



## UTeach Maker - Showcase Lesson Overview

Ayesha Qadri (Spring 2018)



Lesson Title	Let's Make Some Soap!
UTeach Maker	Ayesha Qadri
Name of collaborator/s	Shelly Rodriguez, Jason Harron
Subject and grade level	10 <sup>th</sup> grade Geometry
<b>Link to lesson plan and materials</b>	<a href="https://ayshaquteachmaker.weebly.com/maker-education.html">https://ayshaquteachmaker.weebly.com/maker-education.html</a>

### Lesson Description:

This lesson was implemented in both of my chemistry inclusion classes during this apprentice teaching semester. Because my students did not make anything throughout the school year in the chemistry class, this lesson was an introduction to making that came with two critical components: students making a bar of soap and designing a soap dish. The maker project took five days to complete. Day one was the introduction to what making is and maker education. I talked to students about my maker journey and asked students to share things they have made or are making in a class. For day two, students made their first round of soap bars using olive oil. After realizing that olive oil does not harden as fast as needed, day three had students learn from day two and make their second soap bar, this time using coconut oil. Students had the opportunity to add scents, color, and use a mold to make their soap bar personal to them. On day four, students used an online software editor, Method Draw, to modify templates of soap dishes and to create their own design if they were ambitious and determined. At the end of the day, students reflected on what they learned so far in the project and prepared to present and talk about their soap bar and holder for next class. On day five, students participated in a gallery walk in which they presented to other classmates and members of the UTeach community, including a University facilitator, some of the UTeach professors, a former UTeach graduate and maker, and my maker mentor. This allowed students to realize the importance of their hard work, share it with their classmates and members of the larger community, and reflect on it. Students then turned in a foldable documenting their soap project, including what they learned and how it can be used to help them with other projects/ideas in another class or in their personal life.

### **Lesson Development:**

Honestly, it took me a while to come up with this lesson. I was watching a lot of YouTube videos, talking to my maker mentor and my UTeach professors about what my maker project for the UTeach Maker program would include. I was sitting in a study room on campus watching cool chemistry experiments when another video on the side about saponification popped up and caught my eyes. I then clicked on it and watched a couple more after I realized that I totally wanted my students to make soap. Moreover, in order for students to have something to hold their soap, I wanted students to design their own soap dish. I then contacted Shelly Rodriguez and Jason Harron, UTeach Maker program coordinators and spoke with them about my scattered ideas. Shelly, Jason, and I then met one morning at Kerbey Lane during which I communicated my ideas, got feedback on my ideas for my soap lesson, and had a rough, multi-day overview of my project. I was debating whether or not the project would be four or five days. I initially wanted each student to laser cut their soap dish. The school I student taught at did not have a laser cutting machine. Because of limited access to materials and equity issues, I decided I would cut 42 students' soap dish design on my own and bring it back to the school. Realizing that this would be infeasible due to time constraints, I gave my students the option that if they were very interested, they can come to UT and laser cut their soap dish design. Also, after incorporating a day for the gallery walk where students presented their work and shared their project with others, the project was planned to take five days.

### **Lesson Implementation:**

I implemented the soap project with both of my chemistry inclusion classes. I have 42 students and every single one of them showed excitement some way along the project, if not during the majority of the project. One thing I learned about my students was that they absolutely love anything hands-on, which speaks a lot to me and fits with my maker philosophy and teaching philosophy. While observing my students make their soap bars and design their soap dish, I realized that my students loved the individuality and agency the project gave them. There were many opportunities students had to make the product of the project their own and they took ownership of it. One of my students did not have very successful soap made of olive oil and was absent on day three when the classes made the second batch of soap. Nonetheless, he was very proud of his small amount of soap that did solidify and presented it along with his soap design. That showed to me that he really cared about the experience making soap and the growth he had as a student designing his soap bar and soap dish. Overall, my students had a great time during the project and did face many challenges. However, they talked to their peers and discussed their

### **Connection to important concepts and skills within the discipline and/or across subject areas:**

This lesson strongly connects with the concept of producing a tangible product in a chemistry class using skills such as observations, trial-and-error, and learning about acids and bases and pH. Students did not cover acids and bases yet, but it was a fun way to introduce the concept during a hands-on project in which students used an acid (olive oil) and a base (NaOH) to make soap. The soap dish design connects with any class that has students designing something

using a software. My students used Method Draw to design their soap dish, but it can be used to design anything and everything.

### **Reflection:**

This project was my first maker lesson project I ever implemented and I think for a first, it went well. Students were interested from day one when asked my their personal making experiences in their life or in the other classes. Students then made soap for two whole class periods and learned from day of soap making that olive oil was not such a good oil to use for making soap. For day three and the second round of soap making, every students except two chose to make their second soap using coconut oil. The realized that coconut oil compared to olive oil thickens faster, which will minimize the time it will take to heat their oil and lye-water solution, which means a faster soap making process as a whole. Students then liked the ideas that I wanted for them to make the soap more personal to them and enjoyed the variety of colors and fragrance and essential oils I had for them. Although the room stinked for a week, it did for a good reason. Students then had the opportunity to go a step further and design a soap dish on a software editor, which some students had a difficulty with. A lot of students said that they needed to be more patient and they also understood the software editor we used, Method Draw, like other editors, can be used for another class project. On the last day, students loved walking around the room and interrogating each other with questions about their soap bars and dish design. They got feedback from another audience and incorporated that into their foldable as well.

### **Thoughts for the Next Iteration**

Making the soap dish design with the software was very structured and was a bit less creative. If students were give more time to work with the software, I would not have had students use the templates. Using the templates helped students give a background of the software and the designs that could be made, which destroys the personal aspect of it as well as the creativity. However, students were able to modify the design, add images and colors, which helped make it more meaningful to them. Of course there were also other areas where I could and would improve on for next time. For future implementations, I would have students bring something in that they made and share it with the class on day one of the project when we talked about making. I would also do this project after we discussed acids and bases. Many students were confused over the difference between the two, which became evident during their presentations. The soap making aspect of the project went well, but I would change it to where students had to use more than one oil the second round and determine the difference in their soap properties after both days of soap making. Students would still be given the opportunity to use the same additives and maybe even be able to bring some of their own additives if they wished! For the gallery walk, I would invite other science teachers to come and have a look around at my students' work. This would allow teachers to talk to students they don't have

as students and for students to share their project with another science teacher, someone they may have or have had or heard a lot of cool things about in the past!