1. Q1: In your own words, what is science?

Points 0/1, This item will be graded later.

Earned: 
Correct Answer:

Your Response: Science is the empirical process of posing a question about our world, designing a means of answering said question through observation, evaluating these resultant observations followed by using them to revise the current beliefs held, that relate to the new information, in accordance with it.

2. Q2: Science clearly differs from other disciplines like art, religion, and philosophy. What do you see as some of the most important features that distinguish science from other ways of understanding the world?

Points 0/1, This item will be graded later.

Earned: 
Correct Answer:

Your Response: The desirousness of questioning the beliefs held at present makes it significantly different from most religion. Art really has no similarity in my mind as I can't see it as a means of understanding. Philosophy I don't see much of a difference in, other than the empiric nature of observation in science versus the more ephemeral method of thought and questioning used in philosophy. Both use logic to draw conclusion about our world from observation of it.

3. Q3: Now let's consider science learning, and a particular scientific phenomenon: the expansion of gases when they are heated. What percent of local middle school students would you predict actually know that gases expand when heated? How do you think most learned this fact? What do you think most imagine a gas to be, and--were you to interview them carefully--how would they describe, at a molecular level, what happens to a gas as it is warmed?

Points 0/1, This item will be graded later.

Earned: 
Correct Answer:

Your Response: Very nearly all know it although decidedly few realize it, by this I mean in all of them they have seen it but many, if not most, haven't assimilated the conclusions they could draw from their observations. Most that have assimilated this information have done so because they were presented in more or less in a gift-wrapped package by a teacher (defined as to include anyone who imparts knowledge in a way that allows one to repeat it), not necessarily in a way in which they truly are comfortable with the knowledge in an applicable way.

Most more than likely understand a gas to be something physical, but don't understand its almost ephemeral representation in reality. I also doubt that without leading questions and explanation of these, that students could describe a gas at a molecular level but would describe it as a liquid only very thin (non-viscous).

4. Q4: Now consider another phenomenon: the solubility of gases in water. What percent of local 10th graders would you predict know that gases are less soluble in warm water than in cold water? What experiences in life may have contributed to a student's misunderstanding about this concept? Why is understanding this concept important in the subject you plan to teach? What do you think students would need to do in your classroom to improve their understanding of this concept?
Points: 2/1, This item will be graded later.
Earned: 
Correct Answer: Probably this guess is too conservative but 08%. As to evidence leading to misunderstanding, boiling water on the stove. The appearance is that hot water releases large quantities of air, far more than appears to be in it in a cooler state.

This is important to physics, earth/space and general science teachers as it governs much of our world and others. In example for general science it determines biologically habitable areas for fish of different species owing to lower concentrations of O2 in the water at or near the equator. For physics it is a property that this science in conjunction with chemistry controls. For Earth and Space science it allows for historical conclusions to be drawn in geology from present biology in stratigraphs.

An experiment would help to make it observably apparent if one could find a safe means of providing a visible gas and allow it time to diffuse unmolested in to two controlled environments of equal volumes of water at equivalent pressure but at different temperatures. Varying the temperature is the difficulty as one must take care not to induce the mixing effects of a convection current.

5. Q5: Most science teachers have students work in groups some of the time. Given the view of science you described in Questions 1 and 2, is group work more important in science class than in, say, art or English? Why or why not? Describe some types of group work that you think are much more common in science than in science classrooms. Is this difference a problem, in your opinion? Why or why not?

Points: 2/1, This item will be graded later.
Earned: 
Correct Answer: Group work is not more important nor is it less important in science class than in any other class. Group work is necessary in all environments as it allows for exposure of new ideas to new media continuously, in other words it allows for a ‘group-think’. This group-think allows for a train of thought that exhausted in ’Johnny’ to reach a new height in ’Becca’s’ mind. This is true in all disciplines. Group work in science also allows for peer evaluation which, if students do correctly, will result in some criticism being accepted more readily as it came from a more trusted face in a less authoritative manner. This is far more common in science than it is in science classes, to my recollection. This is an issue in my mind as many students would be lacking the trained eye of a critical and experienced evaluator of work, making them less likely to do their own well when the criteria are not so thoroughly handed to them once they are out of school.

6. Q6: One might argue that science achieves objectivity by using processes that minimize the importance of scientists’ values, beliefs, and commitments. A laboratory report written in the third person typically doesn’t even mention the scientist: the narrative centers on the objects of investigation because a scientific experiment--properly done--does not depend on the subject (that is, the investigator). What do you think of this view? And, whether you agree with it or not, critique it from an educational perspective.

Points: 2/1, This item will be graded later.
Earned: 
Correct Answer: I agree, it does minimize the scientists beliefs, values, and commitments. However I, to put it bluntly, think it should. Honestly (albeit somewhat posessing sarcasm, please pardon) in the
case of Jane Goodall I very much doubt the chimps that she was observing worried much about the morals put forth by Moses’ stone tablets that Ms. Goodall may have paid tribute to. As such her recorded observations and drawn evaluations thereof should not superimpose such concepts upon them. This objectivity is a result of recognizing that the subject of research is not you and therefore your thoughts and beliefs are not a part of it, its thinking (assuming it can do it), or its actions.