

C2C Lesson Plan - Year 4

Sunday Evening Review of Year 3 Concepts - Day 0 (7/6/14)

Learning Objectives:

- Reintroduce Science as a Method
- Reintroduce Year 3 Vocabulary
- Teach Concept Mapping as a skill for organizing information

Skill/strategy focus:

- *Have students introduce themselves again and say one thing (vocab, concept, idea) they remember from last year's science*
- *Demonstrate Concept Mapping with example*
- *Then have student groups (4-5 students) create a concept map and share with the group*

Materials:

Large paper, markers

C2C Lesson Plan - Day 1 (7/7/14)

Subject: Science as a Process

Skill/strategy focus:

Hour 1 &2- Introduction to Scientific Method: Amphipod Selection of Sediment

- Introduction of Science is a Process
- Use observations from last summer to compare possible habitat impacts to invertebrates

Hour 3 - Introduction to Scientific Communication

- *THIEVES 1st Paragraph of Each Section in Sediment Paper (Rabeni et al. 2005)*
- *Ask students to provide the major or important points of each section in a scientific paper*
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Materials:

Hour 1 & 2 - Plastic Tubs x6, 500 ml of Sand x6, 500 ml of Gravel x6, 2,000 ml of Creek Water x6, forceps x6, minnow nets x6, 100 amphipods, 10L Aquarium

Hour 3 - Computer Lab, Sediment Paper

Homework:

Hour 1 & 2 - Study guide/notecard activity (Moni)

Hour 3 - Write a draft conclusion statement for lab activity during hour 1 & 2. Conclusion must include: 1)summary of major findings, 2) the importance of major finding, 3) future opportunities for research.

C2C Lesson Plan - Day 2 (7/8/14)

Subject: Developing Questions into Hypotheses and Experimental Design

Skill/strategy focus:

Hour 1 -

Hour 2 - Field trip to Garvin Heights and West Lake Winona

Hour 3 - Outdoor

Materials:

All Day -

Hour 1 -

Hour 2 -

Hour 3 -

Homework:

Hour 1 - Find two sources and write your lab report Introduction*

C2C Lesson Plan - Day 3 (7/9/14)

Subject: Data Collection for Lab Report

Skill/strategy focus:

Hour 1 -

Hour 2 & 3 - * Each research group rotated and went out on the boat to collect water samples and record water quality (pH, Conductivity, D.O., and temperature)

Hour 2 & 3 Alternate - While one group was on the lake, the other peer-reviewed their group member's introductions at the Lake Winona pavilion.

*Data collection in Lake Winona took approximately 20-25 minutes per group collecting 4 water chemistry measures at the surface, middle, and bottom of the lake

Materials:

Hour 1 -

Hour 2 -

Hour 3 -

Homework:

Hour 1 - Write your **hypotheses** and methods for your lab report

Hour 2 -

Hour 3 -

C2C Lesson Plan - Day 4 (7/10/14)

Subject: Scientific Data Analysis

Skill/strategy focus:

Hour 1 - Peer review of Hypotheses and Method Sections

*Hour 2 - Designing and entering data into an excel table. Introducing graphing in excel**

**activity ran long (~2hrs)*

Hour 3 -

Materials:

Hour 1 -

Hour 2 -

Hour 3 -

Homework:

Hour 1 -

Hour 2 -

Hour 3 -

C2C Lesson Plan - Day 5 (7/11/14)

Subject: Writing a Results and Discussion

Skill/strategy focus:

*Hour 1 - Introduction to writing a results and discussion**

*Hours 2-3 - Writing Workshop. Peer review, instructor one-on-one time.***

*Discussion was difficult for some students due to the multiple variables recorded. (Note for next year, keep open inquiry variables simple 1-2 different measurements)

** Did not have time to complete conclusion and reference section. Moved to Monday morning

Materials:

Hour 1 -

Hour 2 -

Hour 3 -

Homework:

Hour 1 - Final lab report to be completed (except conclusions and references)

C2C Lesson Plan - Day 6 (7/12/14)

Subject: Educational Field Trip

Skill/strategy focus:

