PPAT® Assessment

Library of Examples – Science

Task 4, Step 4, Textbox 4.4.1: Reflecting on the Whole Class

Below are two examples of written responses to Textbox 4.4.1 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 4.4.1

a. To what extent did the students reach the learning goal(s)? Cite examples from the lesson plan and/or the video that support your conclusions.

b. Reflect on your instructional strategies, interactions with students, and classroom-management strategies. Discuss what went well and what areas you would revise in the future. Cite examples from the video that support your conclusions.

c. Describe revisions that you could make if you were to teach the lesson again. Why would you make each revision? Cite examples from the lesson plan, the video, and/or the student work that would prompt the revisions.

Example 1: Met/Exceeded Standards Level

a. Throughout the lesson, students showed marked progress toward the goal of understanding the relationship between kinetic energy (KE), gravitational potential energy (GPE), and total mechanical energy. As can be seen at 14:30, some students felt sure enough to begin sharing their insight with other peer groups. In their discussions students became increasingly confident in using the technical terms of energy and motion to answer my questions and debate design elements. This comprehension was quantifiably apparent on the post-assessment. The formative assessment (lab report) from the building activity showed that all groups in this class satisfactorily calculated maximum GPE and KE, and identified where the marble accelerated, decelerated, and defied gravity. Engagement remained high throughout, with all groups in this class meeting all rollercoaster requirements. This is conclusive evidence of achieving the second learning goal of understanding the relationship between KE, GPE, and total mechanical energy of an object. To the first learning goal, in the pre-assessment the most frequent issue was

with labeling answers. The unit for energy, Joule (J), was new to students, and less readily understood than something more familiar such as the units for velocity. While the class average on the pre-assessment was 70%, labeling answers correctly averaged 51%. Due to the novelty of this unfamiliar term, I made a particular emphasis throughout the lesson to reinforce understanding of it. In the post-assessment, the overall class average increased from 70% to 95%, with understanding of energy units increasing from 51% to 81%. The students admirably met my high expectations for them on all facets of this lesson.

b. By not permitting the lesson to become bogged down with purely mathematical exercises, student interest and inquiry remained at a high level. As can be seen in the video, critical thinking was catalyzed by the scale modeling activity and the inter- and intragroup discussions (whole video). Students were actively trying to synthesize their shared ideas with their prior experience and background knowledge, as well as with the technical content we had been learning through the introduction and online video, to make meaningful connections in their learning. They were identifying aspects of motion, energy, and (with a little guidance) making scientifically accurate observations. The less formal nature of my classroom management strategies of walking amongst the students (whole video), having them answer questions and defend their designs in a low-pressure situation (8:50, 9:36, 10:00), and sharing my personal experiences and insight (12:25) really helped students settle into the lesson and be confident that I was present to facilitate their learning as more of a guide than a dispenser of information. I am quite comfortable in front of the room, and I think that ease of interaction with students also helped them focus more on the building activity than on worrying about anything else that might be affecting the classroom dynamic. One thing that is abundantly clear from the video is that in future, I need to make a conscious effort to increase wait time after asking questions and receiving student responses. As with the observations students start making at 0:30, students are responding at the same time. That happened a lot throughout the lesson, and I need to find a proper way to balance the active, on-going dialogue that I am looking for with enough time for all students to go through the thought process and come up with ideas and answers on their own.

c. If I were to teach this lesson again, I would reinforce student understanding with an interactive, online activity to allow them to independently explore the ideas of KE and GPE before starting the building activity. For several students, it took real effort to master the concepts of energy transfer and total mechanical energy of an object. Exploring these ideas in a virtual context would have allowed individual students to re-examine at will, strengthening their conceptual understanding and generating more creative and lively debate when design and fabrication began. These personal, visual experiences may help students better "see" what is going on in the units and equations of energy, and thus their application to real-world design. I also believe that spending several more class periods on the actual building exercise would benefit the learning experience. My initial plan with the 45-minute time constraint was to simulate a real-world, time-sensitive engineering project, emphasize the urgency of cooperation and decisiveness, and nurture a supportive, risk-taking atmosphere. Had more time been allowed, I believe the deeper, tangible understanding garnered would have outweighed a minimal loss in the aforementioned. Lastly, when introducing new content such as this that is heavily dependent on mathematics, I should provide students with more exercises that break the concept down into more easily understood parts. One thing that I have noticed with most

of the students who are below grade-level in math is that when they do not immediately understand something, they need concerted encouragement and support to persevere. By breaking complex processes down into more easily understood tasks, I can build student confidence and belief in their own abilities to comprehend and master whatever content we face.

Refer to the Task 4 Rubric for Textbox 4.4.1 and ask yourself:

- What evidence from the lesson plan and/or video does the candidate provide to show the impact of instructional strategies, interactions with students, and classroom management strategies on the students' attainment of the learning goals?
- What examples from the lesson plan, video, and/or student work does the candidate provide to illustrate what revisions could be made to the lesson in the future?
- Why is the reflection effective?

Example 2: Did Not Meet/Partially Met Standards Level

a. Students reached the learning goal because they were able to apply the scientific method during a mini experiment. Students were able to create a hypothesis with their group and conduct an experiment as a group. While doing this they went through the steps of the scientific method.

b. If I were to teach this lesson again I would make sure to walk around more during the review part. I think this would manage some of the bahaviors such as talking I dealt with during the lesson. I think I was so focused on making sure the video was getting me that I stayed in one place the majority of the time. I think my explanation of directions were clear and easily understandable. I think the lesson was fun and engaging and allowed the students to practice using this method without them realizing they were doing it.

c. I would walk around more as I was giving direction and going over the review of the scientific method like I stated above. This would lessen the off task behaviors of the students.

Refer to the Task 4 Rubric for Textbox 4.4.1 and ask yourself:

- What evidence from the lesson plan and/or video does the candidate provide to show the impact of instructional strategies, interactions with students, and classroom management strategies on the students' attainment of the learning goals?
- What examples from the lesson plan, video, and/or student work does the candidate provide to illustrate what revisions could be made to the lesson in the future?
- Why is the reflection ineffective?

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.