I. Content: Describe what it is you will teach. What is the content?

Our first lesson of our matter unit will feature a discovery activity that elicits the student’s prior knowledge of the water cycle. Upon this they will build the concept that adding or taking away heat will make matter change states. This will be achieved by an experimental race to melt snow.

II. Learning Goal(s): Describe what specifically students will know and be able to do after the experience of this class.

- SWBAT explore what makes matter change state.
- SWBAT explain orally and in writing that adding heat to snow will melt it.

III. Rationale: Explain how the content and learning goal(s) relate to your Curriculum Unit Plan learning goals.

This lesson activates and builds upon the students’ prior knowledge of the water cycle in order to meet the third content standard of the Massachusetts Frameworks for physical science (listed in my CUP). We will also begin to address the Common Core reading standard for informational text (listed in my CUP) by using the scientific method to organize scientific ideas and concepts. In addition to these content standards, the lesson will also tackle practice standards, or habit of mind, so essential to the scientific discipline. Student scientists will work together in pairs to answer a question: What will make snow melt the fastest? They will then apply their findings to an everyday situation: How could we empty the parking lot of all snow the quickest? Students will achieve these two goals by using the scientific method; additionally, throughout they will be exposed to precise scientific language, such as matter, state, solid, liquid, melt, and freeze. Furthermore, this lesson incorporates literacy development by tasking students to engage with new vocabulary and to begin to employ it in their oral and written language. This is referenced in my language objective for this lesson, which appears in the learning goals section of this LAP. Lastly, we will further build our community of learners by maintaining a safe environment to ask questions, make mistakes, and challenge one another. Students will also work collaboratively on the Meltdown experiment; as such, they will be forced to rely on one another as funds of knowledge. This type of interaction also allows a period of “legal” talk, in which interpersonal and social conflicts must be set aside for the purpose of achieving the most points.
IV. Assessment: Describe how you and your students will know they have reached your learning goals.

There will be a variety of formal and informal assessments that will indicate to me whether my students will have reached my learning goals. First, we will begin by accessing our prior knowledge about the water cycle, which will reveal their preconceptions and misconceptions. This informal method of assessment will be complemented by a discussion, which will further reveal, in an informal manner, what growth my students make after the experiment. Students will be formally assessed by their performance on the MELTDOWN! Worksheet as well as a low-stakes exit slip, both of which will formally assess their initial understanding of matter.

V. Personalization and equity: 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?

The strengths of individual students will be brought out and encouraged in several ways: **High flyers** will benefit greatly from sharing their prior knowledge during our water cycle activity, as well as participating actively in the accompanying discussion. This will give them an opportunity to grow their understanding by showing it. Furthermore, they will benefit from the graphic, which offers a great deal of facts for the close listener. During the experiment, students will work in homogeneous groups, where they will be pushed to think creatively and quickly by equally paced peers. Students who have an **IEP or 504** will benefit from clear, single-step directions. To further support their success, I have thoughtfully selected preferential seating spots for them, as well as provided repeated directions as necessary. Both students on an IEP or 504 as well as **ELLs** will benefit from the graphic, which provides many visuals of the concepts at hand. As always, I will emphasize the need to use the correct vocabulary and encourage students to reference our growing anchor charts for assistance. Furthermore, ELLs who have the opportunity to work with more fluent English speakers will have the chance to encounter this new domain specific academic vocabulary employed by their peers. **Auditory** learners will be supported by the repetition of our new vocabulary. They will also profit from the oral nature of the discussion. **Visual** learners are sure to benefit from the graphic as well as our anchor charts. Finally, **kinesthetic** will benefit from the active and hands-on nature of our experiment in this lesson.
VI. Activity description and agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Teacher Activity</th>
<th>Student Activity</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:00-0:10</td>
<td>I will display the graphic of the water cycle. I will lead a discussion about what is happening to the water. I will introduce unit vocabulary, writing them on our anchor chart.</td>
<td>Students will share what they think they know about the water cycle.</td>
<td>Graphic of the water cycle ELMO Chart Paper Markers Post its</td>
</tr>
<tr>
<td>0:10-0:35</td>
<td>I will introduce experiment and give instructions for worksheet.</td>
<td>Students will conduct the experiment in partners.</td>
<td>Meltdown worksheet Snow</td>
</tr>
<tr>
<td>0:35-0:40</td>
<td>I will lead a discussion about who melted their snow the fastest and why.</td>
<td>Students will share their reasoning as to why some snow melted faster than other.</td>
<td>Same as above</td>
</tr>
<tr>
<td>0:40-0:45</td>
<td>I will hand out slips of paper for our exit slip. I will clean up.</td>
<td>Students will answer the prompts.</td>
<td>Paper Pencils</td>
</tr>
</tbody>
</table>

One major challenge I foresee is that the students will have difficulty returning to the worksheet while they melt the snow. To assist them, I will scaffold their completion by prompting the whole class, section by section. There is also the possibility of a mess or spill. I will remedy this by not giving out the snow until the “Conduct your experiment” phase. I will also be explicit about the rules (You cannot touch the snow; if you spill, you will be observing the rest of the experiment).

VII. List the Massachusetts Learning Standards this lesson addresses.

- Massachusetts Frameworks for physical science (pg 64): 3. Describe how water can be changed from one state to another by adding or taking away heat.
- Common Core reading standard for informational text (pg 18): 3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

VIII. Reflection

I had such an incredibly fun time during my round, and the smiles on everyone’s faces reassured me that they were too! I was so proud to see my scientists engaged in the material and all the while having a blast. The adult presence in the classroom made what could’ve been a messy disaster into a learning experience for every child. This is evidenced in their performance during the experiment as well as the outstanding responses on their Meltdown! worksheet.
During the experiment, students seemed to be copying each other a bit, as made clear by the universal smashing with the straws and blowing. However, several students had unique methods to help them along. For example, Cameron was attempting to provide his and Cristian’s cup with shelter, which might provide extra warmth to melt the snow. Additionally, students were doing an excellent job of integrating their prior knowledge of the water cycle into their activation of new knowledge regarding matter. Frequently, students were overheard using words such as “heat,” “change,” and even “condensations”! The use of these terms in their astute observations assures me that they are ready to incorporate the new discipline specific concepts and vocabulary that are associated with matter.

The major delta of my round is my lack of written language throughout the lesson. As Holly noted during our post-round, I relied on oral communication far too much. I am going to take her suggestion of writing a formula (snow + heat = water) in order to transition from this primer lesson into the meat and potatoes of the matter unit. Written anchor charts will also be necessary for the inclusion of the new vocabulary for the unit; we may be able to further integrate our work during the Meltdown! by labeling the pictures on the worksheets.