

Lesson Plan Analysis 3

Eliciting students' ideas at the beginning of the lesson

At the beginning of the lesson, does the teacher elicit both students' ideas about the new content and predictions about the phenomena?

I think that this lesson does a good job at eliciting student ideas and predictions in the beginning of the lesson. First, the lesson introduces the concept of friction and allows students to explain what they think about when they see that word. Then, the lesson gives students a chance to make a prediction about the distance they assume the car will roll in the experiment that they will perform. However, perhaps to elicit more student ideas I may include a question like: Where do we see friction in our lives? Or, how does friction affect our lives? (Perhaps questions like these could make the importance of this lesson more explicit to students?)

At the beginning of the lesson, do students have the opportunity to give *explanations* for their ideas about the new content and *explanations* for their predictions about the phenomena?

Students do have the chance to give an explanation for their initial predictions about the distance the car will roll. In fact, this is something they need to include on their student notebook pages. However, I do not see clear evidence for explanations for student ideas. Therefore it may be important to include a follow up question in the initial discussion on friction like: How do you know that? Or, why do you think that? I also think that posing questions that could relate more to students' lives, like the questions listed in my response to the first question, could also have the potential to prompt more student explanation.

At the beginning of the lesson, do students have the opportunity to record their ideas and predictions and share them with others in the class?

Students have the opportunity to record their predictions in their notebooks. It is not clear whether students share these predictions with their classmates; therefore I would include a specific statement in the lesson that says: Have some students share their predictions in the discussions. Students also have the opportunity to share their ideas about friction with classmates, but they do not have the opportunity to record their initial ideas. To address this weakness I would first have students write a few sentences about their ideas when they hear the word friction. Then I would have students share the sentences they recorded with classmates (either in a whole-class setting) or in partner talk with the individuals that they are sitting next to.

Assessing student learning

Does the lesson provide teachers with assessments that allow them to assess their students' inquiry skills and understanding of science ideas?

I really like how this lesson aligns their assessments directly with the objectives that they have laid out. So, it appears that it does provide teacher with assessments that they can use to test skills. It suggests that teachers can assess students understanding of inquiry by observing students during lab, looking at student notebooks, and observing discussions.

Does the lesson provide teachers with assessments that allow *each* student to demonstrate his or her understanding and skills?

The teacher can assess each student's understanding by looking at their individual notebook worksheets. Therefore the lesson does provide some opportunities for the teacher to observe the abilities of each individual. However, I don't think that the teacher can get a sense of every student's ability by simply observing students in the experiment activity and the lab activity. I think that it would be helpful for the teacher to record some notes during this time if at all possible. I also think that it would be easier for the teacher to assess each student's understandings and thinking if she had them record their initial thinking about friction. Lastly, I recognize that it is difficult to assess some of the inquiry based objectives especially if these objectives will be accomplished by engaging in an activity. Therefore, I think that this lesson overall does a nice job providing assessments that can allow the teacher to see each students skills.

Does the lesson provide teachers with assessments that require students to apply their ideas to a new task or situation?

In this lesson there is an activity that could be used to extend students to a new situation with friction. In this section they investigate shoe traction and friction. However, this section is quite brief and it does not explicitly provide an assessment that the teacher can use. However, if this activity was expanded I think that it could have the potential to provide an assessment. For example, I may have students write their predictions about shoe soles and which could provide the most amount of friction along with an explanation. Then after testing soles and their friction I would have students engage in a discussion, much like the one that occurred earlier in this lesson.

Fostering a welcoming environment for all students

Does the lesson help you as a teacher attend to the needs of individual students in your classroom?

I think that this lesson does provide the teacher to attend to the needs of individual students. Even though the lesson may not clearly state how the teacher does this, I think that this lesson would provide for these opportunities. First, the teacher can attend to students needs as they arise in the group experiment. At this time the teacher can walk around and assist individuals as needed. Secondly, I think that the initial discussion could provide the teacher with a sense of what students know about friction. This knowledge

could be used by the teacher when leading the wrap-up discussion. At this point, the teacher could ask questions that could lead to the discussion and revision of previous alternate ideas that students may have had about friction. Therefore, even though this lesson doesn't clearly say how teachers can attend to the needs of individual students, I think it provides several opportunities in which the teacher would engage in this process.

Does the lesson provide students with opportunities to make connections between the scientific ideas and their personal, cultural, and social experiences?

I think that this lesson could provide students with more opportunities to make connections between scientific ideas and their personal, cultural, and social experiences. I think that the shoe example may fit into students lives better than the car example, because students have experience with shoes on a daily basis, however, some students may not have experience with toy cars, sandpaper, or corrugated cardboard. However, I was impressed that the students got to observe each item before using it in the experiment. By allowing for this exploration, each student will have had at least one shared experience with these materials. However, to really help students provide connections I think it would be important to include a question either in the final discussion or the initial discussion that asks students to think about how they see friction in their lives. I think that this could help students see that friction can be beneficial and harmful (which was an objective of this lesson) and I also think that it could provide more opportunities for students to make connections and understand the importance of friction.

Does the lesson help teachers make scientific terminology accessible to all students?

As I said earlier, I was impressed that this lesson provided a shared experience with sand paper and corrugated cardboard to the class. I think that this would help students understand what these items are without having previously experienced them. While the terms sandpaper and corrugated cardboard wouldn't be considered scientific terminology, it does serve of an example where the lesson is making the science accessible to all students. I think that there are other examples in this lesson where the teacher is helping to make scientific terminology accessible to all students. For example, the teacher initially explains what friction is to the students (after hearing some ideas) then the student engage in an experiment about friction, and finally they discuss friction. These various activities provide students with experience with friction on several different levels which can make this term more accessible to students. However, I think that this term could have been more accessible to students if the teacher was to record a definition on the board of friction (for those students who learn visually). I also think that it is important that the teacher not only explain how to find the average distance that the cars rolled, but also explain what the average distance is. I am sure that there may be some students in that classes that have not heard that term before, therefore, I think it is important to ensure the students understand what that term means, and how it applies to their study on friction. In general, though, I thought that most of this lesson made scientific terminology accessible to most students. I think, however, that it is important to

modify the lesson if the teacher may have English Language Learners, or students with special needs that may require more support.