Science Knowledge Survey Introduction

In order to get an untainted insight into any misconceptions about the nature of science that your students may have, you may want to administer a short pre-test within the first day or so of the course. So, after (or before, if you prefer) your dramatic opening (see below), plan to insert your pre-test (Science Knowledge Survey) in some 15-20 minute time slot as early as you can. Take a look at the "**Science Knowledge Survey**" below as an example. It's also available in pdf format, ready-to-use. Be sure to remove the "KEY" from the master copy before making your classroom set.

At some point in the Survey follow-up, you may be asked why certain items are considered correct - or not. To help you with this, consult the **Science Survey Discussion** pages (3) prepared to clarify why each item is correct - or not - as **currently understood by working scientists**. By the way, notice that this qualifier is used in the directions to the student taking the Survey, primarily to focus attention on whether a statement actually fits modern science - or not, and discouraging the more casual attitude that this is merely an opinion survey. **NOTICE**: Before giving the survey, it may be helpful for **you** to **read these discussion items** in order to be prepared for questions that may arise during or after the survey. You may, or may not, choose to provide that information to students during the follow-up. If you do, I suggest keeping it brief, pointing out that they will have a chance to discover for themselves just what science IS and is NOT during the lessons that follow. If you do not share that information, just be sure that you don't leave students with inaccurate views from the survey. It may be sufficient to just show them the answers from the key, or point out which ones were "Correct statements" (only ten of them), assuring them that the lessons to follow will answer their questions.

OPTIONS FOR SURVEY FOLLOW-UP:

1. After students have completed the survey individually, they could gather into small groups to compare their answers and discuss differences. This could lead to clarification, or some frustrations begging the need for clarification. After groups have each gathered a few (or several) items to discuss further in class, hold a guided class discussion, with each group sharing out an item or two of contention in turn, for discussion by the class. Be prepared to step in for clarifications, or to point out that "we will be exploring this item in some activities to follow." Take note of the items selected for class discussion, especially if there is no clear class agreement with the appropriate scientific understanding of the item. Be sure to select lessons from the ENSI collection that effectively address those issues during your unit.

2. If you have the means (e.g., a Scantron system), you may find that an item-analysis of the questions would be very revealing. You could share the frequencies of hits and misses for each item (or selected items) with your class as an opening to discussion, or as a rationale for the need to take a look at **What Science is NOT**.
3. You could make an overhead listing each numbered item, revealing it as you proceed with your comments and brief discussion. Then look at **What Science IS** (below).

From this point, you should provide your students with a variety of experiences that illustrate the true nature of science. To do this, use a fair sampling of the NOS lessons in the ENSI collection, all designed and selected to clarify concepts and repair the main misconceptions about real science.

At the end of the unit, or end of the course, you could use this same test as a "post-test" to see how much your students have improved, and/or to see how effective your teaching has been. Pre/post scores become useful markers from year to year to see if your efforts to improve have paid off. If used as a post test, be sure to announce that the results will NOT affect their grade, and that it's mainly to see if their true understandings about the nature of science have improved. If graded, they may be more inclined to answer the way they think they are *expected* to answer, not necessarily the way they actually think.

SUGGESTION: You might consider surveying your students before each topic/unit (or selected topic units) on what you consider to be some of the more common misconceptions about that topic, as well as any basic and critical factoids that you consider fundamental knowledge about that topic. We offer such a survey that you could use before your **Evolution** unit. We all acquire misconceptions throughout our lives, and the sooner they can be discovered and repaired, the more accurate will be our world view going forward on which to build, and the less likely we will be to pass along those misconceptions to others. Once we have a deep-seated misconception, it's very hard to remove... But the first step is to be convinced that we have that misconception. Then we can learn why the more accurate view works better, and add that to our knowledge bank.

FEEDBACK: As with all postings on this site, if you have questions, problems, suggestions or experiences to share about our Science Knowledge Survey, please email the webmaster.