

2011-2012 Lesson Plan for Henrico 21 Awards

Lesson Title: "Help me 7th Grade Scientists, my college lab report is due tomorrow!"

Target Grade/Subject: Grade 7 - Life Science (Special Education)

Length: 2 - 90 minute blocks

Summary: This lesson involved the collaboration between L. Douglas Wilder Middle School students and two chemistry majors attending Christopher Newport University. The class was given the task of helping the chemistry majors gather quantitative and qualitative data for three lab experiments that were due to their professor the following day. It was framed in the context that the 2 chem students needed the help of the seventh graders in order to successfully complete their project. The class Skyped with the undergraduates and worked in collaborative groups in order to gather all of the necessary information into a google doc. During the live feed students were able to backchannel using the website todaysmeet.com in order to ask any clarifying questions throughout the lab. The lab concluded with the students answering the essential questions and reflecting on the lesson via a discussion forum in School Space. This lesson truly was an authentic task where students engaged in meaningful communication and purposeful collaboration.

Essential questions:

- How can the computer be used as a tool?
 - How do chemicals benefit society?
 - What must Scientists do in order to research something?
 - What are some methods that allow for us to communicate over long distances?
 - Why does our society need rules?
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SOL Objectives:

LS.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which

- a) data are organized into tables showing repeated trials and means;
- c) triple beam and electronic balances, thermometers, metric rulers, graduated cylinders, and probeware are used to gather data;
- d) models and simulations are constructed and used to illustrate and explain phenomena;
- e) sources of experimental error are identified;
- f) dependent variables, independent variables, and constants are identified;
- h) data are organized, communicated through graphical representation, interpreted, and used to

make predictions;

i) patterns are identified in data and are interpreted and evaluated

Lesson Development:

Bell Work -

The student will review safety rules/procedures/tools through the use of an ActiveInspire flip-chart. The students will be able to manipulate the objects on the Promethean board from their seats using the Activslate. The teacher will facilitate discussions to guide the students in answering their own questions in order to successfully complete the flip-chart.

CNU Lab - (Student Video Footage Attached)

Prior to the lab - Surprisingly, not many of my students have ever ventured outside of the Richmond area. In order to better prepare the students for the collaboration between Wilder Middle School and Christopher Newport University, it is important that they have a concrete understanding and a general sense of where Christopher Newport University (CNU) is located on a three-dimensional map. The students will use Google Earth in order to identify CNU on a globe and do some preliminary research listing specific facts about the University.

- Student Artifact - (.KMZ file attached)

The students will help conduct an experiment in collaboration with CNU students in real time through the use of Skype. The CNU students are going to initially present themselves as disheveled (Loose jewelry, goggles around their necks, hair not tied back, etc.) Students will need to critique their attire and make sure they are following proper safety guidelines before conducting the experiment. During the experiment students will work in cooperative groups by interpreting what they are seeing through the use of a google doc. Quantitative data, as well as anecdotal records will be used throughout this process. Back-channeling will also occur using the website todaysmeet.com in order for the students to ask any clarifying questions during the live session.

Labs - (pdf of lab experiments attached)

Lab #1: Stop Light Reaction

Lab #2: Flame Test

Lab #3: Explosion

- Student Artifacts -
 - [Google Spreadsheet](#)
 - [Google Document](#)
 - [Today's Meet](#)

(Rubric for this project attached)

Questions posed by the CNU students will be answered in real time using a shared Google Doc. Use of a google spreadsheet will also allow students to graph their recorded data in order to show any established trends or/and relationships between reactions and time. School Space Discussion Forum - The student will reflect on the lab and what was learned through a discussion board on School Space. The school space discussion forum will also act as a great venue for students to discuss any errors that were present during the lab and what steps could have been taken to remove those errors. The teacher will facilitate a discussion about the importance of safety and what was learned through the lab. Students will post to the discussion forum and must reply back to at least two other classmates.

TIP Chart Assessment:

Categories:

Research and Information Fluency:

Approaching - Students had flexibility and choice in determining how they would obtain information regarding Christopher Newport University. Many students in the class utilized meta-search engines when locating applicable information. They also used advanced search strategies in google in order to fine-tune their queries. Information was double checked and sources cited in order to validate a website's credibility. Students constructed questions they wanted to know about CNU and assembled and organized that information into Google Earth. Google Earth proved a powerful tool that allowed students to display and interact with the acquired information.

Communication and Collaboration:

Ideal/Target - Students worked in cooperative as well as collaborative groups in order to perform a live, real time experiment in a college lab setting. This lesson allowed for the class to collaborate with experts regardless of physical distances (approx. 75 miles). Digital tools such as Skype, Google Docs, allowed for multiple editors to simultaneously edit a single document. Backchanneling provided the means for the students to use their computers to maintain a real-time online conversation alongside live spoken remarks. The students were also able to reflect on their learning by answering and posing essential questions via. a school space discussion forum.

Critical Thinking and Problem Solving:

Approaching - During the live Skype session students were continuously generating and responding to purposeful questions. They were able to justify their hypothesis' and respond appropriately to questions asked by the facilitators. The use of digital tools throughout this lesson allowed for open communication and real time decision making. Their ideas generated in the discussion forum allowed for them to reflect on their roles as critical thinkers, and allowed for them to ponder what they would have done differently if given the opportunity to do this again

in the future.

Creativity and Innovation:

Ideal/Target - The kids were all given a real-world authentic task - “College students at CNU are counting on your problem solving skills in order to help prepare them for a lab that is due to their professor the following day” Many of the children immediately bought into this notion and were eagerly ready to assist in any way possible. Engagement levels were high throughout the entire lesson, and many students wanted to take on leadership roles to help the undergraduates become successful in the lab. The class was able to analyze trends and make predictions through the use of google docs and perform final reflections through the school space discussion forum.