Viewing Protocol

Title: Roller Coaster Physics: STEM in Action
Link: https://www.teachingchannel.org/videos/teaching-stem-strategies
Grade: 5

Learning Goals and Success Criteria

The teacher states that the goal of the lesson is for students to create a roller coaster that is fun and safe. They are learning about potential and kinetic energy, Newton's three laws of motion, and trying to see these laws at work within the design challenge. As an example, one student states that their roller coaster has either not enough momentum or too much friction. When students are engaged in sketching out their individual design, the teacher makes clear her expectations that they communicate through precise labeling and using scientific terms. The teacher also states to the video audience that the objective of the lesson is for students to "design the optimal coaster with the longest ride so that the marble gets to the very end without falling off." This is similar to success criteria.

What do you notice about the Learning Goals and Success Criteria? What commendations and/or suggestions would you offer for this teacher?

Eliciting and Interpreting Evidence

The teacher begins the lesson by having the students share challenges from the previous lesson. She uses this as a formative assessment opportunity to gauge where students are in their learning. Each of the subsequent activities serves as an evidence gathering opportunity for the teacher and students. The teacher consistently rotates around the room, listening in, asking questions, and making suggestions to students to assess and further their thinking. For example, as students are nearing completion of their roller coasters, she asks one group to share their prediction of what will happen when they run the marble through it.

What do you notice about the teacher Eliciting and Interpreting Evidence? What commendations and/or suggestions would you offer for this teacher?

Taking Pedagogical Action

The teacher responds to evidence of student learning through questioning and providing feedback. She has adapted this current lesson based on evidence gathered during the previous lesson - providing students with the opportunity to use more materials to slow their marbles down, since they generally struggled with that in the previous lesson.

What do you notice about the teacher Taking Pedagogical Action? What commendations and/or suggestions would you offer for this teacher?

Student Self and Peer Assessment

When students share their challenges from the previous lesson's learning at the beginning of the new lesson, they are engaged in actively reflecting on their own learning status. This promotes more autonomous learning and peer support. Students also create labeled sketches of their design ideas. These labeled sketches serve, in part, as self-assessments and peer assessments. When students are developing joint designs, they are taking action based on information gained from their previous self-monitoring (e.g., the "chiming" activity, individual sketches, and the computer simulations). Also, if students' designs "fail" during the computer simulations, they need to write on post-its what failed, why, and record a concrete action to remedy the problem. They must then try it again.

What do you notice about the Student Self and Peer Assessment? What commendations and/or suggestions would you offer for this teacher?