# Samantha Loomis

# TPA Task 3-Assessment Commentary

1. **Analyzing Student Learning**

a) Identify the specific standards/objectives and central focus from the learning segment measured by the assessment chosen for analysis. Describe any changes from what was planned for this assessment as described in the lesson plans or in prompt 5 of the Planning commentary.

MN State Benchmarks:

9.4.1.2.5 Compare and contrast passive transport (including osmosis and facilitated transport) with active transport, such as endocytosis and exocytosis.

Objectives:

Students will be able to explain and summarize the processes of diffusion and osmosis.

Students will be able to identify a solution as hypotonic, isotonic, or hypertonic and describe the direction that osmosis would occur (into the cell or out of the cell).

Students will be able to state the differences between active and passive transport.

Students will be able to identify the five different types of cell transport.

\*No changes from what was originally planned in the planning commentary

b) Respond to the prompts below to create a summary of student learning relative to your evaluation criteria.

1. Summarize student performance and understanding in narrative and/or graphic form (e.g., table or chart).

There were two forms of assessment in this learning segment. The group presentations were an informal (ungraded) assessment. For the most part, students did very well on these presentations and exhibited understanding of the concepts. This was shown by their explanations, which used appropriate academic language, and by their responses to my questions. However, there were several groups, such as the one shown in video clip #2, where only one or two students spoke. This made it difficult to gage the other (non-speaking) students.

The formal assessment for this learning segment is what is shown in the student work documents. It was worth a total of 23 points, which is around half the size of test in this class. Most students did *very* well with 75% scoring As and Bs and a class average of 88.7%.

1. Discuss what students appear to understand well and where they continue to struggle, including any misunderstandings, developmental approximations, confusions, or needs (including a need for greater challenge).

The majority of the students have a basic understanding of the vocabulary. This was shown by how well they scored on the multiple-choice section of the assessment.

However, students did not do as well on the short answer questions. This shows me that either a) their understanding is only superficial, or b) the wrong answers were due to poor communication of their thoughts.

The most difficult question seemed to be the short answer question that was an upper level question and asked students to *apply* their knowledge of osmosis to a scenario that was not discussed in class (though others were). Throughout the year, students have continued to struggle with these types of questions.

One misunderstanding that I discovered while reading these assessments was that many students think that soil is made of cells (and is therefore alive). This was one of the most common reasons that students answered short answer question #2a incorrectly. However, most of these students were able to correctly draw an answer to #2b that made sense with what they described in part a. This shows me that the problems with #2a were due to misunderstanding the situation described in the question and not misunderstanding osmosis.

Another common misconception that was revealed in the short answer section was shown by the way that students labeled their drawings of the plasma membrane. Several students though that the plasma membrane is hydrophilic (water loving) on the top side and hydrophobic (water fearing) on the bottom side. They were supposed to have learned that the plasma membrane is hydrophilic on the *outside* and hydrophobic on the *inside* and that this is necessary because the membrane is surrounded by water-based solutions on *both* sides.

Because there were four perfect scores, there may be some students in this class that have a need for greater challenges. However, I do not believe that tests are the right place to put these challenges. This is something I have not though about before. I will definitely consider differentiating for these students in the future as they are *very* bright and have consistently high scores. The test was designed to allow students the opportunity to show me they were meeting MN State Standards and my own learning objectives. The questions asked were chosen specifically because they portrayed whether or not students were meeting the standards/ learning objectives.

1. Consider common patterns across the class as well as groups of students with similar strengths or needs. Cite evidence to support your analysis from the **three student work samples** you selected.

\*Note: there are no English language learners or IEP students in my classes

K is a member of the group of high achievers in the class. He shows a complete and in-depth understanding of the concepts and went above and beyond what was required. I am sure that he would also benefit from more challenging assignments and activities. K understands the concepts well enough to be able to apply them as shown by his response to short answer question 2c. The transmembrane protein in K’s drawing for short answer question 2b is different from any of the pictures or drawing I used in class. This shows me that K had looked at pictures of the plasma membrane outside of class! (This is very unusual for most of my freshman students).

