

Annotated Middle School Science Vignette

Lesson on Light

Annotations	Vignette	Annotations
<p><i>Criteria: The Success Criteria are clearly connected to the Learning Goals.</i></p> <p><i>Goals: The use of a mind map supports students to make meaning and internalize the Learning Goals.</i></p>	<p>In this middle school science lesson, students are studying light.</p> <p>The Learning Goals for this lesson are:</p> <p>I will understand:</p> <ul style="list-style-type: none"> • How light travels from different sources • How light enters our eyes • How shadows are made <p>I will be able to:</p> <ul style="list-style-type: none"> • Identify different light sources • Describe how light enters the eye • Demonstrate how shadows are made • Use key vocabulary <p>The lesson starts with all the students together on the rug at the front of the room. The teacher stands before them and says, “Before we move on, we need to get together and decide what we already know about light. What do we know? Where are we going to take it? What gaps do we need to fill in?”</p> <p>The students turn and talk with a partner to share their thoughts on these questions. Then they share out with the whole class and the teacher records their answers on chart paper in the form of a mind map. This gives them feedback on what they already know and what they still need to learn. One student shares that shadows are created when objects get in the way of light. The mind map activity helps visually depict students’ current understanding and involves them in helping define what they need to learn during the current lesson. The teacher positions herself as one of the learners in the classroom, stating that the class is a learning group together and she is part of that group.</p> <p>After the mind map activity, the teacher shares the lesson Learning Goals with students. They are written on a piece of chart paper at the front of the class and the teacher reads them out loud. Students also write them down in the learning journals they have with them on the rug.</p>	<p><i>Goals: The Learning Goals are presented in language that students can understand.</i></p> <p><i>Goals: The teacher contextualizes the intended learning for the lesson within a longer sequence of learning. Students are supported to consider connections between prior, current and future learning.</i></p>

Questioning: Teacher questioning is integrated into instruction and helps students to think through next steps. It also gives the teacher insights into student thinking and where they are in relation to the Learning Goals.

At times during the activity, students need additional support. To decide which classmate to ask for help, they refer to a bulletin board with different types of “smarts” listed with various students’ names attached to each type. (Students have previously added their names to the types of intelligences they identify with). During lessons, if students need support with word or number smarts, for example, they check the board to find out who to go to with their questions.

Since students know where to get the resources they need and which peers to go to when they have questions, the teacher is free to take a step back, observe, and listen in order to get a sense of how students are learning. She also can check in with various groups, asking questions to gauge the status of their learning and further their thinking.

With one group, she sits down and asks, “How are we getting on here?”

Students share that they’ve created a table to catalogue which things make shadows and which don’t. They state that of the things they’ve experimented with, only a few have made a shadow.

The teacher probes their thinking, “How can we take it further? What can we do now?”

Students answer, “Get some solid stuff.”

“Can you extend what you’ve started and see what you can do?” the teacher asks.

This questioning helps develop student thinking without any direct teaching, reinforcing the idea that it’s the students who do the learning.

At another table, students write down their observations. They shine light from a flashlight through a sheet of yellow plastic film, determining that the plastic is transparent and produces a yellow light when the flashlight is pointed at it. The teacher observes as students in small groups discuss the characteristics of light as it goes through a transparent film, and when light is blocked by an object. She asks several questions about how they are understanding these differences, and through questioning, she encourages students to deepen their theories about what is underway.

As she moves from table to table, she frequently pauses, ask questions, and lets the students know they are on the right track. After leaving one group she says “Excellent, well done. That would be a good starting point to continue forward, don’t you think?”

Using Evidence and Feedback: The teacher circulating and engaging with each group during the lesson is a primary strategy for reaching most students during the lesson to elicit evidence and give feedback.

