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

Our third lesson of our matter unit will begin with a review of the definitions of matter and what makes a solid a solid. We will then explore in more detail the essential property of a liquid: matter that takes the shape of its container. We will ground our understanding of liquids and solids by reviewing our scientific gains from the first week week (snow+heat=water).

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

- Content: SWBAT identify what is matter, the state of matter known as a liquid, and examples of this state.
- Language: SWBAT orally describe their observations during the experiment and develop their written hypothesis and conclusions.

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

In this lesson, we will address two content standards of the Massachusetts Frameworks for physical science (listed below). We will achieve the first by reviewing what makes a solid a solid and by discovering what makes a liquid a liquid. Secondly, we will rely on our understanding of the water cycle in order to reinforce the concept of state changes. In addition to these content standards, the lesson will also tackle practice standards, or habit of mind, so essential to the scientific discipline. The first is that our classroom scientists will be charged with employing technical language and vocabulary in order to communicate precisely; in this lesson, they will be required to define matter, solids, and liquids correctly. Additionally, our scientists will continue to use a method in order to discern facts from experiments. This scientific method models the thinking and practice of all scientists. 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 in our whole group 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 with a review of last class, which will reveal their retention of how heat influences the state of matter, as well as the definition of matter and solid. Students will be assessed by their participation in our read-aloud; they will have to cull important definitions and information from the text that I read to them. Finally, students will be formally assessed by their performance on the worksheet in which they have to use the scientific method to organize their ideas and discoveries.

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 retained knowledge during our review, 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 read-aloud, which offers a great deal of facts for the close listener. During the unusual matter game, high flyers will be provided with the most challenging states of matter. 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 have a modified worksheet with less writing prompt and tasks. Additionally, these students will be provided with easier states of matter in the unusual matter game. ELLs will also benefit from the read-aloud, which provides many visuals of the concepts at hand. They will benefit from the teacher doing the reading work, so that they can do the content tasks. As always, I will emphasize the need to use the correct vocabulary and encourage students to reference our 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 read-aloud, which is rich in illustrations, as well as our anchor charts. Finally, kinesthetic will be allowed to work in open spaces as is deemed appropriate.
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 lead a review of the major concepts of the unit (matter, solid, changes through heat).</td>
<td>Students will participate in the discussion and provide the class with their prior knowledge.</td>
<td>Anchor chart</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marker</td>
</tr>
<tr>
<td>0:10-0:20</td>
<td>I will read-aloud from “What is the world made of? All about solids, liquids, and gasses!”</td>
<td>Students will listen for a definition of liquids.</td>
<td>Same as above</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Book</td>
</tr>
<tr>
<td>0:20-0:35</td>
<td>I will conduct the experiment.</td>
<td>Students will complete their worksheets.</td>
<td>Worksheets</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cups w/ liquids</td>
</tr>
<tr>
<td>0:35-0:40</td>
<td>Time permitting, I will guide them through the collaborative unusual matter game.</td>
<td>Students will work in teams to identify unusual items of matter.</td>
<td>Worksheets</td>
</tr>
</tbody>
</table>

The main challenge I fear is that students will fail to get that all liquids take the shape of their container from the experiment. However, all should have enough life experience to confirm the validity of this property of matter. Another challenge will be their memories of the material we worked through before February break. Ideally, the anchor charts and discussion will jog their memories.

VII. List the Massachusetts Learning Standards this lesson addresses.

Massachusetts Frameworks for physical science (pg 64):

2. Compare and contrast solids, liquids, and gases based on the basic properties of each of these states of matter.

3. Describe how water can be changed from one state to another by adding or taking away heat.

VIII. Reflection

This lesson proved a bit more challenging than the former two, but for no reason that I could have anticipated. It was simply a Friday and they were particularly noisy and rambunctious. As such, it was difficult to get them all settled on the rug for our review of the vocabulary terms and scientific concepts. To add to the chaos, Patty had removed six children so that they could preform their fables for other classrooms in the primary wing. Knowing that other children were gallivanting around the school preforming a play that they would all do at some point in the day, the remaining students were difficult to keep entertained.

Always a dutiful teacher, I did my best to emphasize the elements of the previous two lessons that had engaged them the most: our meltdown experiment. With the help of this review
and the anchor chart, students readily recalled the vocabulary terms at hand. Our next task, the read aloud, illuminated the essential properties of a liquid succinctly and clearly. Little did I know that my most challenging task of the lesson was ahead.

The class transitioned nicely to their seats, when I passed out their differentiated worksheets. Only a few students jumbled the papers and ended up with the wrong version, but I was able to rectify this situation. My fear of students mixing up the papers is the main reason that I don’t differentiate in this way, but it worked out. Going forward I’ll be less reluctant to create slightly different worksheets for my ELLS.

As I guided them through the experiment, the students made their hypothesis. I was so glad to have such a variety of opinions, which meant that they were eating out of the palm of my hand just as Sara’s class had. Unfortunately, my class was less forgiving than hers about minute differences in the amount of liquid when we moved to the next phase. When the oil and the syrup didn’t quite make it up to one cup, they refused to accept that the three liquids were the same amount. It took quite a bit of forceful convincing to get them to see that the differences were negligible. I wish I had spent the time exploring whether that fact was important or not, but I was eager for them to fill out the worksheet. It seemed that completing the scientific method all the way through (making hypothesis, making observations, and drawing conclusions) would be the most discipline centered task of the entire lesson.

On the whole, the lesson achieved my objective of emphasizing the major property of liquids. At the beginning of our next lesson, I think I can reinforce our gains by connecting the dots between our experiment and the property that liquids take the shape of their container. Hopefully our next two experiments will allow the kids to be more upbeat and less picky about minor differences. Gasses will be challenging, and oobleck will really boggle their minds. My scientist need to be a little more flexible and give a little.