L represented a large portion of the class who did very well (or even perfectly) on the multiple-choice section, but made small mistakes in the short answer questions. This section of L’s assessment showed that she had both of the misconceptions discussed (see above). However, her drawing for short answer question 2b (as well as her perfect score on the multiple-choice section) shows that she did have a good understanding of the movement of water due to osmosis. L’s drawing for short answer question #3 shows that she understands at least one of the functions of transmembrane proteins: that they transport molecules into and out of the cells. This is shown by the circles (which represent molecules) on one end of the transmembrane protein and below the plasma membrane.

N is an example of a student who did not display *any* understanding of the concepts in this learning segment. Even one of the questions she got correct (#9) must have been a guess, as she later got the same question wrong (#14). (I made a mistake and repeated one question twice). Fortunately, her low scores was an outlier in this class. The next lowest score was 17 out of 23 (a 74%).

c) Respond to prompts below by referencing your understanding of the two focus students: K and N.

1. Describe each student’s individual learning strengths and challenges (e.g., prior knowledge of the content, academic development, language proficiency, special needs) relative to the standards/objectives measured by the assessment.

It was my assumption that all students had the same prior knowledge (which was very little) coming in to this unit, though I did not give a pre-assessment.

Based on K's formal assessment, he has met all of the learning objectives and standards for this learning segment. In addition, K is very good at expressing himself in writing, although K struggles to communicate socially. K is also a strong reader as shown by his consistently high test scores and the books he has with him in class to read for fun.

N was able to meet only one part of one of the objectives for this learning segment, “identify a solution as hypotonic, isotonic, or hypertonic” as shown by the top of side 2 on the assessment. N consistently struggles with writing with writing assignments. She often misspells very simple words even when they are written in the questions she is answering. This tells me that her academic language is limited. However, N did poorly on *all* parts of the test (not just the questions that required writing). N likely struggles with reading as well. N has been scoring low on tests throughout the year. It is hard for me to convince her to ask questions and come in for extra help.

1. After analyzing each student’s work sample, what conclusions did you make regarding their individual learning? Cite specific evidence to support your conclusions.

N is not one to take the initiative to ask for help or ask questions. Even when it comes to following directions, she is one who will sit and do nothing rather than ask for clarification. I have to be careful to keep an eye on her and closely monitor her progress.

This makes it even more important for me to include formative assessments that really allow to check whether *every* individual student is understanding the material so that I can catch the students who are lost, *before* the formal assessment at the end of the unit.

**2. Feedback to Guide Further Learning**

1. In what form did you submit your evidence of feedback?

I submitted feedback by writing directly on work samples.

1. How did feedback provided to each focus students address individual students needs and learning objectives? Reference specific evidence in the submitted feedback to support your explanation.

The feedback provided to K was designed to boost his confidence as this is the only area in which he is lacking. Often times, successful students receive less attention from their teachers because the teacher’s focus on the students who need their help. Therefore, I try to make sure K knows that his successes do not go unnoticed by me.

L’s feedback was designed to clarify the misconceptions that she displayed in her answers to the short answer questions #2 b and #3. However, I also let her know that I could tell she was understanding the material and meeting the learning objectives.

I did not give N as much written feedback as I could have because I wanted to wait until I could talk to her individually. I focused on getting her to come in and talk to me. When we met one on one, I asked her about her study habits and gave her some verbal feedback on that. I again strongly suggested that she ask questions and come in for help when needed.

1. What opportunities were/will be provided for students to apply the feedback to improve their work, either within the learning segment or at a later time?

Students were able to use the feedback I gave them, both in writing and during class discussion, to help them when they saw these concepts again on the final exam.

3. **Using Assessment to Inform Instruction:**

For the prompts below, consider what you know about your students and the effectiveness of your instruction when designing the next steps. Be sure to connect your next steps to your analysis of the student performances.

1. Based on your analysis of student performance on this assessment, describe next steps for instruction for the whole class.

