

Clark University Master of Arts in Teaching Program
Learning Activity Plan
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Modified Learning Activity Plan (LAP) Format

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

This lesson will be providing practice in calculating volume, surface area, and 2D area connected to MCAS problems. The problems will allow students to practice solving the problems and applying the formulas to ensure they understand the process for solving.

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

In this lesson, students will be able to solve for the volume and calculate areas of many different shapes in real world contexts, as well as MCAS styled problems. Students will be able to apply these formulas into real scenarios to see how these types of problems can work in more realistic settings. They will be able to recognize which formulas need to be applied to which shape and how to calculate volumes for each of those shapes.

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

My thinking behind this lesson is that students will get the chance to actually practice using the equations rather than understand them. We will have spent more than a week understanding these equations and trying challenging problems, but this will give the students the chance to try these problems in a more standard, MCAS sense to build skills for the actual computation. This also helps familiarize MCAS-type problems that students will likely see when the test comes in a couple months, building confidence for it and preparing students more.

IV. Assessment: Describe *how* you and your students will know they have reached your learning goals. What will your students need to be able to do in order to meet the learning goals?

In this lesson, I will be looking for proper applications of each formula, as well as correct problem solving. Students will need to use their logical thinking and MCAS Reference Sheet to approach these problems correctly. After the practice time, I will be providing a Friday Flashback to assess where students are at as an assessment of where students are earlier in the unit. The Friday Flashback, as well as the problems themselves, will provide a strong assessment of where students are at.

V. Personalization and equity: Describe how you will provide for individual student strengths and needs, such as academic, social, personal (including moderately and severely disabling conditions), and language development level. How specifically will ELL students and students with learning disabilities gain access and be scaffolded?

For some of these problems, I provided a form of UDL through offering multiple choice options as a scaffold. On either side of the paper was the same problem, but students had the choice between the open-ended problem, or the multiple choice answers with it if they needed a better sense to check their work. I also allowed students to pick out the problems they felt they wanted or needed practice on the most. I offered a wide variety of problems, all covering something that would be on the Friday Flashback. This allowed students to get some practice time in before the flashback and gave them the option to choose what they need work on the most, which was helpful for some students that needed more of a challenge or needed something lighter to get kicked off with.

VI. Activity description and agenda

- a. Describe the activities that will help your students understand the content of your class lesson by creating an agenda with time frames for your class (see table below). Be prepared to explain why you think each activity will help students on the path toward understanding.
- b. What particular challenges, in terms of student learning or implementing planned activity, do you anticipate and how will you address them?

Revised 3/25/20 (by online conference agreement!)

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One struggle I can see happening is that students may have trouble putting together their knowledge for more standard practice problems. This can be addressed through reminding students they have all the tools necessary to solve the problems and need to build perseverance skills. I'm also worried about the change in style of problems confusing students since they aren't in the same format they're used to. This will hopefully be addressed by learning through more discovery-based lessons and reminding students to build perseverance skills in problem-solving.

VII. List the Massachusetts Learning Standards this lesson addresses.

- GEO.G-GMD.A.1 - Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.
- GEO.G-GMD.A.3 - Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*

VIII. Reflection

- 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?

This lesson felt like somewhat of a success. I've been providing time for students to practice at their own pace lately in previous units and it's seemed to work well. For this time around, I made a couple minor adjustments. For one, I allowed students to choose their own problems they want to work with so they can choose what they need practice with. I also provided extra scaffolds for some problems by printing them front and back, where one side had no multiple choice answers while the other had them available if students get stuck and need a bit of a hint. I provided a wide variety of problems for the students to work on that would be covered in the Friday Flashback, as well as some review problems from previous units. The students seemed to appreciate the time available to work on the problems. They liked being able to work at their own pace and work with their peers at understanding the problems. The students were asked to be a little bit more independent since I had to talk with other students about their grades, which helped keep them focused and put the responsibility on them to learn. I feel that helped provide a little more productive struggle and space for students to teach each other, which is something I love. Students being able to explain to other students is super helpful for both the helper's understanding and the helpee's. Students liked having the choice over their work and what they need practice with, allowing them to do self reflection and think about what level they're at and where they should be challenging themselves. I feel a big thing I could have improved, however, was providing an answer key for students to check in with. This was a big error on my end. I've done it in the past and students have utilized it very well. It was something that completely slipped my mind, but I quickly learned the importance of after seeing students struggled with some of the problems and didn't have a way to check themselves. Last time I did some form of peer reviewing, where students checked the answers of each other, then provided feedback on the incorrect ones. I didn't have time to do that this time in the same way, mostly due to having to complete grade checkins, but I think this would have been helpful as well. I could have found a way to adjust the peer review so that it could be more independent and still valuable. These were the two biggest mistakes on my part in terms of getting the most out of the learning.

In terms of future LAPs, I will make sure to consider any possible time constraints ahead of time that would take me away from being more proactive with the students. This would allow me to figure out how to adjust things so that students can still get the most out of their learning (through things like peer reviews) without relying on me to pace it. I also will make sure going forward that I have some way for students to have that instant feedback, like with an answer key. The instant feedback might make students more inclined to work harder by helping to build confidence if they see they're getting correct answers, while also helping misguided students in the right direction mathematically.

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Time	What students will be doing	What teacher(s) will be doing	Rationale (how this supports learning goals)
Day 1 - Thursday (60 minutes)			
5 minutes	Joke of the Day Mindful Moment		Keeping the routine of class
10 minutes	Warmup - review exit ticket, favorite no if common mistake is seen	I will run students through the favorite no from the exit ticket the previous day and answer any questions students may have about the problem.	This provides feedback on the exit ticket and helps build a safer learning environment with favorite no.
45 minutes	Students will complete MCAS problems and word problems related to volume, surface area, area, and polynomials, as we have looked at over the past month or so.	I will bounce around, providing help to students that need it. I will also be reviewing grades with students, since the grades for the interim close this week.	This provides practice for students and allows them to begin to get comfortable with MCAS problems, as well as utilizing each other as a resource for learning if needed.
Day 2 - Friday (90 minutes)			
5 minutes	Joke of the Day Mindful Moment		Keeping the routine of class
10 minutes	Warmup: Find the surface area of a rectangular prism with dimensions 2x2x3 inches	I will bounce around to help students with the warmup and facilitate going over it	This gives students the chance to go over a surface area problem as a class, which we haven't done to this point.
50 minutes	Students will complete MCAS problems and word problems related to volume, surface area, area, and polynomials, as we have looked at over the past month or so.	I will bounce around, providing help to students that need it. I will also be reviewing grades with students, since the grades for the interim close this week.	This provides practice for students and allows them to begin to get comfortable with MCAS problems, as well as utilizing each other as a resource for learning if needed.
25 minutes	Students will take a Friday Flashback on volume, surface area, and 2-D area/perimeter	I will provide the students with the assessment quiz.	This provides an assessment on the past week and helps to see where students are at early on in the unit.