DLESE Classroom Studies: Learning from Pilot Studies of Participant-Developed Curricular Units

Lecia Barker & Susan Lynds
DLESE Evaluation Services Center
University of Colorado
Boulder, Colorado 80309
303-735-6004
barkerl@colorado.edu

Categories and Subject Descriptors
K.3.0 Computers in Education, General

General Terms
Participatory design, Documentation, Performance, Design, Human Factors, Evaluation, Collection Development

Keywords
Classroom, Teaching Units, Digital Library, Education, Geoscience, Qualitative Research

1. Teaching Box Pilot Study

The Digital Library for Earth System Education (DLESE) Teaching Box pilot study was begun in the spring of 2004. Middle and high school teachers were selected to attend three workshops and develop online teaching boxes for some area of geoscience. A “Teaching Box” (TB) would contain everything needed for teaching a curricular unit, from background reading for the teacher to downloadable materials for supporting kinesthetic activities for kids. The TB would include the concepts teachers would teach (e.g., convection), a lesson sequence, and any other information that would support the teacher. Providing TBs could help teachers who cannot afford a textbook, have little or no background in the subject area, or who want new ideas for teaching the unit. Teachers agreed to use the boxes in their classrooms and to demonstrate them at the Fall 2004 California Science Teachers Association meeting. Through this pilot project, the DLESE Program Center staff hoped to develop strategies for (1) the re-use of these teaching boxes, and (2) the creation of new boxes in the future. DLESE Evaluation Services staff was also involved, recording, observing, and interviewing the participants and events.

In November 2004 and February 2005, Evaluation Services staff interviewed and observed teachers at two middle and two high schools where the teachers who participated in design were incorporating the TBs into instruction. In addition, two new teachers came on board, providing an opportunity for learning to what degree non-participating teachers would have the same perceptions of the TBs as those who took part in designing them.

Overall, the teachers felt the TBs added value to their teaching; however, the interviews and observations brought out ways in which the boxes would better serve them. In particular, the qualitative data suggested a variety of ways that teaching situations are different, even in the same high school. These differences could be used to develop a customizable TB tool.

2. Differences in Teaching Contexts

Managing the Classroom and Time. Observation showed that student disruptions cost teachers as much as half of their available teaching time. Teachers hoped that the next version of TBs would include an estimate of how much time each activity and lesson might take.

Student Ability Level, Learning Styles. Teachers felt they had to either create activities and resources or had to customize them, based either on their students’ abilities or the amount of time they had available for the lesson. Although the TBs contained prerequisites (knowledge and skills students would be expected to have), they didn’t include pointers to learning materials or objects for accomplishing them. In addition, the pilot TBs had a one-size-fits-all approach, yet teachers reported having students who were years behind in their abilities and students who needed additional challenges. Some teachers felt that students really needed to move around to stay engaged and desired kinesthetic learning materials. The next round of TBs could include pointers to resources for these situations.

3. Customizing a TB

These contextual differences and more will be addressed in the poster session. A solution to dealing with variation would be to develop a customizable TB tool within DLESE, “My Teaching Box,” where a teacher would answer questions about their classroom situation and specific classes. Questions would include issues of time, student ability level, classroom management issues, computer lab availability, whether prerequisites need to be taught, whether there are special student needs, and more. The result would be a sequenced and time-estimated curriculum customized for individual teachers and classes.