Recommendations Based on the Booth Survey

Open-ended responses to the booth survey covered 4 questions. Not all respondents answered each of these questions. This data is most powerful in a disaggregated state and that is how it is reported on here. In other words, rather than giving percentage of people who have given each category of response, we report on the strongest themes identified within the data. When considered in light of other research findings related to the questions (from other sources), several suggestions and recommendations emerge related to DLESE communication with K-12 educators in the future as well as research-based indications of the types of materials teachers will find most compelling in terms of reasons to adopt and use the resources.

The open-ended questions were as follows:

1. What are your greatest challenges in teaching science?
2. If you have seen and/or used DLESE, what was your opinion of the library’s functions and
3. What do you remember about the DLESE brochure?
4. Please list any other comments on DLESE or this survey.

Open-ended responses from the participants in this survey indicate opportunities for DLESE initiatives to meet the needs and concerns of K-12 teachers. Teacher responses to the question of challenges they face as well as to other open-ended questions in this series indicate that they tend to use computers in their science classroom as a tool for finding information. Seldom do their responses indicate that they consider computer-based activities such as learning modules and simulations. Very few respondents seem to consider that the DLESE collection contains any sort of activities let alone simulations or other types of learning modules that students can work through on their own or in groups. In conjunction with this, consider recent results from the Current Population Survey results (2001) report that focused on computers and students ages 5-17. The study found that students primarily use the computer to do research for school on the internet. Computer use among students in this age group is very high, equal among girls and boys, and most often occurs at school. Thus, student usage suggests that teachers often fail to use computer-based learning tools and tend to integrate technology in their classroom by assigning information-seeking projects conducted on the internet. We cannot be certain with this data set alone whether or not teachers really do define educational computer use in a narrow way (as a tool for finding information and conducting research rather than a teaching tool that provides students with hands on activities). However, several different findings and our own extensive research in K-12 classrooms suggest that this is likely. If teachers do hold a narrow view of how technology can be used in their classrooms, they are missing an important opportunity to effectively integrate technology in their teaching and to provide alternative, affordable, computer-based, hands-on learning experiences.

The respondents to this survey have a great deal of concern over the cost of activities, labs, and equipment. This pressure is no different than that currently being felt in higher education as well. For example, lab courses in biology are offered less and less often because of the high costs involved when compared to an inability to provide opportunities for students to run experiments multiple times and follow realistic laboratory procedures. If this concern is considered in relation to the increase in the number of interactive modules being designed to
enable students to run experiments and to manipulate variables and see the outcome of these manipulations through the use of computer technology, understanding that teachers face and are aware of the increased limitations they face in regard to resources, provides a vehicle for DLESE to increase its presence in the k-12 community. We know from a 5 year research project focused on the introduction of computer modules in astronomy labs for non-majors, that students self-identify as hands-on, visual learners (e.g., Garvin-Doxas and Bagenal, 2001). This same study showed that students believe that interactive computer modules are hands-on and visual learning experiences. Given the challenge teachers face to provide lab experiences to their students in cost-effective ways (further explained in the findings section below), ensuring that they are made aware of collections that include computer-based modules would be beneficial.

DLESE has an opportunity to influence teacher thinking and use about technology in the classroom and to broaden current practices by framing workshops, communication, and even news on the front page of the website to highlight resources available to K-12 educators that can provide a lower-cost lab and hand-on experience for students. We know that concerns over technology access and resources are still a legitimate problem in today’s public schools. DLESE can widen teachers’ use of technology in classrooms through a number of approaches, including ensuring that the design and organization of the toolboxes and similar resources allow teachers to identify means of spreading computer-based activities and labs out among small numbers of students over time if they do not possess the resources to have all students in the class on a computer at the same time. This suggestion does not negate the need for information resources, but it does help define an opportunity for DLESE to more actively engage in systemic ESE reform – by providing modeling and means for teachers to more easily integrate technology in their classrooms in ways that enhance learning and move beyond simply providing information resources.

Responses to question 1 fell into 7 main categories with 120 people responded to the question. Several gave responses that fell into more than one category. Concerns about activities, labs, and other similar experiences (e.g., demonstrations, field trips) comprise the strongest theme. Within this theme, cost and availability of lab materials, supplies, and equipment were the primary challenges teachers articulated. Other concerns within this theme included time (for preparation of activities and class time enough to conduct activities and labs) and age appropriate activities and labs. Interest and motivation was the second most common theme embodied in responses to this question and these concerns included creating interest through connecting content to everyday-life. Issues involving resources was the third most common category of response and these concerns included the availability of technology, resources enough vis-a-vis class size, and the quality (e.g., accuracy) of available resources. The fourth most popular response theme fell into the category of time – teaching time (short class periods) and teacher preparation time. Curricular demands were also important to respondents and these challenges ranged from the ability to cover all of the required topics to the limitations that the need to meet standards and cover material for standardized tests. The final two categories of response covered teacher concerns about keeping up with new research and/or with new information, ideas, and resources for teaching and special needs of students (the ability to teach to the range of levels found among students within the same class and the needs of special needs populations such as students with learning disabilities, handicaps, and those who are incarcerated).
Eighty-eight people responded to question 2. Many of the responses to this question were positive and the themes that emerged were that they found DLESE easy to use; rich in terms of resources, information, and images; and liked the range of search options (by grade level, by type of resource, etc.). The majority of the respondents had not used DLESE at all or they saw it at the demonstration and this brief experience has inspired them to look into it more at a later time. However, a significant number of these potential users also mentioned needing time in order to determine how valuable it will be for them. Further correlations need to be run comparing these response categories with their responses to forced-choice responses so that we can better determine the significance of these responses (it is unclear if the perception of ease of use is founded on personal experience with the site).

There were a total of 90 responses to question 3. The Brochure left very little impression on those who saw it, but most of those responses included the qualification that they experience such a degree of information overload during these sorts of conferences that they remember very few things that they picked up (like brochures). The most common positive response about what they remembered was that the brochures is where they got the URL for the site. The second most common positive response was that they remembered the color and images. Several people responded with the following sorts of answers “was that the one with the volcano on the front?” or “is yours the one with the picture of the earth on it?”.

Responses to the final question were few in number and demonstrated only one strong theme. Respondents were grateful that the survey had been sent to them because it reminded them that they were interested in looking at DLESE further. Most of the respondents acknowledged their experience with information overload at conferences and they had not followed up on their intention to further explore the site. This indicates a strong need for DLESE to create means of following up with conference participants who cross their paths and/or to continue to determine alternate means of engaging new members.