Unexpected Achievements: Teaching English Language Learners in a Remote Environment

Even when the rug gets swept out from under us, we can sometimes land on our feet.

The pandemic started as I, Ian, was wrapping up my school year in Arizona and planning on moving to Washington state. I got a job at Sehome High School in Bellingham, Washington, to teach mathematics. Our school kept teaching remotely through the fall, so I met my new colleagues and students through the computer screen.

Along with teachers around the world, the new remote learning environment left me feeling like a first-year teacher. The majority of my well-used teaching tools, strategies, and curriculum were not available in this new context. In many ways, I learned how to teach as I taught. One of my greatest resources was Elizabeth Rocks, “Ms. Betsy,” to her students.

Betsy is a volunteer who works with our English language learning (ELL) students. Students move to Bellingham from various locations around the world, such as Eastern Africa, Vietnam, and Latin America. Some of these students have almost

no schooling, no knowledge of English, and little or no experience with formal math classes. The ELL department expanded. Our school's most introductory math class is algebra, and some of these students were not prepared to be successful in that course, so Betsy transitioned to supporting ELL students in mathematics.

Of my five geometry classes, almost all of my ELL students are in one section, with Betsy there to support. Betsy is not an academically trained educator, but her insights were invaluable this year. She helped me see that something special was happening with her ELL students[1], and we want to share her insights with you. The following is a letter that Betsy wrote to capture what she saw.

In a tiny corner of the Bellingham School District online learning environment of the fall 2020 semester, somewhat remarkable and unexpected achievements were made by a small group of students usually considered most unlikely to succeed in this very difficult learning environment. Though I am under no illusion that the achievements I saw can be easily replicated, as they depend on some unique circumstances, I believe it is worth pointing out some of the successful tools and practices so that more creative minds can perhaps apply them in the future.

I supported ELL students in both Ian's mainstream geometry class and a geometry support class with [another teacher]. That meant two solid hours of back-to-back geometry every day. Last year, there was some attempt to acquaint these students with their computers, and some use of Desmos [an online calculator and math learning platform], but in general that was left to the end as extra work, usually only after a set of problems was completed. This group never became very familiar with their computers. Because of online learning, of course, the technology piece was no longer optional.

Betsy's experience with and knowledge of these students had a large impact on how I thought about planning curriculum. Considering students' learning needs made me think about which technological resources to use, how to communicate how to use those resources, which concepts would be most accessible to them and which concepts we could build to later, and how to provide motivation to engage and persevere.

The beginning was painfully slow and required superhuman levels of patience,

from all of us. Ian relied quite a lot on the use of GeoGebra [an interactive math teaching platform], which I came to see as a very effective teaching tool, not just for geometry, but for language and technology learning as well. A student would share their screen, and I would guide them verbally to plot points and create certain figures on Geogebra.

Total Physical Response (TPR), as first described by James Ascher and introduced to me through Berty Segal Cook's *Teaching English Through Action* (1999), is a language learning technique based on first listening, and then understanding and carrying out commands, similar to the way babies learn their first language(s). Using GeoGebra in this way can be the ultimate TPR lesson. For example, a student sharing her own screen is told to plot a point. This skill had not yet been solidly grasped by this group, even after algebra, but doing it many times every day as a response to a command reinforced this essential skill in a way that paper and pencil never have. Also, since students are sharing, if they make a mistake, others will correct them.

After seeing the benefits of Betsy's work with this group of students, I intentionally made an effort to use TPR techniques with all my students. The process was slow—it would have been much faster to share my screen and just show them—but the benefits were obvious in time. Even though my other students were already fluent in English, they were also learning the languages of technology and geometry.

Following Ian's curriculum, students were then asked to use the GeoGebra tools to, e.g., "make a perpendicular bisector." In the case of some students, to listen to and carry out such a task required them essentially to translate between four languages, three of them new: their native language, English, technology, and math. The growth of their skill in this area was palpable as the tasks and learning became more complicated. Watching a Zoom screen and listening and talking about a problem required a level of focus that I have not seen in a classroom. In many ways, the communication is much more intimate and the person you are talking to much closer. Once students were able to follow my directions, I asked them to perform the same skills without direction, and then to explain how to

make figures and solve problems to the other students while performing their magic with GeoGebra.

Initially, as a math teacher, I was concerned that these students were only learning procedures. Push this button, then that button, then this other button, and you're done! I was concerned about whether they were learning any math. Betsy helped me see that our students were learning so much more than math, and that what they were learning was foundationally necessary to make my geometry learning goals accessible.

The constant repetition of the slippery vocabulary of geometry (polygon, Pythagorean, perpendicular…), as students used the GeoGebra tools, made the new words stick in a way I have not seen in other classes. Another benefit of following directions on GeoGebra is the requirement of precision. When you plot a point, you must get to the exact intersection of the grid lines. This is a challenge for many students on paper; points and lines tend to be wiggly and uneven at best. Even though the technology is aiding in the plotting precision, seeing our geometric shapes in this very clear, clean way is a powerful aid to students. GeoGebra allowed students to explore more interesting geometric concepts. Previously, I used technology sparingly because I have seen benefits in students learning the minutiae of plotting and graphing and making decisions about axis scales. Even students' imprecise drawings can drive mathematical conversations and sense-making. But there are benefits in removing the minutiae and focusing on the bigger picture.

