

PPAT® Assessment

Library of Examples – Math

Task 4, Step 1, Textbox 4.1.2: Instructional Strategies

Below are two examples of written responses to Textbox 4.1.2 as excerpted from the portfolios of two different candidates. The candidate responses were not corrected or changed from what was submitted. One response was scored at the Met/Exceeded Standards Level and the other response was scored at the Does Not Meet/Partially Met Standards Level. This information is being provided for illustrative purposes only. These excerpts are not templates for you to use to guarantee a successful score. Rather, they are examples that you can use for comparison purposes to see the kinds of evidence that you may need to add to your own work.

The work you submit as part of your response to each task must be yours and yours alone. Your written commentaries, the student work and other artifacts you submit, and your video recordings must all feature teaching that you did and work that you supervised.

Guiding Prompts for Task 4, Textbox 4.1.2

- How do you plan to use academic content language to advance the understanding of the concept being taught in this lesson? Provide a rationale.
- How do you plan to engage students in critical thinking to promote student learning? Provide a rationale.
- How do you plan to use questioning skills to promote student learning? Provide a rationale.
- How do you plan to integrate literacy into the content you will teach to promote student learning? Provide a rationale.

Example 1: Met/Exceeded Standards Level

- Some of the content language that I plan to advance the understanding of the concept being taught includes the use of modular arithmetic. Modular arithmetic is the base that each of the ciphers that we will cover during the lesson. Each of the 4 ciphers uses modular arithmetic to relate any number that we apply mathematic operations to a number of the alphabet. To do this, all calculations are calculated using modular arithmetic with modulo 6. Students have learned about modular arithmetic in a previous lesson. Having an application for modular arithmetic will not only give the students prior knowledge to build off of, but will solidify the topic of modular arithmetic. Other content language that I plan to use in my lesson is adding, subtracting, multiplication, and multiplicative inverse in modular arithmetic. Each one of these words is used to either encode data or decode data that we will cover during the lesson. The students have prior

knowledge of each of these. This will give a base for the students to build knowledge upon.

- b. I plan to promote critical thinking within the students in multiple ways. One way that I plan to have the students think critically is when decoding one of the codes. I plan on telling the students how each one of the codes work to decode the messages. The students will then discuss how to decode a message given a way to encode a message. The students will talk about "undoing" the encoding process. For example, in the Caesar Cipher, to encode a word, you add 3 to each letter. The students will talk about "undoing" addition with subtraction. The students will talk about undoing multiplication with division, but in modular arithmetic, students will need to find the multiplicative inverse of the number in modulo 6. The students will be engaged when trying to find a way to decode the cipher by trying to figure out what the encoded word was. This also allows time for students to collaborate with each other. They will be able to listen to each others ideas and decide which one to try.
- c. One of the ways I plan on using questioning skills to help promote student learning is to ask students, based on how a cipher encodes a word, how do they think they will be able to decode a message. This will give the students an opportunity to problem solve and collaborate with each other to "undo" the encoding process. Students will talk about undoing addition with subtraction for example in the Caesar Cipher. I also plan on asking students why they think it will work. This will give an opportunity for the students to solidify their understanding of the material, because they will not only have to give an answer but also a rationale for why they think that way. When students are able to explain their thinking process, they are able to understand the material and topics on a deeper level.
- d. During the lesson prior to the recorded lesson, the students covered modular arithmetic. To further the students understanding of modular arithmetic, the students read an article that related modular arithmetic to the clock. Even though there are 24 hours in a day, we tell time in 12 hour increments. This is how modular arithmetic works just in modulus. The modulo used is the increment that is used. Students read this article for homework. This solidified their knowledge of modular arithmetic that is used during the recorded lesson. For my lesson, students will also be encoding and decoding different words. I used words that the students would be familiar with, because if they made a mistake and they decoded a message that didn't form a word, they would be able to diagnose what they did wrong by recognizing that it should form a word.

Refer to the [Task 4 Rubric](#) for Textbox 4.1.2 and ask yourself:

- Where is the rationale that supports the candidate's plan for using academic content language, engaging students in critical Thinking, using questioning skills, and integrating literacy?
- Why is the evidence clear?

Example 2: Did Not Meet/Partially Met Standards Level

- a. The academic content language that needs to be incorporated into this lesson is fraction vocabulary so that we can talk about fractions. Specifically students need to understand that a fraction is made up of a numerator and a denominator. That the numerator is the top number of a fraction and tells the number of parts or pieces. The denominator is the

number that is "down under" and represents how many pieces in a whole. Students also need to know that when the denominators are the same, they are called "common denominators."

- b. Because these students are a part of a self-paced math class, the primary engagement of students is with their 1:1 devices utilizing videos and IXL math. The videos are from a video-sharing Web site or are teacher made videos that challenge the students thinking. If students don't understand the concepts from the video, that is when individual or small group instruction takes place. My lesson was for this type of small group instruction. For this unit on fractions there are a number of instructional videos with practice problems and an IXL assessment. The class is generally well motivated to stay on task, although some require prompting.
- c. Questions used to guide thinking and help students construct the answers are a much more powerful learning tool than lecture. Students need to be given the vocabulary definitions and have it demonstrated then be allowed to utilize the meaning to work their math problems.
- d. Literacy integration in this lesson is limited to the story problems on IXL and shown in the students' videos. Because this is math and the goal is to teach and assess mathematical understanding and application, there is limited text involved. On some lessons I am able to draw on current or historical events to provide context and have the students engage in reading a text with me. However, in this lesson the only literacy involved is the reading necessary for the story problems on IXL and in the videos..

Refer to the [Task 4 Rubric](#) for Textbox 4.1.2 and ask yourself:

- Where is the rationale that supports the candidate's plan for using academic content language, engaging students in critical Thinking, using questioning skills, and integrating literacy?
- Why is the evidence minimal?

Suggestions for Using These Examples

After writing your own rough draft response to the guiding prompts, ask the question, "Which parts of these examples are closest to what I have written?" Then read the 4 levels of the matching rubric (labeled with the textbox number) and decide which best matches your response. Use this information as you revise your own written commentary.

Lastly, using your work and/or these examples as reference, consider what you believe would be appropriate artifacts for this textbox.