

Teaching Teachers through Outreach

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Abstract

Elementary and middle school teachers participated in workshops and credit and/or non-credit classes designed to increase their content knowledge and to introduce age-appropriate activities which will prepare the next generation for careers in the STEM disciplines. Each of the classes and workshops were scheduled along with a public outreach event, giving teachers experience in demonstrating the activities.

Background

For the past five years, Crossroads at Big Creek, through an arrangement with the University of Wisconsin-Green Bay Education Outreach program, has offered teacher education classes in astronomy. We have been able to attract teachers by offering stipends with generous funding from the Wisconsin Space Grant Consortium.

When we began offering these classes, we focused primarily on content, assuming that most teachers were not up to date on current astronomical understandings. We discovered that most teachers lacked any background at all, and in fact, were quite confused by the materials presented in two dimensional reference books. Unfortunately, their misunderstandings were being passed on to the children if astronomy was presented at all. A surprising number of teachers avoided teaching space related topics altogether because they did not feel prepared.

Educational Offerings

We discovered that the best way to teach teachers was to actually have them participate in the hands-on activities that were intended for children. We also learned that if teachers had tried (rather than just read or hear about) the demonstrations themselves, they were more likely to use them in the classroom.

Offering generous scholarship /stipends of \$200 usually worked in recruiting teachers for our credit classes. For workshops we tied instruction to subjects teachers were already presenting and to encourage participation, we offered a free dinner, a program with free teaching materials, and we invited teachers to bring their significant others and their children if they so desired.

Having kids at the workshops was a game changer! Teachers could see how engaged children became while doing the activities. And once they had seen kids in action, teachers were eager to present the activities to their students and/or to bring their classes to Crossroads for field trips.

We now schedule our workshops and classes to coincide with the outreach activities of the Door Peninsula Astronomical Society. Teachers are still offered a scholarship/stipend and free meal, but we now offer an additional \$20 if the teacher will stay and present activities to the general public during Astronomy Days or special events such as the Transit of Venus.

This is a win-win. Teachers are more far likely to encourage their students to attend DPAS outreach activities if they will be presenting. Because they are experienced in working with children, teachers are outstanding presenters during our programs. And best of all, after becoming thoroughly familiar with the activities, teachers are far more likely use them in their own classrooms.

In 2012, we directly reached 23 teachers, but we continued to provide services to teachers who have participated in previous years.

Results

We do not have the staff to do extensive follow-up activities to determine the impact of our classes and we certainly cannot determine long range outcomes such the number of students who eventually go on the pursue STEM careers. However, we have seen a significant increase in the number of teachers who schedule astronomy field trips to Crossroads and we can tell by the questions of the students whether or not a teacher has participated in our programs.

We were simple amazed when a third grade student asked if the asteroids were on the same plane as the planets and another wanted to know if a comet was coming at Saturn, would it be swallowed up by the planet or caught in the rings.

We do hope to continue to offer kind of teacher training in the future as teachers struggle to grasp and teach the concepts covered by the New Generation Standards for Science.

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