Sadie Levy
Engineering LAP 6
2/14/19

1. <u>Content</u>: Describe **what** it is you will teach. What is the content?
   a. In this lesson we will complete our unit by finishing analyzing our boat structures for a second time, and also as a class. On an anchor chart we will come up with what we think are the most important aspects of a boat when designing. Also, we will do an SEI-modeled "Divide and Slide" as a way to discuss in pairs many aspects of this study and wrap up our thoughts on engineering before break. Afterward, we will watch a short video of some professional sailing designers who test and use their models to win races. Although they are looking for different qualities in their boat, seeing this real life application of the design model I think will be a nice way to wrap up the unit.

2. <u>Learning Goal(s)</u>: Describe what specifically students will **know** and **be able to do** after the experience of this class.
   a. Students will be able to work in a team - compromising and collaborating.
   b. Students will use language of team building.
   c. Students will be able to observe their second model within the framework of their reasoning for the materials and construction they chose.
   d. Students will be able to identify the issues or points of improvement in their newest model.
   e. Students will be able to assess themselves as a group on their ability to work as a team and create a boat.

3. <u>Rationale</u>: Explain how the content and learning goal(s) relate to your Curriculum Unit Plan learning goals.
   a. last lesson of goal

4. <u>Assessment</u>: Describe **how** you and your students will know they have reached your learning goals.
   a. Students will be assessed on their ability to work in a team and their observations and fixes of their boats. I will be assessing these two components through observation and their Engineering Journals. Their Engineering Journals ask them sketch and plan their design, so I will ask them to circle the areas in red of that plan which they think could use more work. Then they will write 2-3 sentences on what they would change specifically and why. I will also ask them to complete the final page of the Engineer Journal - a self assessment page which asks more of their opinion on the challenge itself - how did they like it and how did their group do working together?

5. <u>Personalization and equity</u>: Describe how you will provide for individual student strengths and needs.   How will you and your lesson consider the needs of each student and scaffold learning? How specifically will ELL students and students with learning disabilities gain access and be supported?
   a. use vocab
   b. practice oral conversation
   c. go beyond building, also watch videos
   d. orally talking so there's not so much writing; opportunity to just talk individually

time	activity	rationale
10 minutes	Students finish testing their boats	
5 minutes	In their Engineering Journals, students will circle their problems or places for improvement on their original plan.	In response to my lack of a place to write the explicit problem and the time pressure, I am choosing to make this step minimal so we can save time for discussion.
10 minutes	As a class we will come up with factors we think are the most important to building a boat (a large flat surface on the bottom and introduce the word **buoyancy:** the ability to float or not What do we notice about shape? - better with a larger bottom than on top	After we all do our work individually/in groups, it is important to debrief as a whole class and start to form patterns.
5 minutes	Watch https://www.youtube.com/watch?v=CvWrkxzCiaY on displacement. A silly video that explains why huge boats/cruise ships can float. It's a bit beyond their level and uses lots of new vocabulary, but it's a good way to stretch beyond what we've been talking about.	Even though we did not talk about displacement or buoyancy for the entirety of our unit, I think it is important to expand beyond what we talked about in our unit
10 minutes	Divide and Slide; we will go over parts of our boat now knowing this word buoyancy and talk with partners to review: - What was your favorite part of the whole process? - Do you feel like your boat	The idea of this assessment/debriefing tool is to get every student talking and involved, regardless of their group's opinions or group discussion.

	improved? - What made your boat **buoyant**? - What improvements did you make to your boat along the way? - Can you recite the 6 steps of the **engineering cycle** together? - What was the most challenging part of the cycle? - What does it mean to **compromise**? - Can you tell your partner an example of when you compromised?	
5 minutes	Complete final self reflection in last page of Engineering Journal	As a final wrap-up of this unit, I want students to, again, be thinking for themselves. This self-reflection is intentionally low-stakes to get everyone involved in the writing and able to get their thoughts down on paper.

     e. What particular challenges, in terms of student learning or implementing planned activity, do you anticipate and how will you address them?
         i.   I imagine time might be against us in this lesson.

6. <u>List the Massachusetts Learning Standards this lesson addresses.</u>
     a. (science engineering) K-2ETS1-3. Analyze data from tests of two objects designed to solve the same design problem to compare strengths and weakness of how each object performs.
     b. 2-PS1-1. Describe and classify different kinds of materials by observable properties of color, flexibility, hardness, texture, and absorbance.
     c. 2-PS1-2. Test different materials and analyze the data obtained to determine which materials have the properties that are best suited for an intended purpose.
     d. listening/reading in standards Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
         i.   Follow agreed-upon rules for discussions.

    ii. Build on other's talk in conversations by linking their comments to the remarks of others.

    iii. Ask for clarification and further explanation as needed about the topics and texts under discussion.

 7. <u>Reflection</u>
    a. In light of all areas of planning, but especially in terms of your stated purpose and learning goals, in what ways was the activity(ies) successful? How do you know? In what ways was it not successful? How might the activity be planned differently another time?
    b. What did you learn from the experience of this lesson that will inform your next LAP?

