

Getting *the* Word Out

Disseminating Programs to Teachers

HHMI Precollege Program Directors' Meeting

October 24–26, 2005

HHMI

HOWARD HUGHES MEDICAL INSTITUTE

Office of Grants and Special Programs

Getting *the* Word Out

Disseminating Programs to Teachers

HHMI Precollege Program Directors' Meeting

October 24–26, 2005

“Program dissemination is complicated,” observed Nancy Moreno, Ph.D., associate director of the Center for Educational Outreach at the Baylor College of Medicine. “Many of us who have transitioned from science to science education have difficulty understanding why teachers don’t rush to use our products. We have to learn that people won’t use something just because we believe it is the right thing to do. Our efforts can’t really be successful until we know our audiences and meet their needs.”

Dr. Moreno was one of four panelists discussing dissemination challenges during the second day of the 2005 precollege program directors’ meeting. Other panelists were Chris Craney, Ph.D., director, Undergraduate and Sponsored Research, Occidental College; Ted Kahn, Ph.D., CEO of DesignWorlds for Learning, Inc., and founding director, Bay Area Science Education Collaboratory; and Anna Thanukos, Ph.D., adviser and co-author, Understanding Evolution website, Museum of Paleontology, University of California, Berkeley.

Dr. Craney agreed with Dr. Moreno that dissemination must be tailored, adding, “I used to believe that we could find one optimal solution for all dissemination challenges, but now I know we need different solutions to reach different audiences. Not everyone will buy even the best mousetrap.”

Dr. Craney also noted, “A personal approach, using community connections to build from the ground up,” was critical to the success of the Occidental College program. The program focused on reaching high school teachers and administrators in the relatively fragmented Los

Angeles school system. “To succeed, we had to learn what was needed by teachers and administrators in the target schools,” he explained.

WORKING SUCCESSFULLY WITH EDUCATORS

The four panelists reported that their program dissemination efforts targeted various audiences, including students, teachers, scientists, museum-based science educators, and the general public. However, educators were a primary audience for each program. Dr. Craney described elements of the education culture that need to be considered when developing and disseminating information. These included:

- Relatively high turnover among teachers and school administrators
- Teachers’ highly structured daily schedules that allow little or no time for reviewing websites
- Teachers’ reliance on peer recommendations for educational resources
- Active involvement of the school system hierarchy in decision making
- Competition for status between schools and school systems
- Requirements that curricular decisions be congruent with local and state content standards and professional development goals

To address these challenges, the Occidental College program developed self-contained materials aligned with local standards and professional

development goals. Support materials also were developed that could easily be adapted for students at different levels of competence.

“Above all,” Dr. Craney reported, “I learned that success depended on having teachers actively involved in developing and disseminating the program. My background was the university model, which puts a strong emphasis on professional knowledge and top-down dissemination. I was somewhat surprised to realize that it was important to generate a team effort and that teachers needed a genuine stake in the program’s success.”

Dr. Kahn, director of the Bay Area Collaboratory, agreed. He added that the meaningful inclusion of teachers in the collaboration of area families, universities, informal science learning centers such as museums, and other scientific organizations increases the impact of peer-to-peer dissemination efforts and provides the program director with informal testers and advisers who have an ongoing commitment to the project’s success. Currently, he is building a sustainable community of educators who will guide the Web-based collaboration in providing resources to help middle school teachers both excite their students about science and meet the state standards for science education.

DISSEMINATION CHANNELS

To be effective, programs must attract teachers, school system administrators, and other groups that influence decision making in education, Dr. Craney observed. This includes dissemination to students and their families, scientists, and professional organizations focused on science and teaching. The panelists employed an array of dissemination channels to reach these groups, including:

- *One-to-one and small meetings with the local education leadership.* Dr. Craney noted that these sessions were critical for understanding the needs of educators and administrators and led to invaluable word-of-mouth support for the program.

- *Presentations, such as workshops and exhibits, at professional meetings.* These activities are particularly useful for reaching smaller audiences, such as potential local users, and for encouraging participation in program development and dissemination.
- *Print promotion.* This includes writing articles for newspapers and professional journals, placing advertisements in those publications, and distributing postcards and flyers at various venues.
- *Partnerships with professional societies and museums.* These collaborations enhance program legitimacy, expand the pool of available collaborators, and bring the project to the attention of larger audiences.
- *Commercial marketing efforts.* These can include hiring designers to provide a program with an eye-catching, uniform “brand” and working with for-profit publishing companies.

