Using video clips to identify and promote children's rights as mathematics learners

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ARTICLE

Abstract: The Rights of the Learner state that children have four rights they can exercise in the classroom: 1) the right to be confused; 2) the right to claim a mistake; 3) the right to speak, listen, and be heard; and 4) the right to write, do and represent what makes sense to you. In this paper, the author discusses how she uses a video clip of Gretchen solving a multi-digit subtraction problem as a way of helping elementary teacher candidates learn how to attend to children's mathematical thinking and moments when they exercise their rights as learners. Implications for equity in mathematics classrooms is discussed.

Keywords: Teaching and Learning, Access and Equity, rights of the learner, productive struggle

When children have the chance to show their brilliance in mathematics, teachers can bear witness to sophisticated thinking that may otherwise go unnoticed or dismissed. But too often, children experience mathematics in a way that feels constrained, pre-determined, and dismissive. To push children's ideas (whether finished or incomplete) to the forefront of instruction, teachers can commit to the Rights of the Learner (RotL).

Students can exercise at least four rights when learning mathematics: 1) to be confused; 2) to claim a mistake and revise their thinking; 3) to speak, listen, and be heard; and 4) to write, do, and represent what makes sense to them (Kalinec-Craig, 2017a, 2017b; Torres, personal communication, March 7, 2016). The RotL align with the notion of Rough Draft Thinking (Jansen, Cooper, Vascellaro, & Wandless, 2017), where students' ideas are valued at whatever stage of completion. In the sections below, I briefly outline how I use a video from the IMAP program (San Diego State University Foundation, & Philipp, 2005) to help teachers learn how to teach mathematics with the RotL in mind.

GRETCHEN SOLVING 70-23

The video begins with Gretchen, a 2nd grader, being asked by the interviewer to solve the problem 70-23, written in a vertical orientation. Gretchen says, “That’s easy,” and applies what appears to be a traditional, U.S. algorithm. Gretchen writes 53 as her answer (Figure 1).

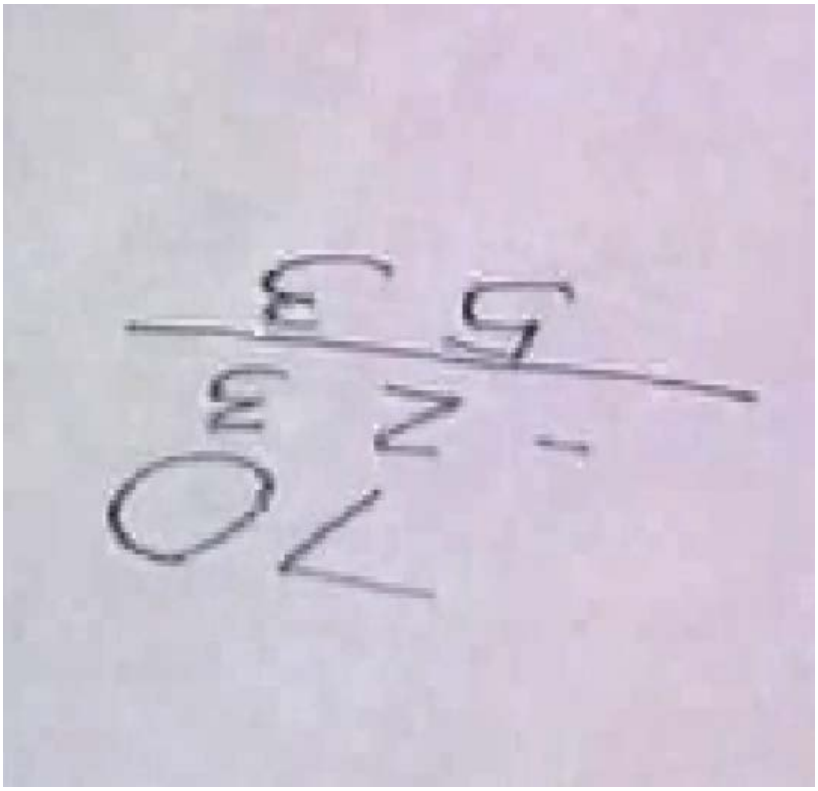

Figure 1. Gretchen's initial strategy and solution. Reprinted with permission.