Hour 1-3 - Educational Field Trip

- *Daley farm in Lewiston*
 - *1550 Dairy Cow Operation*
 - *Students really enjoyed the farm and asked plenty of questions*
- *Trip to Winona Farmers Market*
 - *Students had to ask a farmer/vendor three questions:*
 - *1) Can you describe the type of farm*
 - *2) How important is water to your farm?*
 - *3) Do you practice any water conservation on your farm?*
 - *Students also really enjoyed this activity*
- *Trempeleau NWR*
 - *Rain prevented us from getting out of the car*
- *Perrot State Park*
 - *Mini experiment with contaminated water in the campground?*
 - *Rain limited our ability to collect water samples*
 - *Created a Mini Lab Activity Sheet for next year to better guide activity*

Materials:

Hour 1 -

Hour 2 -

Hour 3 -

Homework:

No Homework on Saturday. (Sunday homework shifted due to Math Quiz)

C2C Lesson Plan - Day 7 (7/14/14)

Subject: Beginning the Poster Project

Skill/strategy focus:

Hour 1 - Finish Conclusion and Literature Cited of Lab Report

- *Conclusion section seemed redundant for a short lab report*
- *Remove for C2C next year?*

Hour 2 - Poster Activity Packet Part 1 & 2, ***

- *Formed Poster Working Teams of 4-5 students*
- *Part 1: Step 1 & 2 (15 minutes)*
- *Shared location descriptions with work team, had to select "best" location (10 Minutes)****
- *Part 2: Step 1 & 2 - Students had to write a clear description of the environmental problems at their selected location using 5 vocabulary words*
- *Peer share of location problems*

**Students seemed eager to share and develop their preconceived ideas about their project, rather than critically think about their general locations*

***Suggest assigning Part 1 & 2 as summer homework, then begin week 2 with a peer review of location and pollution problems*

****Suggest adding peer review criteria of what makes a good study location*

Hour 3 - Step 5: Initial Poster Research

- *Students began to research their problem and solution. Task was to find at least one information source about a similar pollution problem or solution to problem*

Homework:

Complete Poster Activity Packet.

- Packet Part 2, Step 5: Need to find a minimum of 5 internet sources about study site, pollution problem, or solutions
- Packet Part 3, Step 1: Clearly Identify Problem and Solution
- Packet Part 3, Step 2: Turn problem and solution into a testable hypothesis

C2C Lesson Plan - Day 8 (7/15/14)

Subject: Poster Project Day 2

Skill/strategy focus:

Hour 1 - Team Peer Review of Hypotheses (40 minutes)

- *See Rubric for Hypothesis Guidelines*

Hour 2 - Writing Poster Introduction Part 1

- *Introduction should start general and introduce the pollution problem: sources, causes, harm to the environment or people*
- *1st paragraph should be written in 45 minutes (10 minutes for peer review; 5 for break)**

Hour 3 - Writing Poster Introduction Part 2

- *Introduction should begin to narrow its focus, what are specific solutions that can decrease the pollution problem*
- *2nd paragraph should be written in 45 minutes (10 minutes for peer review; 5 for break)**

**Times did not work. Students struggled to develop appropriate topic sentence and relevant information about the general subject. Nearly all students wanted to start with their specific study site problems*

Homework:

- Continue working on Introduction
- Begin working on Study Site/Methods?

C2C Lesson Plan - Day 9 (7/16/14)

Subject: Poster Project Day 3

Skill/strategy focus:

Hour 1 - Writing Expected Results & Broader Impact

- *See Rubric for Hypothesis Guidelines*

Hour 2 - Writing Poster Introduction Part 1

- *Introduction should start general and introduce the pollution problem: sources, causes, harm to the environment or people*
- *1st paragraph should be written in 45 minutes (10 minutes for peer review; 5 for break)**

Hour 3 - Writing Poster Introduction Part 2

- *Introduction should begin to narrow its focus, what are specific solutions that can decrease the pollution problem*
- *2nd paragraph should be written in 45 minutes (10 minutes for peer review; 5 for break)**

Materials:

Hour 1 -

Hour 2 -

Hour 3 -

Homework:

- Continue working on Introduction
- Begin working on Study Site/Methods