The Baylor College of Medicine’s Center for Educational Outreach used an array of these dissemination methods to increase and respond to their successes. Initially, Dr. Moreno and other scientists and educators developed 15 curriculum units and professional development resources for local high school science teachers. These packages were produced simply in-house and were disseminated at regional professional development workshops. As the program grew, Dr. Moreno and her team began working with in-house design staff to give the products a uniform and recognizable look. To further expand the program dissemination efforts, the group licensed the materials to a commercial publishing house for production and marketing. At present, the Center is refocusing its program dissemination activities and developing a publication marketing effort that meshes with a newly created website.

WEB-BASED DISSEMINATION

Well-crafted websites eliminate barriers to learning related to time, cost, and distance, Dr. Moreno observed. These advantages, coupled with educators' increased access to high-speed Internet, has created a great and growing interest in Web-based dissemination. However, Dr. Kahn noted, the increasing popularity of the Internet has a downside—"information overload" and growing competition for educators' attention. Teachers are being inundated with Web-based information but have increasingly less time to evaluate its reliability and usefulness, he cautioned.

To meet these challenges, and to do so efficiently, program designers and educators should work together to develop the content and presentation, advised Dr. Thanukos. "This approach helped the Web-based Understanding Evolution program reach its targeted audience of elementary, middle, and high school teachers," she commented.

Once the site is developed, it should be reviewed regularly to ensure that it:

- *Is easy to find and use.* For example, the site should reflect ongoing changes in search-engine algorithms. This includes taking advantage of website optimization strategies such as tagging key words for rapid search-engine recognition, Dr. Moreno observed. In addition, as Dr. Kahn explained, "accessing the website and key pages should be 'light-switch' easy. Users should be able to access resources with a maximum of three mouse clicks."
- *Includes information that is currently in demand, attractive, and tailored for the target audience.* For instance, BioEd Online, the Web-based extension of the Center for Educational Outreach program at the Baylor College of Medicine, now offers teachers easy-to-use lesson plans on science topics and biology news updates from the journal *Nature*. Additionally, the site

includes streaming videos of scientists and educators, downloadable curriculum materials and annotated, peer-reviewed PowerPoint slides that teachers can use to expand their own understanding or incorporate into their teaching.

- *Uses links to and from other sites.* "Being housed by the Museum of Paleontology on the University of California, Berkeley, website—which gets more than 100,000 page requests per day—has been critical in building an audience for Understanding Evolution," Dr. Thanukos reported. The audience of educators using the site has been further expanded through links to sites maintained by groups such as the National Center for Science Education.

Some of the most effective websites work in conjunction with other dissemination channels. For example, the Collaboratory combines online professional development courses for teachers with actual or virtual school and family field trips and site-based workshops, held at museums and other informal science learning centers in the community.

SUSTAINABILITY

"Very few people want to be part of a project that will be gone next year," Dr. Craney observed. "Dissemination and sustainability are intimately linked, and sustainability generally requires support from multiple and varied sources drawn from both the public and private sectors." Panelists noted that operating in the political arena may make directors uncomfortable, but they agreed with Dr. Craney's recommendation that "we must build relationships with local, state, and national political leaders so that we can explain what we are doing and get sustained support." Other panelists added that thoughtful evaluations of program content and dissemination are critical in building sustainability.

ASSESSMENT OF DISSEMINATION METHODS

The assessment of outreach efforts needs to be addressed as part of the basic program evaluation design, Dr. Kahn observed. In addition:

- In many cases, assessments of dissemination and content can be combined in one instrument.
- Assessment methods and results, for both program content and outreach, should be modified regularly in response to user feedback and appropriately shared with sponsors and other interested parties. “This builds sustainability and expands interest in the program,” Dr. Moreno explained. “For example, having program evaluation results published in a professional journal gave additional legitimacy to our Center’s outreach efforts.”

