LESSONS LEARNED: BEST PRACTICES IN EDUCATOR WORKSHOPS. C.. Shupla[1], S. Shipp[1], J. Allen[2], K. Tobola[2], [1]Lunar and Planetary Institute (3600 Bay Area Blvd, Houston, TX 77058, shupla@lpi.usra.edu), [2] JSC ARES Astromaterials Education

Introduction: We have had the privilege of conducting formal and informal educator workshops with a variety of education specialists and scientists. In this presentation, we will share tidbits from the wealth of education research on best practices in professional development, integrated with the lessons we have learned from our own experiences.

Workshop Style: An effective model for a successful workshop engages the participants as learners, creates opportunities to explore their own conceptions through a variety of learning opportunities, provides explanations from research, and supports application to their own teaching [1]. This is the primary model we have used in our workshops.

Also according to national reform documents, science learning experiences for teachers must incorporate understanding science through inquiry, yet this has been an issue when most instructors teaching science courses are more comfortable and accustomed to using lecture-style approaches [2] [3] [4]. As often as our own time-constraints and resources permit, we attempt to allow our participants to discover the content for themselves through the activities, rather than telling them the content and then providing activities that only relate to the content.

Tip 1: Model the experiences as they would be done in the participants' classrooms.

Any activities we share need to meet the participants' needs: they need to be affordable, with easily obtainable materials, they should fit into the participants' curriculum, and they need to be grade-appropriate.

We've found that most participants value connections to the scientists who are actively involved in ongoing research. When possible, we invite well-spoken scientists to present short talks in order to provide background content and to interact with the participants throughout the workshop.

Tip 2: Involve research scientists when possible.

Planning Workshop: Our first step in planning any workshop is to identify our own objectives. For example, we may wish to enable teachers to use the ongoing lunar scientific research in their classrooms. But we then need to compare those objectives with those of our anticipated audience. We identify the intended audience based on the appropriateness of our topic for different classrooms and/or informal audiences. A workshop on magnetospheres might work well with high school teachers but will face numerous limitations among elementary teachers.

Tip 3: Know Your Audience

- What grades do they teach?
- For which standards and topics are they held accountable?
- What are their objectives in attending your workshop?
- What misconceptions might they have?
- How much do they already understand about this topic?
- What limitations do they face—i.e. are their budgets non-existent? Are their students English language-learners, or are they teaching gifted students? Does their district have a policy against using food in the classroom?

When possible, we gather information about our audience as they register for the workshop; responses about the participants' own goals in attending the workshop, the topics they already teach, and their comfort level with this topic can be useful in planning our workshop. We also try to restrict the workshop to the intended audience, and restrict the number of participants to a typical classroom-size of 30 to enable the presenters to personally engage the participants in activities and discussions.

Assessment: Assessment is another key to success. We've begun to incorporate a pre-assessment activity to help us identify participant misconceptions, and follow-up activities to help us determine the participants' level of understanding.

Tip 4: Assess, assess, assess!

- Assess participants' knowledge before you begin—what is their level of expertise? Their misconceptions?
- Assess their understanding during the workshop, through discussion and activities
- Evaluate their knowledge at the end of the workshop—do they understand the topic better? Have you accidentally created new misconceptions?

Follow-Up: In an ideal world, all workshops would be long-term, with ample time for follow up. Research reveals that one-time workshops are unlikely to result in significant, long-term change in the practice of a teacher; follow-up is imperative to successful implementation [5]. When possible, send out emails to participants after a workshop is concluded, to learn how they are using the new materials and activities and whether they have identified any issues. Share opportunities for next steps, such as upcoming workshops, teacher research experiences, and more.

Additional details will be presented at LPSC. For further information, contact the presenters.

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