Encouraging a Culture of Outreach in Astronomy Clubs

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Abstract. Astronomy clubs constitute a “marching army” of knowledgeable, experienced astronomy enthusiasts deployed in a national network: an important resource for engaging the public through educational outreach events and activities. The Astronomical Society of the Pacific (ASP) in partnership with the Institute for Learning Innovation (ILI) and Inverness Research, Inc., has been engaged in a multi-year NSF-supported project focusing on this network and its potential to advance astronomy education and outreach. The project has explored the culture of astronomy clubs, identified impediments to building cultures of outreach within clubs, and developed and introduced new mechanisms to overcome these impediments and enhance clubs’ abilities to encourage and sustain cultures that value and promote outreach efforts. This paper shares initial research, development and evaluation findings of the project, and describes ongoing supplemental efforts that continue to advance project objectives.

1. The Project and the Playing Field

For more than five years, the Astronomical Society of the Pacific (ASP) and its research and evaluation partners, the Institute for Learning Innovation (ILI) and Inverness Research, have been engaged in an experiment studying ways to encourage amateur astronomy clubs—already a marching army of astronomy enthusiasts with the potential for engaging the public through outreach events and activities—to enhance their capabilities in this area. The vehicle for the experiment has been the NSF-funded grant project called “Sharing the Universe,” whose aim has been to “harness and amplify...existing outreach enthusiasm in order to encourage a greater number of interested amateurs to do more frequent and effective educational outreach with a larger number and diversity of public audiences.”

The playing field for this effort has been the NASA Night Sky Network (NSN),1 sponsored and supported by the Jet Propulsion Laboratory’s Exoplanet Exploration public engagement program, and managed by the ASP. The ten year-old NSN consists of more than 400 amateur astronomy clubs across the U.S. making use of a variety

1http://nightsky.jpl.nasa.gov/
of online and other resources to assist in their outreach efforts. Network members receive (1) education “toolkits” consisting of ready-to-use hands-on demonstrations and activities for use with the public on a wide variety of concepts, matching the investigations of sponsoring NASA missions and programs, (2) training in the use of materials and in public engagement via workshops and video demonstrations, (3) opportunities to attend teleconferences with NASA experts and others on topics of interest, (4) online scheduling and event-logging capabilities, and (5) opportunities to participate in nationally coordinated events.

In *Sharing the Universe*, NSN clubs were engaged through a series of surveys and interviews to determine what characteristics successful outreach clubs possessed, and to identify barriers to success in less successful clubs. Among the factors possessed by the most successful clubs in undertaking good public outreach were the following:

- one or more outreach champions who advocated and conducted outreach activities,
- a “critical mass” of supporters for outreach efforts,
- a strong organization and infrastructure, and
- a tradition of valuing outreach activities.

Among the characteristics of less successful clubs were:

- a lack of champions or a critical mass of supporters,
- a lack of organizational and infrastructural support,
- a lack of a strong outreach tradition, and
- inertia.

The findings were used to develop a series of “interventions”—strategies and new resources to help less successful clubs overcome their lacks.

2. Developing and Testing Strategies

Based on initial surveys and interviews, a series of four strategies were developed to encourage the development of stronger cultures of outreach among less successful outreach clubs:

1. We reorganized toolkit materials to improve their accessibility, including breaking up elements into menu choices with new online accessibility.
2. We developed new training videos to address identified challenges (for example, how to answer difficult questions, how to say “I don’t know,” connecting with kids).
3. We developed “how to grow your club” videos (on organizing, recruiting new members, soliciting volunteers, starting outreach efforts, etc.) to provide guidance in developing successful outreach efforts.
4. We created an online Events Service (including an events calendar, organization tools, and an app called “GoStarGaze” that helped users to find clubs and club events within a useful radius of their location) to make outreach easier to manage. These new strategies were developed, tested by clubs, and refined over a series of months and iterations. Among the preliminary selected findings resulting from the new “interventions” and tests were the following:

- There was a 40% increase in NSN club enrollments over the life of the project, suggesting strong appeal for what the Network had to offer.
- Later surveys showed that 61% of respondents have one to ten members doing outreach, and 37% have 11 to 50 doing outreach.
- 74% of clubs cite satisfaction with their outreach efforts, 45% being very satisfied (the efforts included public observing, special events, newsletters, and website postings).
- More than half of clubs are very familiar with NSN tools, and a third are somewhat familiar.
- The most popular features of the network are the toolkits and the new events calendar.
- 60% have used training videos and found them helpful.

But our investigations also still found barriers to successful outreach, including inertia, and especially in the following:

- a lack of time to explore and master new tools, and
- a lack of knowledge about the new tools.

To address these ongoing challenges, we secured a supplemental grant for our “Sharing the Universe” project to pilot a new intervention.

3. The Mentoring Pilot Program

Our work revealed that clubs had greater success in understanding and using the new tools provided when we were able to provide personalized engagement and coaching. We therefore used the supplemental grant to undertake a mentoring program to provide more direct intervention—that is to say, engagement—with clubs to assist in their use of the new resources. The six-month pilot was conducted as follows:

- We selected six “alpha” club outreach coordinators nationally.
- We provided extensive training in NSN online tools.
- We modeled mentoring for the recruits at national amateur conferences.
- We then had the six mentors engage approximately 15 clubs each in the online tools.
• We gathered extensive mentor feedback during the process.
• We evaluated the results.

The evaluation showed significant improvements in mentored clubs’ activity and use of resources over non-mentored clubs over the term of the effort (April through September of 2012):

• 27.3% of mentored clubs changed their status from Associate to Active (a measure of increased club outreach activity) compared to 8.1% of non-mentored clubs.
• 29.1% of mentored clubs increased their number of upcoming events, compared to 9.4% of non-mentored clubs.
• 65.5% of mentored clubs had an increase in registered individual NSN members compared to 25.8% of non-mentored clubs.
• 52.7% of mentored clubs showed an increase in logged toolkit events compared to 39.7% of non-mentored clubs.

While the mentoring effort proved to be resource intensive and “high maintenance,” the effort appears to lower barriers to outreach and produce beneficial results.

4. Conclusion

The final report on the grant was still forthcoming at the time of the presentation, but the project has left us with a strong conviction: the more we can encourage, nurture and enhance cultures of educational outreach among astronomy enthusiasts, the more effective the EPO community can be in leveraging our efforts to increase science literacy and support among the public.

As one of the NSN club outreach coordinators and mentors remarked: “[The benefits of investing in NSN outreach are] the ties to STEM education and getting more people involved. Everyone you show the sky to is a future taxpayer or contributor. Some kid you show Saturn to may some day be a senator in charge of the Appropriations Committee!”