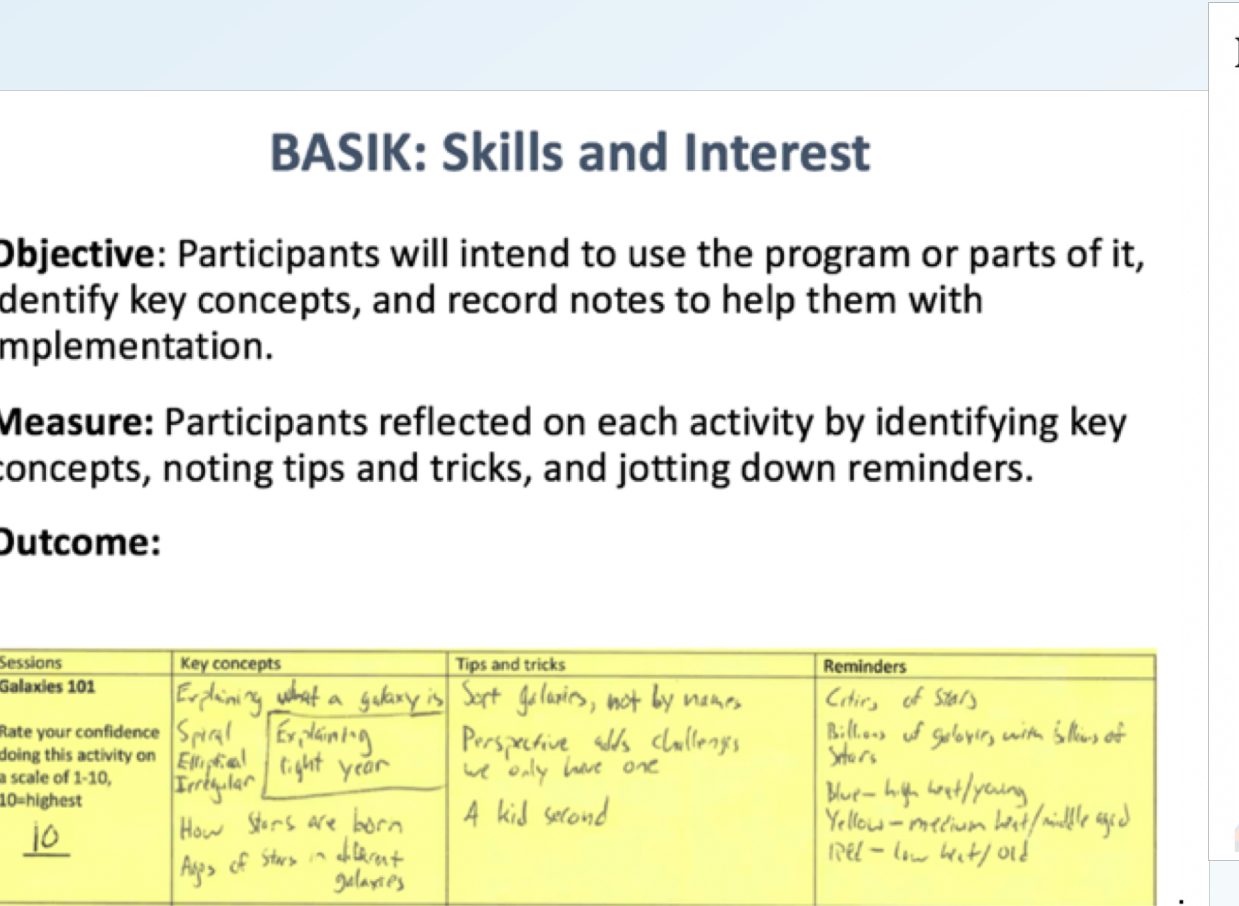
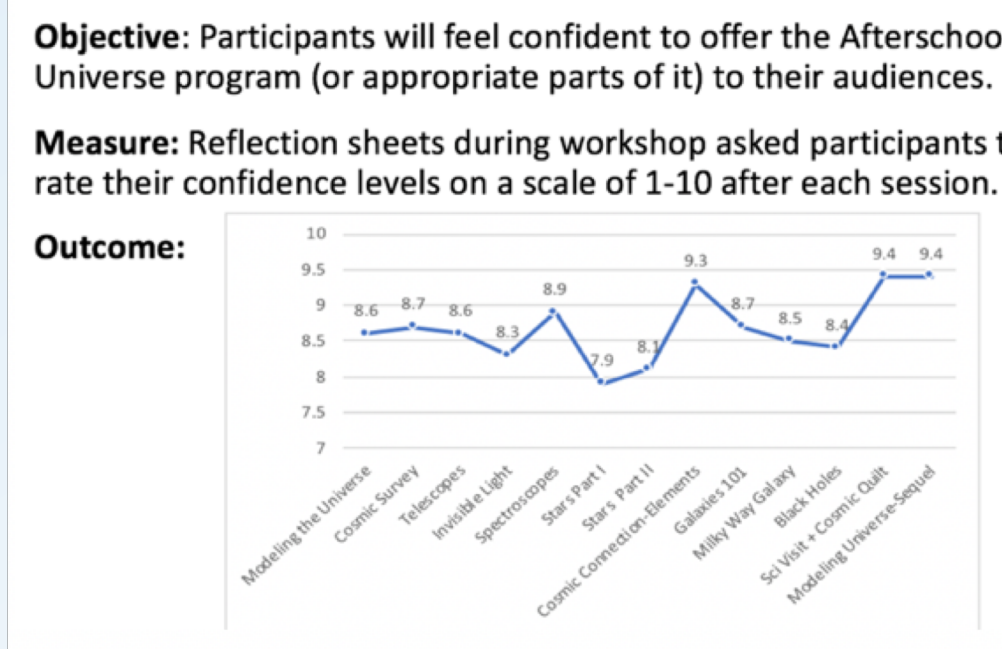
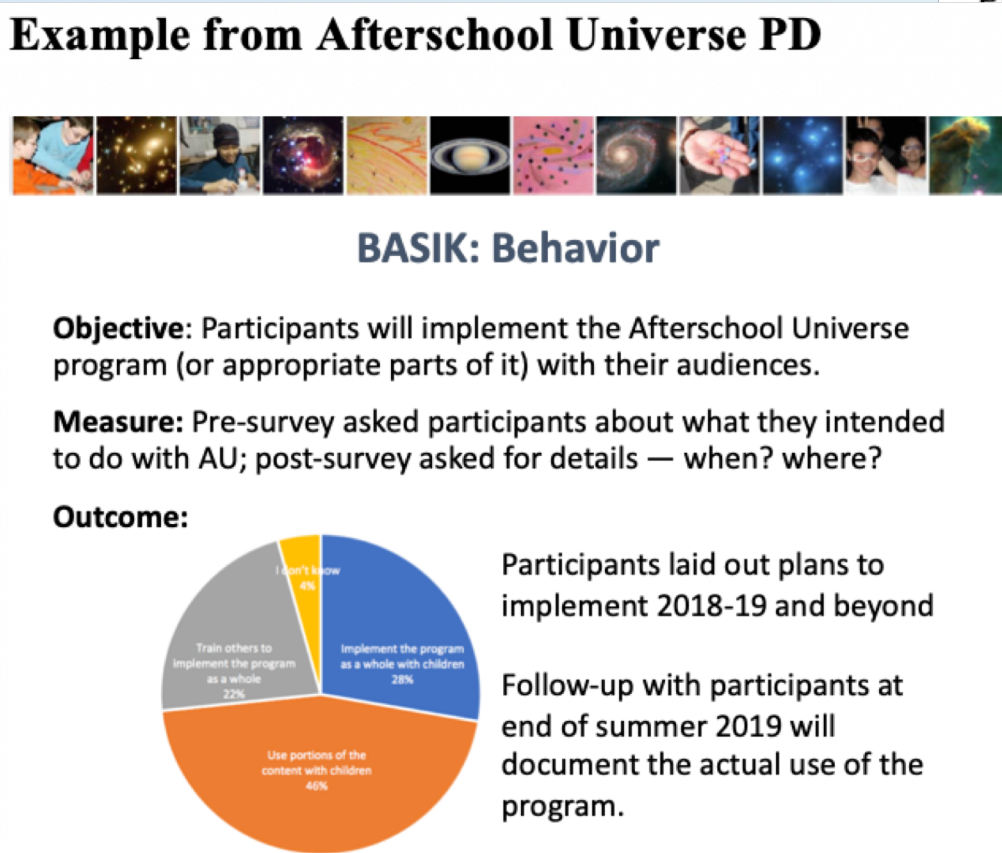
Monthly reporting form
Email address _____ Person reporting _____
Institutional or Organizational Affiliation (pulldown)
Project or Activity (pulldown)
Activity Description _____
Zip code for activity location _____