<p><i>Extended Thinking: The teacher consistently probes student responses to encourage deeper exploration of the learning and to elicit elaborated answers. This engages more students in thinking through their investigations.</i></p>	<p>At various tables, the teacher notices that students are not yet using the vocabulary that they have been learning in this unit on light. She does not correct students when she hears this at table groups. Midway through the lesson, she pauses the inquiry and asks the whole class, “If I had this yellow plastic film and this pencil, would they both create a shadow? What do we need to do?” Directing a question to one student in particular, she asks, “Ian, can you refine the idea for me at all?”</p> <p>“When an opaque object gets shone on, a shadow is formed,” states Ian.</p> <p>“Ok, then,” she says, again addressing the whole class. “What’s the difference between this and that (holding up the two objects in her hand), if we think about Ian’s answer?”</p> <p>“The yellow plastic is transparent,” one student responds.</p> <p>“It’s transparent and see through,” says the teacher, expanding the student’s thought.</p> <p>The student continues, “...whereas the pencil isn’t; it’s solid.”</p> <p>“So they aren’t both solid?” asks the teacher.</p> <p>“They’re both solid, but (pointing to the pencil) that one’s opaque,” answers the student.</p> <p>“Ok, and that’s some of the vocabulary we need to pick up during the lesson,” the teacher concludes.</p> <p>As students complete their experiments, they regroup on the rug to review what they’ve just done, clarify their learning, and refer back to the Learning Goals to see what they still need to learn during the next part of the lesson. The teacher gives them a framework for the next lesson activity. She tells them they will be working in pairs to research answers to the remaining Learning Goals, i.e., to identify light sources and learn how light enters the eye. They will then present their findings in a small poster they create independently.</p> <p>Before getting started, students do a quick turn and talk on the rug to share ideas with a partner about what they want to include in their poster and what it will look like. One student talks about using interesting words to explain the pictures.</p> <p>Addressing the whole group, the teacher asks, “Is there anything else we can use to make sure that our poster has everything in it we need?”</p>	<p><i>Feedback: The teacher frequently uses questioning as a form of feedback to students to further their learning.</i></p>
<p><i>Using Evidence and Feedback: Through conversations with students, the teacher has identified that students need to have their attention directed to the use of key vocabulary.</i></p>		<p><i>Self-assessment: Students revisit their Learning Goals and Success Criteria to consider their next steps in learning.</i></p>
<p><i>Culture: Students have multiple opportunities to collaborate during the lesson which they appear to enjoy.</i></p>		<p><i>Culture: Student participation is enthusiastic and respectful.</i></p>

<p><i>Peer feedback: Students value feedback from one another.</i></p>	<p>“We could use the people with their smarts. Other people with word smarts might be able to help you with writing and what you can put, and people with picture smarts can help as well.”</p> <p>“And remember your partner is there. Why do we need to remember your partner is there? Why is that also important?” asks the teacher.</p> <p>“If they’re stuck on anything or need help,” offers one student.</p> <p>Another student adds, “If you get stuck, they can help you.”</p> <p>Restating the response, the teacher remarks, “If you get stuck, your partner’s there to help you.”</p>	<p><i>Peer Feedback: The teacher asks students to assess one another’s work and provide feedback to improve the quality of each other’s work.</i></p>
<p><i>Peer Feedback: Students use the Success Criteria to give quality feedback to one another. They also have time to make revisions to their work using the feedback they receive.</i></p>	<p>Moving on to discuss peer support, the teacher explains, “We’ll be stopping every so often and asking you to review each other’s work because remember, if your partner is working, working really hard, there might be something in there that you think, hmmm, that word isn’t spelled correctly or something like that, you can then help them to improve their work and make it even better.”</p> <p>During this paired activity, students have the freedom to research their own information outside the classroom. Many students go to the library; others to the computer lab. At the library, some students bring back books they think other students can use. At the computer lab, students are already experienced in using particular websites to get the information they need. One student explains to his partner, “When the sun reflects onto an object, the object reflects onto your eyes. At nighttime, because there’s no sun, it’s not reflecting on any object so you can hardly see.”</p>	<p><i>Tasks: This is the last in a series of integrated, well-connected activities that are aligned to the Learning Goals.</i></p>
<p><i>Eliciting and Using Evidence: The teacher reviews student work product during the lesson which provides her with insight into student progress. She</i></p>	<p>During this activity, the teacher goes around to different groups, asking questions to extend their thinking. Students review one another’s poster drafts against the Success Criteria. At the conclusion of the lesson, students gather again on the rug and the teacher asks a few different students to share their posters. Students hold them up for the other students to see and explain their various components. The teacher selects students to share in advance. Her selection is based on whose poster has information or a presentation style that can benefit the learning of the whole class.</p> <p>Before students leave for the day, the teacher asks students to hold up a traffic light card to show how well they think they’ve met the lesson Learning Goals. The teacher asks one student who is holding up a yellow</p>	<p><i>Self-Assessment: The teacher asks students to assess their own learning.</i></p>

<p><i>uses this information to inform instruction.</i></p>	<p>card what he thinks he still needs to do to get to green. He states, “I don’t really understand the bouncing off the mirror.”</p> <p>The teacher clarifies his statement and asks another question, “So it’s the reflection part you’re not really sure of yet. Was reflection something we were focusing on today?”</p> <p>“No.”</p> <p>“James, do you think you understand how light enters the eye?”</p> <p>“Yeah.”</p> <p>“Do you think if I were to say to you, can you identify light sources, do you understand how light enters the eye, and how shadows are made, would you be green or yellow on those things?”</p> <p>“I would be green.”</p> <p>“So the bit you’re yellow on means you’ve gone one step ahead of us. That’s something we’ll be working on in the next lesson. Well done today.”</p> <p>“Everyone, I’m really pleased with how the lesson’s gone today. Next time, we’ll be moving on to reflection. You’ve all done really, really well.”</p>	<p><i>Self-Assessment: The traffic light self-assessment provides evidence of student perceptions and supports the teacher’s plan for next steps.</i></p>
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