LT 712

Lesson Analysis Assignment

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General Description

In the past few years, I have been teaching an elective class called Physical Science III. Typically, this is a small class, with about twelve students. This is an extension of the regular curriculum, where more space science is taught. In this course we study the solar system. The unit is about what our solar system contains, including planets, natural satellites, asteroids and meteors, as well as or sun.

Theoretical Foundations

I would say that this is mostly a constructivist approach to education. The students build upon their prior knowledge by deciding what information must be presented about each planet or moon. This would fit a KWL model (Know, Want to know, Learned). But this doesn't help the students' understanding of their knowledge. According to Wiggins (1998), to understand is to be able to interpret and utilize knowledge. The students in my current unit are just regurgitating information found out there on the internet to the rest of the class. They do not fully understand what implications these facts will have.

Assumptions about Learning

In doing this unit, there are many assumptions that I make about the students prior to learning about our solar system and how they will present their information. Many assumptions have to do with their prior knowledge about the solar system: the learner should be able to give the names of the 8 planets in our solar system; the learner should know that our sun is in the center of our solar system and the planets orbit it; the learner should know that many of the planets have satellites (moons). Another assumption is that all students know how to use a computer and the software PowerPoint.

I have found that in making these assumptions, not all students are "on the same page". Vygotsky's "zone of proximal development" will be different for all students based upon their cultural and social environments (Bertrand 2003). Some students may not have had much access to a computer at home or have done many PowerPoints. This may be due to the economic status of their family: they just can't afford a computer or internet access. Some students may have learned about the planets in an earlier grade, but didn't find it very interesting, so they didn't put much effort into learning about our solar system. I am a big fan of science fiction and enjoy learning about our space program. So maybe my assumptions need to be looked at and considered before doing this unit.

Instructional Approach

To select their planet, I hand out playing cards randomly and highest card gets first choice. Then, we talk about what information is needed for presentation. This is where I determine what the students know or don't know about the planets in our solar system. Typically, the students come up with most of it in an open discussion as I write the topics on the whiteboard. If a few topics are not brought up by the students, I try and coax it out of them. These topics are then the criteria that the students must research.

Teacher's/Students' Role

My role for this unit is a facilitator. I help the students get started by guiding them in the right direction in terms of what they must learn according to state standards. The presentation is graded using a rubric, including the topics: material presented thoroughly, visual aid effectiveness, number of resources and citation of resources, accuracy of information. When the unit is complete, I give a test over what information was presented based on quiz questions that I ask the students to create as part of their PowerPoint.

The students' role is of researcher and teacher. They will present the information that they gather to the rest of the class. They will be actively engaged in the

research of information and become the instructor of what they learned for the rest of the students.

Role of Technology

Technology will be the means of research and presentation in this unit. The students will research using their computers to search the internet for information about their planet. The will also have access to their online textbook as well as a hard copy of the same textbook. I do provide a few other books to reference in the classroom.

Improvements

I would like to modify my unit to follow a more social-cognitive theory (Bertrand, 2003). Instead of each student working alone, I will put the students into teams of three or four, based on the number of students in the classroom. This will allow them to create social-cognitive conflict amongst themselves, which will allow them to see the viewpoints of others, become more cognitively active, discover new information from the answers of other group members, and teach them to cooperate to solve problems (Bertrand 2003, pg. 174). And they will need to experience these things because the focus of the lesson will be to take a trip to one of the other of the planets in our solar system and live either on the surface or on one of the planet's moons for a year and return.

The design for this unit will be "Backward Design"template (Wiggins, 1998). The class will be broken up into teams with as space craft assigned to them that will be destined for a planet. Each member of the team will be assigned a duty, such as pilot, captain, science officer, and chief engineer. Each person will have certain aspects of the mission that they will be in charge of, but will answer to the captain who oversees the entire mission. The main topic will follow the template "Stage 1-Desired Results", which will be their mission (I am starting to hear the theme song from "Star Trek" in my mind). In the "Stage 2-Assessment Evidence", the officers will decide and design what will be their important duties for the mission (ie. the pilot will need to know how long it will take to get there, based on the

speed of the craft and distance of the planet). In the "Stage 3-Learning Plan", the individual officers will be given time to research their individual mission duties. Once every two classroom days, the officers will meet with the captain, who will oversee each officer's progress during the entire process. The officers will present their duty missions to the others for discussion. The assessment of this unit will follow a rubric, which will incorporate design of the mission, survival of the crew, duties of the officers, and cooperation among crew.

How the students present their unit to the rest of the class and me will be up to them, but will be placed on a wiki, where each group will be given workspace. This will give them the freedom to choose how to work on this unit and present what they have learned using multiple intelligences (Bertrand 2003). I want to make sure that each individual can find their own learning style and maximize it in their final product, which will be on the wiki.

References:

Wiggins, G. & McTighe, J. (1998) *Understanding by design.* Alexandria, VA: ASCD

Bertrand, Y. (2003). *Contemporary theories and practice in education* (2nd ed.), Madison, WI: Atwood Publishing.