The next step after giving the formal assessment was to return the graded assessments to students with feedback written on them. I then discussed the misconceptions that I realized many students have. I asked students if they thought that soil was made of cells and most of them said yes. I then asked the class if soil was alive. They had to think about this question for a while. Several of them decided that no, soil is not alive. I reminded students that one of the characteristics of life we had learned in our first unit was being made of cells. A couple of students challenged me saying that I had told them that their desks were made of cells. I then realized that students were mixing up *atoms* and cells. In the beginning of this learning segment, we had talked about how atoms are always moving and that *all* things are made of atoms.

Once students understood that dirt is notmade of cells, I went through short answer question #2 explaining that *plant* cells were the cells in question. These are the cells that would be affected by osmosis. The soil particles were simply mixed into the salt-water solution. I then drew a diagram on the board of a plant cell in a hypertonic solution for question #2b and showed students the direction that water would move via osmosis. I explained to students that water moving out of a plant's cells would dehydrate it and/or cause it to fall over and eventually kill it. We also discussed how wilted crops could affect a farmer financially.

To address the other misconception. I showed students a 3-D picture of a cell with part of it cut out to show the plasma membrane. I pointed to the inside of the cell and asked students what was there. Most students were able to tell me, the cytoplasm. I asked them what the cytoplasm was made of. Again, most students responded that it is mostly water. I then pointed to the outside of the cell and asked students what was there. As expected, this question was difficult for students to answer as we have not (and will not) learn about extracellular fluid. I asked students what makes up *most* of a living organism. They knew the answer was water. I showed them that water is on *both* sides of the plasma membrane, which is why both the outside layer and the inside layer of the plasma membrane must be hydrophilic. I think that seeing a 3-D cell, instead of a cross section, made it easier for students to visualize this.

I also allowed students to ask any questions that they had on any part of the test. I was confident that, as a class, we were able to move on to the next unit.

1. If different, describe any individualized next steps for the two students whose individual learning you analyzed.

No individualized steps were needed for K or L. After the assessment, I did meet with N a couple times to help her individually, and she eventually got a basic understanding of the concepts. However, it is clear that she will need extra help and scaffolding in the future.

1. In your description, explain how these next steps follow from your analysis of the student performances.

Based on N’s poor performance, it was clear that she needed re-teaching of the concepts starting from the very beginning. I made sure to use a variety of pictures and drawing with my explanations as it appears N’s verbal skills are limited.

4. **Evidence of Academic Language** (NOTE: You may provide evidence for academic language with your video clips OR through student work samples in Task 3. If evidence of student understanding and/or use of the key language demand are well represented in the clips, then respond to the prompts below. Otherwise, omit this prompt and respond to prompt 4 in the Instruction task.)

a) Describe evidence in the clip(s) that demonstrates the extent to which students are able to understand and/or use the language associated with the identified language demand (vocabulary, function/form, and/or instructional language) in ways that develop understandings of the nature of science and scientific inquiry.

I believe that the presentations given in class show significant evidence of academic language use. However, the students’ work samples provide even more insights.

For example, in K’s group presentation (not submitted) he did very little speaking, and it was unclear whether or not he was understanding the concepts. However, when reading his assessment, it was immediately clear that he has a *very* good understanding of *all* of the concepts. K is very shy and quiet, which is probably why it was he did not speak as much as he should have in his groups presentation.

N is also very shy, and did no speaking in her presentation (as show in video clip #2). Her assessment, however, shows that she did not benefit from doing the presentation, as she did not learn most of the material.

L and N were both group members in the video submitted (video clip #2). It was clear that L understood the meaning of both their group’s metaphor and their group’s experiment, by her responses to several questions that I asked the group. She was also able to respond to a question asked by a student. However, another student (not analyzed) did all of the initial explaining.

b) Using this evidence, how well did your language supports or instruction promote academic language development for students with varied language levels?

The evidence provided suggests that the activities I designed promoted academic language development in the majority of my students. However, students had to make *some* effort to learn new vocabulary and participate in their groups explanation.