Current Event 2 Constructivism:

A Review on – “Students constructs about energy and constructivist learning”

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Fetherston (1999) demonstrated the application of constructivism learning approach in a science classroom learning about energy and compared it with a traditional classroom. Was there any significance difference in student acquisition and knowledge of energy? Traditional classroom was defined as “uniformity of coverage of content … and involving the generally uniform assessment” (Fetherston, 1999, p.518). On the other hand, the constructivist learning approach kept the teacher aware of the students’ own ideas, and brought meaningful change to misconceptions. Fetherston (1999) randomly chose a high school in Western Australia who was currently on the energy topic.

Three classes of year 9 students were randomly chosen within the high school. Two of the classes received the constructivist teaching approach, while the third class was taught in the traditional manner. Data on student learning was collected via several ways: “Interviews-About-Events, Question-About-Events, and observation of students and teacher during lesson” (Fetherston, 1999, p.517). Data was also done with test scores given to all classes. Repertory grid technique helped determine students’ construction about energy. Students compared three ideas in the lesson via triadic elicitation. An example of a question was, “In what ways are two of these elements the same but different to the third?” (Fetherston, 1999, p.517). All three classes were asked these types of questions at the same time before and after a lesson.

Based on the results from the multiple choice tests given pre and post lesson, there was a significant jump in test scores. However, there was “no significant differences between classes” (Fetherston, 1999, p.522). Fetherston (1999) analyzed that “students who learnt using the constructivist approach learnt the school science as well as students who underwent traditional instruction” (522). Fetherston (1999) claimed the multiple-choice test was an “insensitive measurement” (523) in determining student knowledge. The interviews, observation, and
repertory grid were analyzed and a different pictured was seen. Students in the constructivist setting displayed that they knew so much more about energy. Students reasoned out their knowledge beyond that language found in the multiple-choice test.

The study proved to be a great example of choosing a randomized sample groups. A high school was chosen based on the fact that they were currently studying the topic, rather than imposing the research on a school. Regardless of how the teachers taught their lessons, the classes were relatively on the same topic and given the same assessment so that there would not be a bias in the form of data. The researcher provided a variety of ways in showing how students displayed their knowledge. The idea of comparing their multiple choice test results to their interviews and observations displayed the depth of the data, and more importantly the depth of the students’ acquisition. The students were given the opportunity to show their strengths, and the constructivist approach allowed the students to create their own knowledge. I think the depth in the data increased my understanding of Fetherston’s study and its relevance in a science classroom.

A change I would make to this study would be the explanation of the repertory grid. A more thorough explanation and a sample of this grid would be helpful in seeing what the students and interviewer saw. In addition, an example of the multiple-choice test would provide a way to compare the sets of data analyzed. To sample three classes were a good size, but I wonder, why not make it an equal number of students for both types of treatments (traditional versus constructivist). Seeing the sample of the data would make the results more concrete. The different types of constructivist theories were defined, but I was unsure about the actual strategies used in the classroom. How did these classrooms look different from the traditional
classroom? Actual examples of the strategies would make this study more concrete to the reader, so that the connection is seen in the students’ knowledge pre and post the lesson.

The organization of this study was an excellent demonstration of how my action research can look like. The explicit detail of the test samples was well understood and it did not leave any room for questions. I would like to learn more about the repertory grid. Is it the same or similar to data coding? It was a significant piece of data to the study, which makes me curious as to how it may be able to help my own study. The study pointed out the destructive side of this type of data. It would be hard to manage for many individuals. To learn more on how this was improved so that it can be manageable would be a great asset to my study.

As for my classroom, this study reminded me on the importance of remembering what the students truly knows versus how the students perform on the assessments at the end of the unit. The importance of informal assessments, answering questions in class, hearing classroom discussions, are also good ways in measuring student knowledge. The never-ending challenge is how do we demonstrate this informal assessment in the grades, more importantly, in the high stakes testing? I can only control what happens in my classroom, so I need to continue to differentiate in my classroom and not just base my student knowledge on the formal assessments. I need to be fully aware of the variety of ways that students can demonstrate their knowledge.