An Ed's Tools primer… Version 1.0 (June 2008)

Getting started:

- **Email us and get an account.** We will assign you a user name and password that will enable you to create questions, assign them to courses/groups, and code answers.
- Click on the "Ed's Tools" link at the top of the page.
- [current address: https://solarsystem.colorado.edu/conceptInventories/]

Thinking about a question:

- The second step is to decide which **area of student thinking** you are probing. Then you can compose questions to pose to your students. It is probably reasonable to begin with two to three questions at most.
- As you see the responses, you are likely to find that some questions provoke what we would classify as "knee-jerk" reactions. The answer can be quite sophisticated, but actually fail to address the question asked. It is therefore often reasonable to plan for a two-pass analysis. See what the answers to the first set of question bring, and then modify them to provoke a more informative response
- A valuable strategy is to generate questions that are unlike what students are used to seeing on tests. As an example, when we ask students "what is diffusion and why does it occur?" we get answers that do not actually mention molecular motions. If we ask students "how does a molecule find an enzyme?" we find various "mechanisms", although rarely random thermal motion.

Adding and assigning a question:

- Within Ed's Tools: click on "create question"
- Add your question in the text box; images can be uploaded using the "browse" button
- Assign your question to a subject area using the "list of subject" menu; when you are done, click "submit" - your question will be assigned a number.
- If you subject area is not already there, you can add it. Click on the "administration" button and select "Concept Subject Manager"
    - Add your subject
    - You can also link your subject to your new question on this page.
- Return to the administration page, click on "School/Class management"
    - On this page you can, add a school, add a class associated with that school
    - Once your school/class has been added, find it below and associate your question to that class.
    - To alter the demographics page, use the "Add Association" section and select the subject your questions are about. The system is set up to always ask about mathematics background.

Capturing student responses:

- Students can answer questions through the bioliteracy.net web page by clicking on the "Answer Questions" link, or directly at https://solarsystem.colorado.edu/conceptInventories/external/bioliteracy.php
- Once at that page, they need to select their school and class.
- They will then see a demographics page; if you want to identify students, have them put their name in the "Anything else we should know?" box. We strip names away from answers when coding.

Analyzing student responses:

- To analyze student responses, click on "java coder";
- Click file, then open/dialog select question to code; if you want, you can increase font size.
- You can then highlight student language and mark, or set up new categories. Highlight can overlap one another.
- Any number of coders can code a question. It is worth deciding what categories you want to code. Typically we overall coding under "concepts", "expertise", "linkage" or "misconceptions". Within these categories, you can determine whether you are looking at specific language or more generic bins, which can be sorted out later in the analysis.
- You can download a list of concatenated answers using the "Concatenate Answers" link or presented as a database using the "View Concept Tagged Text" link (all on the administration page).

Building a concept test (coming in the future)