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# ***Assessing Workshop Models for Informal Educators: ASP's "Astronomy from the Ground Up" Experiment***



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# ASTRONOMY from the GROUND UP

An Educational Collaboration of ASP, NOAO & ASTC

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Partners:  
National Optical  
Astronomy  
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(NOAO), ASTC,  
ILLI.



Three astronomy topic areas were featured for the creation of teaching “toolkits”:

- 1) How, Big, How Far – Arrangement of the Universe.
- 2) Light and Color – Breaking the Cosmic Code.
- 3) Change in the Universe – What’s Predictable and What’s Not?







Two types of PD workshops:  
1) On-site workshops – three days in length, at sites around the U.S.

2) On-line workshops - three weeks in length, with an approximately equal number of “contact hours” as the on-site.



## Key Research Question:

How does the learning experience differ between the two workshop modes, and how do they compare?



# On-Site Workshop



Three days of 6+ hours each including content presentation with experts, hands-on, inquiry based investigations and activities using toolkit materials, and discussion and applications to facility programming.





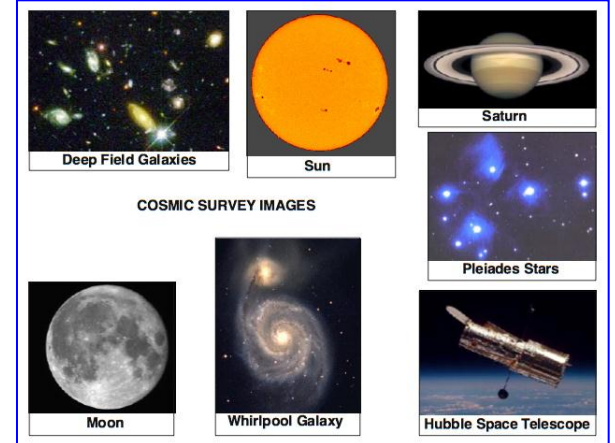


# Online Workshop



Three weeks of 6+ hours each including warm-up discussions, hands-on activities using toolkit materials, investigations (weekly assignments) involving participants' facilities.

The screenshot shows a web browser window titled "Astronomy from the Ground Up" with the URL "http://www.afguonline.org/". The page features a header with navigation links for "AFGU General Information" and "ASTC Connect", and a login status for "Anna Test". The main content area is titled "ASTRONOMY from the GROUND UP" and includes a welcome message, a "Main Menu" with links to "What is AFGU?", "News, events, & ideas", "Help using this site", "Log an Event", and "Photo/video release". A "What's Up?" section lists celestial events like "Faint Rings" and "Uranus at Opposition". The page also has sidebars for "Messages", "Online Users", "People", "Live Stats", and "Search Forums".





# Learning Outcomes for PD

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- General astronomy knowledge.
- Teaching astronomy.
- Organizing astronomy education events.
- Finding resources to teach astronomy content.
- Inquiry-based teaching.
- Using hands-on activities to teach astronomy content.
- Adapting AFGU toolkit activities to your own context and environment.
- Conveying the meaning of astronomical scales (time and space).
- Using models or analogies to teach astronomy.
- Training or coaching someone else to teach astronomy.
- Answering astronomy-related questions.





# Self-Proficiency Ratings

Table 2: Self-Rated Proficiency on Learning Outcomes

	BEFORE starting AFGU	Right AFTER main AFGU Workshop	MONTHS AFTER implementation
	Median Rating	Median Rating	Median Rating
General astronomy knowledge	2.5	3.7	3.7
Teaching astronomy	2.3	3.6	3.7
Organizing astronomy education events	2.3	3.4	3.4
Finding resources to teach astronomy content	2.4	3.9	4.0
Inquiry-based teaching	3.3	3.8	3.7
Using hands-on activities to teach astronomy content	2.5	3.9	3.9
Adapting AFGU toolkit activities to your own context and environment	1.8	3.7	3.8
Conveying the meaning of astronomical scales (time and space)	2.2	3.7	3.6
Using models or analogies to teach astronomy	2.4	3.8	3.7
Training or coaching someone else to teach astronomy	2.1	3.4	3.4
Answering astronomy-related questions	2.4	3.5	3.6

Before AFGU: **2.3** (avg)

After Main Workshop: **3.7** (avg)

Months later: **3.7** (avg)

*On-site and online sample groups expressed similar rates of improvement—the online group with slightly less long-term improvements in some areas.*

Scale is from 1 to 5, where 1=Not at all proficient and 5=Highly proficient.



# Astronomy Programming Percentages



On-site and online sample groups were similar in nearly all respects, including self-rated proficiency in astronomy prior to the workshops,.

Post-workshop, both groups trained similar numbers of additional staff members in what they had learned, and both groups doubled the percentage of programming related to astronomy at their facilities.



# Preliminary Observations



Similar outcomes, with some differences possibly resulting from proximity versus distance factors (e.g., connectedness).

For some educators, travel to on-site workshops is prohibitive.





# The Ongoing Program



Between the AFGU project and the follow-up NASA-funded “Sky Rangers” program, over 700 people from 50 states have so far participated in the workshops and other activities.



# Astronomical Society of the Pacific



*ASP: Advancing science  
literacy through astronomy.*

[www.astrosociety.org](http://www.astrosociety.org)