Dr. Thanukos reported that an independent evaluator was employed to assess educators’ use of Understanding Evolution, but other panelists employed internal staff for their evaluations. “Outside evaluators can be helpful in conducting assessment activities,” Dr. Kahn noted, “but even if funds are not available to hire an independent professional, outreach efforts should always be evaluated.”

EVALUATING DISSEMINATION VIA WEBSITES

Panelists noted specific considerations that must be addressed in front-end planning to effectively evaluate dissemination via website:

- The website design should include data collection methods that track both general usage and specific patterns of use.
- The data collection process should be, as much as possible, invisible to users—this eliminates clutter and distractions and allows users to focus on their informational needs.

These considerations were incorporated in the evaluation design for Understanding Evolution. The site was constructed to automatically track how long people spent on the site, which pages were used, and whether the user was specifically looking for this site or for information on evolution. In addition, users’ domain names were tracked to identify countries where the site is popular and determine whether page requests were coming from educational institutions. Dr. Thanukos reported that the site’s educator pages were being used frequently and for significant amounts of time. Furthermore, usage was heavier during the school year than during summer vacations and winter breaks, which suggests that the site was heavily frequented by educators. In addition, the site was being used internationally and by educators at universities as well as at high schools.

EVALUATING OTHER DISSEMINATION METHODS

Panelists used informal and formal methods for evaluating dissemination conducted via meetings, print materials, and other channels. Dr. Moreno noted that attempts at “cold calling” (contacting potential users who had no other knowledge of a project) were generally unsuccessful. For instance, disseminating program information by including it on plastic cups provided to principals at a professional meeting did not yield results. “We didn’t receive any responses. We hadn’t made a presentation at the meeting or had any other contacts with the principals, so they had no context for the information on the cup.”

The use of the commercial publishing house to market the Center’s curriculum packages was more successful, Dr. Moreno recalled. However, she cautioned that:

- The intensity of commercial marketing efforts generally reflects the perceived profitability of the product rather than the goals of the program.

- Commercial marketing efforts do not guarantee income for the program.

The Center for Educational Outreach has also used combined assessments of content and outreach for their publications and curriculum development programs. This evaluation strategy has three components: local teachers provide feedback on classroom use; program staff reviews pre- and post-use work from students; and the Center partners with other organizations, such as the American Physiological Society, to examine the effectiveness of the materials in other geographical regions. General findings related to student knowledge gains, usability in the classroom, and how well the curriculum materials were received by teachers provided support for expanding dissemination through a variety of mechanisms.

NEXT STEPS

Panelists are developing more formalized and in-depth evaluations of their effectiveness in reaching educators. For example, the Center for Educational Outreach will conduct structured focus groups with teachers to explore how best to disseminate content via the Web and improve its comprehension by educators. In addition, the Museum of Paleontology's site evaluator will be assessing similar issues through pre- and post-use surveys.

The program directors also will continue to expand their dissemination efforts to educators:

- Dr. Thanukos is developing collaborations with organizations that will help Understanding Evolution reach speakers of Spanish and Portuguese.
- The Center for Educational Outreach is developing virtual workshops that provide continuing education credits.
- Both the Center and the Collaboratory are developing new Web pages that will bring science education expertise to teachers working with younger students.

- Occidental College will be extending its service area beyond Los Angeles, making extensive use of its most recent program, BioWeb, to bring Internet support for science education into the classroom.

A FINAL TIP

The panelists agreed that successful dissemination requires a good program and persistent promotion. As Anna Thanukos said, "If you develop it, and it's good, users will come, but you must let them know—often repeatedly—that the program exists."

—Joan Guberman

MORE INFORMATION

*Center for Educational Outreach,
Baylor College of Medicine*
www.ccit.bcm.tmc.edu/ceo

*DesignWorlds Bay Area Science
Education Collaboratory*
[www.designworlds.com/Hewlett/
BA_ScienceCollab/index.html](http://www.designworlds.com/Hewlett/BA_ScienceCollab/index.html)

*Undergraduate and Sponsored Research,
Occidental College*
www.oxy.edu
departments.oxy.edu/urc
departments.oxy.edu/sro

*Understanding Evolution website,
Museum of Paleontology,
University of California, Berkeley*
evolution.berkeley.edu
www.ucmp.berkeley.edu