Video Supplement

Norms for Watching Video (if not using your own)
- Speak from the "I" perspective. For example: "If I could rewind the tape and ask students a question, I would ask…"
- Be inquisitive, not judgmental. For example: "I wonder what might happen if," instead of "the teachers should have…"
- Justify your ideas and conjectures based on the video clip, and not other parts of the lesson that you didn't see. For example: "I think that the student understands...because in the video she…"
- Focus on how what you learned from the video might help you implement this (or similar lessons) with your own students.

School Context
- School Type: Urban Public Middle School
- School Demographic Information (approximate):
- Students of color: 60%
- Free and reduced lunch: 45%
- English language learners: 5%
- Students with special needs: 30%

Lesson Context
- Subject: 8th Grade Mathematics
- Unit: Exponents and Exponential Identities
- Number of students in class: 24
- Lesson duration: 90 minutes
- Prior preparation: Students have been taught the exponential identities, and they completed pre-work prior to the class. This is a blended classroom, where some material is provided through video instruction.

Video Context
This video takes place in an ICT classroom, where the opening lesson and discussion were led by the co-teacher, who did it through a mix of examples as well as video presented on a smartboard. The video focuses on talk that occurs with a group of three students as they are working to match the cards that are available in the lesson. Calculators and whiteboards were available to students for this lesson.

Discussion Questions
Cognitive Demand: *How long am I given to think, and to make sense of things? What happens when I get stuck? Am I invited to explain things, or just give answers?*

1. **What do students' explanations tell us about what they struggle with or find challenging?**

2. **As a teacher, what questions might we ask or moves might we make that help students struggle more productively by inviting them to make sense of and explain important mathematical ideas?**

Video Transcript

Legend		
T	Teacher	Per and within dialogue
S1 – S4	Students 1 - 4	Per and within dialogue
C	Class	Per and within dialogue
[ ]	Actions/Non-verbal	Dialogue
{{x}}	Sounds like	Dialogue
{{}}	Inaudible	Dialogue

1   S1:   0:02   What's 3 times 3 times 2 times 2, that's twice? That equals, 3 to the second, fourth power

2   times 2 to the fourth power.

3   S2:   Oh, and I figured out a way to do this. I think I remembered a way- Wait, it's in my notebook   [Checking her notes]. Wait

4   S1:   0:32   So 3 to the 4th power and 2 to the-

5   S2:   Is there a, there is an easier way to do this. Wait, wait, wait, where is this? Wait.

6   S1:   Oh, we could also do, can we do 3 times 2, 3 times 2 is 5, and then…

7   S2:   That's what I was going to do, oh my gosh.

8   S1:   3 times 2 is 5, and then {}

9   S3:   No, no, no. That one is 1-3-9, 1296.

10   S1:   There is a way that [other teacher's name] taught me yesterday. It's an interesting way. If you

11   do 3 times 2 is 5, then…

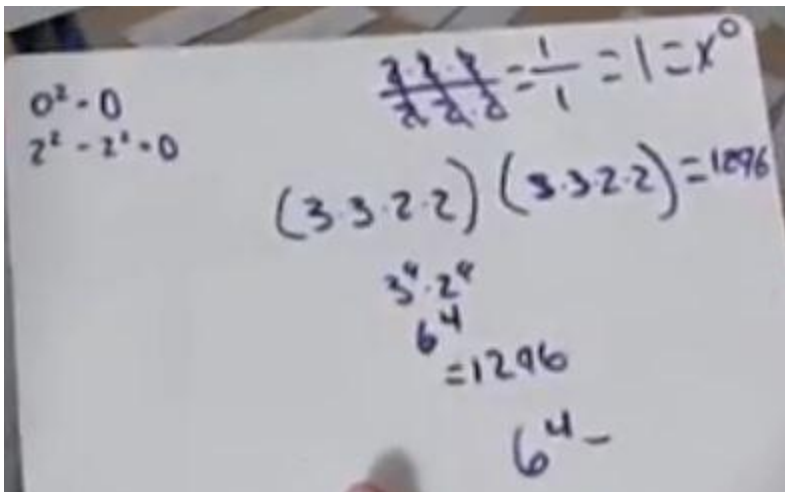|			
12	S2:	1:09	I am out of paper, no! Wait, Is it in here?
13	S1:		Wait if we do 3 times 2 is 5-
14	S2:		It's here [grabs the whiteboard], ok, so you do 3, what's 3 times 2?
15	S1:		6, 5..
16	S2:		I know it's 5.
17	S3, S1:		No, it's 6 [both laugh]!
18	S2:		Wait, what? I thought you said something else, I am sorry. Ok and then this is the way, so 3 times 2 is 6, and then {{you do}} 6 to the fourth power.
19	S1:	1:43	It's 6 to the fourth power.
20	S3:		Don't write in the pencil [laughs].
21	S2:		Yeah, and then you put the 4 here. And then answer that, we check [entering the number on her
22			calculator]. No, no, no, no just look at this way, look at this way. Equals..
23	S1:		I don't know what you're doing right now.
24	S2:		And that equals 1-2-9-6. And then you do, and then…
25	S3:		Wa, wa, wait, hold on, [counting] oh yeah that make sense
26	S1:		Oh it makes sense!
27	S2:		And then! Wait, wait, wait.
28	S3:		That makes sense, yeah
29	S1:		Ok. Ok.
30	S3:		That is the number.
31	S2:		And then you put 6, 4. I know, I am just checking. Um 6, 4
32	S3:		It's true, it's true.
33	S1:	2:22	It's true, we can like show them we did it. This, this and that equals to 1296 [pointing her whiteboard, [Figure 1]. And then this {{6 to the 4th is also 1296}} I have it. Ok so we did all this-

FIGURE 1