

Transcript for Video Clip 5.3

Teacher/video ID:	Michelle Bernstein, 5.3_stella_et_bernstein_L2_c3
Content area:	Energy transfer
STeLLA strategy:	Identify one main learning goal (strategy A).
Context:	The teacher continues a lesson on energy transfer in which students discuss the speed of two marbles rolling down ramps of different heights and how far each marble moved a packing peanut. The teacher challenges students to connect the distance the packing peanut moved and the speed of the marbles to the marbles' energy. Students conclude that the faster marble has more energy because it moved the packing peanut a greater distance than the slower marble.

Video Clip 3a

Time Code	Speaker	Discussion
0:00:01.2	T	So I'm using this group's data for my information up here. It should be similar to something that you found.
0:00:07.4	T	Now there might be a few variables and things that ... different peanuts and the way that we rolled things. But how many centimeters did your—
0:00:15.2	SS	Twenty-four.
0:00:15.9	T	Twenty-four centimeters.
0:00:17.6	SN	Holy smoke!
0:00:18.6	SN	What?
0:00:19.5	SN	Wait, what?
0:00:19.7	T	OK. So ...
0:00:24.6	T	based on this data that we have— Now hopefully you all got something similar. You might not have such a drastic change.
0:00:33.6	SN	Oh, oh.
0:00:34.4	T	But hopefully there was some difference between your slower marble and your faster marble.
0:00:39.6	S	What was your slower marble like?
0:00:41.6	T	OK. So what can we say about the energy of that slower marble compared to the one that we said was the faster marble? What are you guys thinking?

Video Clip 3b

Time Code	Speaker	Discussion
0:00:58.6	T	Savannah.
0:01:00.2	SN	Ramp 2 used all its energy at once, so Ramp 1 didn't, because Ramp 1 wasn't going at a faster speed, but Ramp 2 was.
0:01:08.5	T	OK. So it used up its energy faster. Can you tell me more about what that ... how it used up its energy faster. What do you mean by that?
0:01:16.0	S	I mean that it used its energy faster because the angle is bigger, so it rolls down a lot faster. So in order to get down the ramp faster, it needs to use energy ... more

		energy.
0:01:29.4	T	So the energy it's using, it's using up faster than the one that was at a lower angle or ... So the steeper the angle, the more quickly it uses up the energy that it has.
0:01:41.7	S	Yes.
0:01:42.9	T	OK. Anybody want to add to that? What are you guys thinking about what she just said?
0:01:47.1	T	She said the steeper the angle of that ramp, that marble's going to use its energy faster than the marble that's at an angle that's not as steep.
0:01:59.2	SN	Ooh. Mmph.
0:02:00.6	T	What do you think? Wyatt.

Video Clip 3c

Time Code	Speaker	Discussion
0:02:06.0	SN	Ooh.
0:02:06.6	T	Is there something that both of those marbles did to the packing peanut?
0:02:10.6	SN	[Inaudible]
0:02:12.6	T	Ethan.
0:02:13.4	SN	They both ... Whenever we rolled it, it sort of ... it was like this, and then when it would end up, it would turn and get out of the way.
0:02:19.2	T	And when things do that, when they ... that marble hit it, what did the packing peanut do? When it turned, what that's ... big umbrella idea is what?
0:02:28.3	S	Don't know.
0:02:28.9	T	Think about our focus question for the day. What is ... what kind of energy are we studying today?
0:02:36.6	SN	Ooh!
0:02:36.9	T	What is that key word I'm looking for, guys?
0:02:38.8	S	Mmph! Movement!
0:02:40.0	T	Movement! Motion!
0:02:41.3	SN	I was going to say energy.
0:02:41.8	T	OK. Whoo, thank you. All right.
0:02:44.7	T	So both of the packing peanuts moved. The marbles rolled down the ramp. They were both moving at different speeds, and both of the packing peanuts moved.
0:02:54.8	T	What was the big difference between the two? Zoe.
0:02:59.8	SN	The angle?
0:03:00.8	T	OK. What do you ... the angle of the ramps. And what else about the marbles?
0:03:05.0	SN	Ooh.
0:03:06.0	T	What was another difference between the two marbles?
0:03:07.7	S	Mmph.
0:03:08.2	T	The angle and the ...
0:03:10.4	SN	Speed.

0:03:11.0	T	Speed. OK.
0:03:15.1	T	Think about the distances of the marble. How come this marble was able to push this one farther than this one was?
0:03:26.2	SN	Mm!
0:03:26.6	T	Why was this one able to go farther than this one? That's where I want you to get to be thinking right now. Logan?
0:03:33.0	SN	Because on the ramp that the fast one was at is a higher angle. So it was able to roll farther because the ... the higher angle ...
0:03:45.3	T	Uh-huh.
0:03:45.6	S	of the blo ... of the block helped it. It gave the ... its energy over to the marble, so it was able to roll farther.
0:03:54.7	T	So does it have more or less energy than the other ramp?
0:03:59.8	S	Less.
0:04:01.0	T	Less.
0:04:02.1	S	Wait, more than the other one.
0:04:02.2	T	Think about that. The packing peanut moved farther on the ramp with the steeper angle.
0:04:09.5	SN	Mm!
0:04:10.4	T	It didn't move the packing peanut as far on the ramp with the less steep angle.
0:04:16.9	T	Be thinking about these ideas. Try to connect the movement of the peanut to the speed of the marble to the amount of energy in each of those systems.
0:04:27.3	T	What can we say about that? 'Cause I ... I don't think we're quite making those connections yet. Savannah.
0:04:35.3	SN	Since it was going faster, it gave the packing peanut more energy, so it ... so it moved farther than the slower one.
0:04:44.3	T	OK. You guys agree with that?
0:04:47.0	SS	Yes.
0:04:47.8	T	She's saying that the one that was at the higher angle was able to give more energy than the one at the lower angle. Mr. Wassel, please don't do that. Thank you.
0:04:59.1	T	So what can we say about this here? The energy of the marble as it's rolling down the ramp, does it have more or less energy?
0:05:08.5	SN	Less.
0:05:09.3	T	Less. And we can prove that by what now?
0:05:12.6	SN	The ... the distance that the packing peanut moved.
0:05:15.4	T	The distance that the packing peanut moved. That's our evidence.
0:05:20.7	T	So if this one has less, then this one has ...
0:05:23.2	SS	More.
0:05:23.6	T	More. So you need to be thinking about that when we talk about energy. And energy of motion. OK? We kind of talked ...