Applications Project – Scientific Practices Unit

A well known publisher has asked our class to create science units (3 -5 class periods) that each teach some aspect of *scientific or engineering practices.* The unit should be designed so that students engage in the process of science (investigation, observation, using models, etc…) figuring things out for themselves. Not only do they engage in *doing science,* but they must be aware of the scientific practice(s) that they are learning. **Explicit instruction** about these skills is required.

Requirements:

- Create a 1 page flyer with less than 200 words to demonstrate to teachers what content they can expect from this unit; basically a nice flashy clear advertisement for your unit.
- Lesson plans:
  1. Any format you think will be clear for teachers who will be reading this unit with enough information for them to teach the lesson just as you've envisioned it.
  2. Learning goals (what the students will be able ***to do after*** completing your Unit) *Don't forget the Scientific/Engineering Practice(s) that your unit targets.*
  3. Identify the elementary/middle school grade level you are targeting.
- Group mini-lesson:
  - Pick a 20 minute section of the unit to teach your group.
  - Provide specific learning goals for this 20 minutes
  - Create 5 assessment questions to use on your group members (you will test them before your mini-lesson day and after the lesson).
  - Grade the assessment questions to identify classmate learning
  - Write a short reflection on how the mini-lesson went and what you might change based on the experience.
- You will be asked to evaluate all of your fellow group members' mini-lessons.
  - **Only** what is **"Taught" to you** can be evaluated. Other material that will **be taught before or after** the 20 minute portion is **irrelevant** to your evaluation.
  - Provide useful feedback on the mini-lesson. For example, explain why full points were not given in each category.

Due Dates:

Resources and Learning Goals **Due 10/31**: Use at least 4 resources (only 3 can be online). A good teacher repurposes other people's work. You do not have to invent everything but you must reference anything that you "repurpose". *Don't forget the Scientific/Engineering Practice(s) that your unit targets.*

Optional early feedback **Due 11/7**

Group mini-lessons **11/17 or 11/19**

11/24 Final version of the project due.

Application Project Rubric

Project Title_____ _____ **Name** _____

4 resources identified by deadline	(4 pts)_____
Learning Goals (content and "doing science")	(5 pts)_____
Flyer	(4 pts)_____
Mechanics (spelling, punctuation, grammar, etc.)	(5 pts)_____
Unit fits identified grade level	(3 pts)_____
Reasonable length of time for unit/each lesson	(4 pts)_____
Hands-on/ Minds-on	(7 pts)_____
Explicitly teach at least one aspect of Scientific/Engineering Practice	(7 pts)_____
Content addresses learning goals	(6 pts)_____
Assessment questions address learning goals from group mini-lesson	(5 pts)_____
Assessment with results and reflection on 20 minute mini-lesson	(10 pts)_____
Classmate reviews of 20 minute mini-lesson	(20 pts)_____
Grading of other group members and completion of assessment questions	(20 pts)_____

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Assessment questions address learning goals from group mini-lesson	(5 pts)_____
Assessment with results and reflection on 20 minute mini-lesson	(10 pts)_____
Classmate reviews of 20 minute mini-lesson	(20 pts)_____
Grading of other group members and completion of assessment questions	(20 pts)_____

20 minute mini-lesson Rubric

Evaluator Name _____

Unit Title _____ Author Name _____

I. Delivery

Prepared:

a. Assessment questions on time (0-1)_____
b. Lesson materials (0-2)_____
c. Flow – smooth transitions (0-2)_____

Presentation:

a. Speaks clearly (0-2)_____
b. Enthusiastic (0-1)_____
c. Knowledgeable (0-2)_____

Timing:

a. Background information less than 5 minutes (0-2)_____
b. Complete mini lesson 15 – 25 minutes (0-3)_____

PRESENTATION TOTAL _____

Comments:

II. Content

a. Grade level matches content (0-2)_____
b. Hands-on/Minds-on (0-6)_____
c. Explicitly teach Scientific/Engineering Practice (0-6)_____
d. Materials clear and easy to follow (0-4)_____

Clear Learning Goals (LGs):

a. Content LGs (0-3)_____
b. Scientific/Engineering Practice LGs (0-3)_____

Lesson Matches Learning Goals:

a. Assessment addresses LGs (0-5)_____
b. Content addresses LGs (0-6)_____

CONTENT TOTAL _____

TOTAL _____

Comments: