

Notes of EarthEd Workshop August 2006 – Preparation for NSF Report

The EarthEd Advisory committee met on 8, 9, 10 August 2006 in Hood River Oregon to review, evaluate, and suggest directions for future work related to EarthEd. There are ten (10) Advisory committee members, plus Wm. Prothero, the Project's PI.

Participants, affiliation, email:

Stuart J. Birnbaum, University of Texas @ San Antonio (TX); stuart.birnbaum@utsa.edu

Sean Chamberlin schamberlin@fullcoll.edu

Keith R. Dungan, Faulkner Press, kdungan@faulknerpress.com

Greg Kelly, gkelly@psu.edu

Frank Kinnaman frank_kinnaman@umail.ucsb.edu

Don Reed dreed@geosun.sjsu.edu

Doug Segar, dsegar@reefimages.com

Bob Stewart rstewart@ocean.tamu.edu

Robert B. West, East Los Angeles College (CA), westrb@elac.edu

Sabina F. Thomas, Baldwin-Wallace College (OH); sfthomas@bw.edu

William Prothero prothero@geol.ucsb.edu

The Advisory Board found

- the project has excellent potential for sustainability and wide adoption. Specifically, access to data tools such as Our Dynamic Planet (ODP) and Global Ocean Data Viewer (GLODV) improves student learning through exploration of earth data. These tools are based on real earth-science data, collected by reputable institutions (for example the Smithsonian Volcano Database) and as such are highly reliable. Students use these data tools to formulate and test hypotheses and learn through a constructivist learning model.
- the integration of science writing is unique; this is an extremely strong pedagogical component of EE. Students must incorporate their observations of data using the data tools and have the additional ability to develop and embed their own diagrams and graphs constructed using these data tools. We know of no other applications that have this capability. Additionally, a calibrated peer review (CPR) approach to the science writing enhances the impact and learning through the use of EE.
- many additional aspects of EE enhance student learning and class management.

To maximize the benefit of this project the following issues should be addressed:

1. EarthEd has matured to the point where focus must now be placed upon making it work well. Program bugs NEED to be fixed and extensive testing be carried out. The key components of the software must be robust and reliable. This perhaps could best be accomplished through the application of a modular approach described below (see 7).
2. Examples of pedagogy should be developed to better permit the audience/target groups in the educational market (instructors, students) recognize utility at their level of instruction.
3. We recommend that serious consideration of sustainability be addressed with respect to a revenue stream. This will be needed to support continuing development and maintenance.

4. Continued use by a diverse group of “early adopters” is seen as critical to the evaluation of both strengths and weaknesses of EE and to provide feedback. These early adopters will identify uses not previously considered and expand avenues for dissemination.
5. Consider permitting the user to migrate the program to a user-identified server, either in-house or commercial. Having the administrative files housed on local computers may improve adoption by those instructors who prefer local control of the learning environment. Local control will facilitate timely incorporation of current events, uploading new problems, editing existing assignment, CPR paper examples, grading criteria etc. by the adopting instructor.
6. Consider running EarthEd in a browser-like environment as students and instructors are more familiar with working in a browser environment. Many board members are convinced that it would enhance adoptability of EE.
7. The best approach to facilitate the use of EE is, perhaps, to adopt a modular approach that provides a clear separation of Class Management tools, pedagogical tools and Data tools. This could be accomplished through the design of a new front-end interface that contains a menu for quick selection and simplified login to access modules.
8. Initial wide adoption may be found by using a focused version of EE for Oceanography labs.
9. Interface needs to be structured to be more intuitive; the learning curve is steep. While students may be able to adapt, teachers may not adopt. The recommendation to either simulate a browser environment, or actually run EE through a browser (bullet 6) is an important first step. Additionally, providing the ability for the instructor to easily upload and use their own exam questions and other pedagogical materials is important (bullet 5).
10. Many of the beta-testers agree that the Pedagogy of Writing is one of the most important elements of EarthEd to retain. It needs to be expanded and made more easily accessible.
We recommended providing simplified guidelines that assist instructors in:
 - Teaching students the characteristic elements of a good science paper
 - Organizing and evaluating scientific writing
 - Developing rubrics and score sheets

Other Issues:

- The Advisory Board also recommends that copyright and fair-use issues be addressed
- Perhaps some of the elements of the Class Management (for example the Grade Book) should be reconsidered—there is a large potential for compatibility conflicts with WebCT, Blackboard etc.
- Create a Teachers Guide (possibly written by users instead of the developer) which may incorporate screenshots for explanation or video tutorials