Upon seeing Gretchen’s answer, the interviewer asks Gretchen, “Can you show me that problem, too, with these blocks?” and points to the base ten blocks on the desk. For her second method, Gretchen pulls out blocks and counts out 7 tens and then 2 tens and 3 ones to represent both quantities of the problem. She first separates 2 tens from the 7 tens (to show 70-20) and then takes 3 ones away from the 5 tens (to show 50-3). Gretchen then counts the remaining blocks (Figure 2) and states she has 47.

Figure 2. Gretchen using the base ten blocks.

Gretchen pauses, returns to her work, and reenacts her initial solution, but concludes by saying, "[sighs] Oh geez! I don't get it." When the interviewer asks her to consider her different answers, Gretchen realizes they do not match and says, "Ok, so 0 take away 3. Yeah, that's 3. Ok. And then, 7 take away 2 equals 5. So, I put 3 there and 5 there." After the interviewer asks, "but what did you get over there [with the blocks]?" Gretchen says "47, but I don't get it."

Sensing Gretchen's frustration, the interviewer asks if there is another way she could solve the problem. Gretchen uses the transparent hundreds chart (Figure 3) and counts 23 spaces back from 70 and arrives at 47; again, confirming her second solution, but still not what she initially determined.

Figure 3. Gretchen using the hundreds chart.

Near the end of the video, Gretchen has not arrived at a final answer, but exclaims, "47 couldn't be right because, like it *has to be* 53." The video ends with Gretchen contemplating what the answer should be and the interviewer prompting her to follow up later.

GRETCHEN EXERCISING HER RIGHTS AS A LEARNER

I use this video nearly every semester, in a course for future teachers. First, it does not end with a tidy conclusion where children arrive at the correct answer. Instead, Gretchen claims that 53 as the correct answer and that she "doesn't get it" even after arriving at 47 with two other methods. Many of my future teachers groan by the end because they want to know whether Gretchen finally learns that 47 is the correct answer.

Second, Gretchen exercises nearly all of her RotL and the interviewer supports Gretchen to exercise these rights. Gretchen says the phrase, "But I don't get it" at multiple points to signal that she is exercising RotL #1 (the right to be confused). Instead of stepping in to clarify Gretchen's thinking, the interviewer encourages Gretchen to use other methods to confirm or disprove her initial answer.

Gretchen also exercises the RotL #3 (the right to speak, listen, and be heard) and #4 (the right to write, do and represent what makes sense) when she says and records 53 despite finding 47 using two other methods. The interviewer inquires about Gretchen's reasoning without quickly correcting her. Interestingly, Gretchen's second and third strategies where she found 47 were conceptually different (e.g., using place value and a "counting back" strategy, respectively), but she was

still convinced the answer was 53. When Gretchen returns to her algorithm, she says, "But three take away zero… that's three." Gretchen's use of the traditional algorithm is a common approach as children develop their understanding of base ten, place value, and algorithms. Because Gretchen exercises her RotL, Gretchen's teacher may know more about her thinking and help her reconcile the solutions.

CONCLUSION

The case of Gretchen is not one that is unique to the IMAP video repository or of other similar video collections. I argue that our perception of children's brilliance suggests a new approach—seeking opportunities for children to exercise their RotL rather than to passively replicate of efficient strategies.

Consider the students in your classroom. What if Gretchen were not a young, white child who felt comfortable exercising her voice in front of educational researchers, but a quiet Black child or a native Spanish-speaker who is learning mathematics in a new language? How can they exercise their RotL while showing their mathematical brilliance? How can we find opportunities to help each child exercise their RotL?

Because implicit bias and harmful stereotypes of Black and Indigenous children pose a real threat to their future success and advancement opportunities, the RotL might create a more equitable classroom for more students. I pose this goal: believe our students have rights as learners and create opportunities that highlight their brilliance.

ADDITIONAL READINGS FOR THE RIGHTS OF THE LEARNER

Boaler, J., & Anderson, R. (2018). Considering the Rights of Learners in classrooms: The importance of mistakes and growth assessment practices. *Democracy and Education, 26*(2), Article 7. https://democracyeducationjournal.org/home/vol26/iss2/7

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