    Overall, this lesson went as expected for the most part, except for one large caveat which is that I felt incredibly I'll while teaching and I feel very distracted by the pain. That being said, I had a pretty good idea of what I wanted to cover so I was able to get across my points, but what was especially challenging was management considering my low energy and their incredibly high energy, it being the last day before break and everything. That being said, we were able to get to everything on our agenda, with the exception of a few questions on my Divide and Slide activity idea. I hadn't thoroughly thought about how this would be a new activity to learn, and therefore a new skill to practice. On a normal day when I feel 100% healthy this activity may have been a different story, but today it was incredibly challenging. We only got through two questions (I skipped the second one on my agenda) and then I just had them sit down. This made the most sense. They went straight into their self-assessments.

    Below are their self-reflections. Since I had written this lab reports before even starting the unit, some of the prompts were not 100% on-topic to what we'd talked about. There was also some confusion between the first questions. I asked them how they *felt* about the project and then also how they felt they *did* on the project. To make this more clear, I could have asked as a second question something more like, if you could give yourself a grade on this project, what would you give yourself?

    I realized through reading some of my student's reflections that they felt sad about their boats because today I put a lot of emphasis on the success of Nathaniel, Kyara, and Mario's boat which was very simply and low-material. Despite other student's success, relative to the simplicity and effectiveness of N, M, and K's boat, there's didn't get talked about as much. That being said, the reflections also revealed some beautiful points the student's made about loving this project and working together.

    Despite the beginning conflict with Chino and Naliya, he seemed to have a good time: (I was a little perplexed why he said embarrassed… Maybe he felt sad his boat didn't end up holding much weight? I'm not sure.)

SELF ASSESSMENT:

How did you feel about this challenge? How

I liked it, I will never
frget that was a suses
I liked testing it!

How did you feel you did on this challenge?

I felt alot enberist!

GROUP ASSESSMENT: (put an X for what

	Never	Sometimes	Basically all the time
In my group we worked well together.		✓	
In my group we listened to each other.		✓	✓
In my group we collaborated.		✓	✓
In my group we used everyone's ideas.		✓	✓
In my group we were proud of our boat :)			✓

Below is the group with Angelyn, Prince and Astrid. Their group really struggled with working together, so it is interested to see their varying degrees of honesty. Considering they had such a hard time working together that they ultimately didn't even create a boat, I was wondering what Angelyn was referring to when she said they were "basically always" proud of their boat. I wonder if she read it thoroughly or maybe she just was talking about their first model. I think Astrid gets really anxious about impressing the teacher, because her writing does not reflect

what I observed, to be honest. They may have worked together in different ways, but from what I saw there wasn't much collaborating. When I reminded the group that there wouldn't be enough time now to build the boat because they spent so much of it bickering, Angelyn and Prince both argued it was because Astrid wasn't there. I can see why this was challenging for them, and put a lot of weight on Astrid to hold the team.

SELF ASSESSMENT:

How did you feel about this challenge? How

I finjoyed it, because it was good trying to build things like a boat, because it was a challenge

How did you feel you did on this challenge?

good beause it maded me nthink hard. t to float

GROUP ASSESSMENT: (put an X for what

	Never	Sometimes	Basically all the time
In my group we worked well together.		✓	
In my group we listened to each other.			✓
In my group we collaborated.			✓
In my group we used everyone's ideas.		✓	
In my group we were proud of our boat :)	✓		
My group compromised		✓	

SELF ASSESSMENT:

How did you feel about this challenge? How

I felt a liittel good
but wen we fonb
it intresting

How did you feel you did on this challenge?

what bibnot worck
avt isi wen we belio tim
the bovt

GROUP ASSESSMENT: (put an X for what

	Never	Sometimes	Basically all the time
In my group we worked well together.	X	X	
In my group we listened to each other.		X	
In my group we collaborated.	X	X	
In my group we used everyone's ideas.		X	
In my group we were proud of our boat :)			X
My group Compromised	X		

SELF ASSESSMENT:

How did you feel about this challenge?

I felt a little ~~happy~~ happy about this challenge Because It made me think and I liked when we Buid and test

How did you feel you did on this challenge?

I think I did very good on this challenge.

GROUP ASSESSMENT: (put an X for what

	Never	Sometimes	Basically all the time
In my group we worked well together.		X	
In my group we listened to each other.		X	
In my group we collaborated.	X		X
In my group we used everyone's ideas.		X	
In my group we were proud of our boat :)			X
My group conftomized X			X

While there were many positive responses, I'm not surprised that Isaiah did not have a positive experience. He missed the first 3 Engineering lessons for some reason, and it really threw him

off for the rest of it. Next time maybe I can make sure the incorporation of people who may have missed class or something is more smooth and intentional to include their ideas.

SELF ASSESSMENT:

How did you feel about this challenge? How

I did not like it alittel I wanted todo plains or jets and I did even get to put my idea.

How did you feel you did on this challenge?

GROUP ASSESSMENT: (put an X for what

	Never	Sometimes	Basically all the time
In my group we worked well together.	X	✓	
In my group we listened to each other.		X	
In my group we collaborated.	X		
In my group we used everyone's ideas.	X		
In my group we were proud of our boat :)		X	