- Participants
- Youth (Elementary School age students, Middle, High, undergrads, grad students)
 - Educators - formal or informal (elementary, middle, high, inservice, preservice, higher ed, colleagues)
 - Public audiences
 - Disadvantaged or under-represented across all types of audiences noted above (socioeconomically, physically, minority female, Hispanic, African American, AI/AN/Pacific Islander, other)

- Results**
- Impact Objectives of this activity: Behavior, Attitude, Skills, Interest, Knowledge
 - NASA themes related to this activity? Earth Rise, Touch the Sun, Eclipses, Apollo 50th (check all that apply)
 - NASA SMD goals supported by this activity? (check all that apply) 1) Enable STEM Ed. 2) NSSEC Monthly Report for Team Members (Responses) Improve Science Literacy, 3) Advance National Ec

| Timestamp | A | B | C | D | E | F | G | H | I |
|--------------------|-------------------------------------|--|---|-------------------|---|-------------------|--------------------------------|------------|--------|
| Timestamp | Email Address | Institutional or Organizational Affiliation | Project or Activity reported on the form | Person reporting | If you have nothing to report this month on this activity, check this box | Month reported on | Identify for activity location | Zip code | |
| 2/20/2018 10:34:34 | Yarenska M Collado-Vega ym@nasa.gov | NASA Goddard Space Flight Center | ISVA | Yari Collado-Vega | | February 2018 | | 20850 | |
| 2/27/2018 16:39:19 | sbosch@iste.org | International Society for Technology in Education (ISTE) | International Society for Technology in Education | Sherry Bosch | | February 2018 | Blue - highlight, | | Online |
| 2/28/2018 10:18:15 | e.a.mcdonald@nasa.gov | NASA Goddard Space Flight Center | Aurorasaurus | Liz MacDonald | | January 2018 | Yellow - needs | 20770 | |
| 2/28/2018 10:26:43 | e.a.mcdonald@nasa.gov | NASA Goddard Space Flight Center | Aurorasaurus | Liz MacDonald | | January 2018 | Green - everything | 20770 + MU | |
| 2/28/2018 11:25:01 | e.a.mcdonald@nasa.gov | NASA Goddard Space Flight Center | Aurorasaurus | Liz MacDonald | | February 2018 | Blue - highlight, | 20770 | |
| 2/28/2018 11:45:58 | e.a.mcdonald@nasa.gov | NASA Goddard Space Flight Center | Aurorasaurus | Liz MacDonald | | February 2018 | Green - everything | 20770 | |
| 3/1/2018 14:44:25 | raelmer@alaska.edu | University of Alaska Fairbanks (UAF) | UAF After School Programs | Rachel Elmer | | January 2018 | Green - everything | 99775 | |
| 3/1/2018 14:46:15 | raelmer@alaska.edu | University of Alaska Fairbanks (UAF) | UAF After School Programs | Rachel Elmer | | January 2018 | Green - everything | 99775 | |
| 3/1/2018 14:47:19 | raelmer@alaska.edu | University of Alaska Fairbanks (UAF) | UAF After School Programs | Rachel Elmer | | January 2018 | Green - everything | 99775 | |
| 3/1/2018 14:46:40 | raelmer@alaska.edu | University of Alaska Fairbanks (UAF) | UAF After School Programs | Rachel Elmer | | January 2018 | Green - everything | 99775 | |

Monthly reports go into a google smartsheet so the community can review each other's reports and the management team can search and sort.



- NASA theme-related activities: 139 Eclipses=139, 47 Earth rise, 29 Touch the Sun
- Status of funded activities: 93% Green (on schedule), 2% Yellow (needs assistance), 0% Red (immediate attention), 4% Blue (noteworthy)
- SMD goal-related activities: Enable STEM Ed=117, Improve science literacy=158, Advance national goals=154, Leverage partnerships=108

2019 Plans have identified BASIK impact categories for their objectives and will report outcomes by category in their monthly reports and post the supporting documents with data in their Project Folders in the community workspace.