Success at this kind of work—"I can build a circumcenter using perpendicular bisectors!"—began to empower these students. When they could follow all the steps, and then could articulate each step as they did it, students felt a sense of accomplishment that they began to remark on and that I reinforced. They expressed positive feelings of accomplishment when solving problems, especially when overcoming challenging ideas. Comments like: "It feels like my brain is growing," "It opens my head," "When you learn something it stays in your brain," and "You keep practicing until you get it" indicated students' true ownership of learning.

One of my personal goals for teaching remotely was to do just that—increase students' ownership of their learning. I recognized that students would need to care about their own learning for remote instruction to be successful.

This exuberance over mastering skills actually led students to ask for more time to work on math. Two hours a day wasn't enough for some of them. One student came every afternoon for more, and I held classes on Wednesdays and some weekends as they frequently requested them.

Betsy connects with students personally. She talks about athletics with Emil and cooking with Ayla. She points out strengths that she sees in students, like Khan's algebra skills or Kenenisa's enjoyment of challenges.

Part of the key to this experience was clearly the small group of students, who already had a base of trust with me and with each other. We had more time together than is possible for the vast majority of classrooms in this environment. The back-to-back support with the main class gave them a super dose of math every day.

I already knew the importance of a culture of trust and collaboration, but I did not know how to develop that culture in a remote learning environment. Observing Betsy's group of students led to me use intentional grouping with the rest of my students. I created groups of students that either already knew and trusted each other or that I thought could come to trust each other. I kept these groups consistent for long periods of time, checking in frequently and having them do tasks to get to know each other. There isn't the strength of culture that Betsy's group has, but I am hopeful this change will lead to small pockets of community.

Another key to the success was the way Ian set up his lessons. Every day was set out clearly and concisely, and a continuous thread of a "big math idea" was woven through the entire curriculum. This made it easy for me to follow and then convey to students, and the consistency and clarity of the format was easy for us to work with. I communicated to Ian most days about the capacities and needs of the ELL students, and he responded by tailoring lessons specifically to them. Since he had such a clear idea of the message he wanted to convey, he was able to simplify content without sacrificing important learning points. The focus was always on

presenting problems that expose patterns, and the question, “What patterns can you see?”

Betsy’s feedback helped me refine my planning. In the face-to-face classroom, I can read my students and adapt the details of my plan to fit their immediate learning needs. Remotely, I found this challenging. My conversations with some students helped guide me, but Betsy’s shared insights strongly impacted the clarity of my lessons.

Most days Ian made a short video to explain the lesson. At first I was a bit skeptical of the value of that for our kids, but I came to see it as a gift. The videos were so clear and concise in content and delivery that I was able to convince the students to use them as a tool, by watching and rewatching, and by pausing to take notes and make drawings. If pandemic learning shows students they can learn almost anything online by watching a video . . . well, things could be a lot worse.

I read recently a reference to “the sad simulacrum for human contact that is Zoom” (Menand, 2020). Of course we are all experiencing online learning as such. But for this small group of students, and for others, there have been notable and unexpected benefits, among them: increased abilities in managing technology (also clearly true for teachers!); the possibility of an intimate setting for concentrated communication without the distractions of an in-school classroom; and (forcibly) learning to be flexible in their acquisition of learning. Still, let’s hope it is over soon!

Betsy shared this letter with her ELL department and our school’s administration. Betsy and I continued to talk about their successes and we made new goals for them as language learners and as mathematicians. More complex mathematical relationships became accessible with their improved skills in language, technology, and collaborative learning. As the school year progressed, this group’s conversations transitioned from procedures to focus on ideas and reasoning. When Betsy couldn’t make it to support class one day, I asked the group for a volunteer to lead. I returned later to find Jasmin explaining a problem about similarity. She explained the problem in depth, how each side was multiplied by the same factor. Then Tien explained the problem back, working through each

piece herself. Jasmin then explained how she had originally been confused with a piece of the problem and how she had made sense of that piece. This conversation occurred with no prompting or guidance from a teacher; Jasmin and Tien worked through the problem together and reflected on what they learned.

When I started teaching remotely last year, I mentally and emotionally prepared myself to accept less success than I normally experience. However, with Betsy's support, "Somewhat remarkable and unexpected achievements were made by a small group of students usually considered most unlikely to succeed in this very difficult learning environment." They grew in their language abilities, their collaboration skills, their curiosity, and their awareness and ownership of their learning. I wanted to write and share this piece with you because, as Betsy writes, "Though I am under no illusion that the achievements I saw can be easily replicated, as they depend on some unique circumstances, I believe it is worth pointing out some of the successful tools and practices so that more creative minds can perhaps apply them in the future."

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[1] Information about students has been de-identified, and all student names are pseudonyms.

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Elizabeth "Betsy" Rocks has been a volunteer in the ELL department at Sehome and Bellingham High Schools in Bellingham, Washington, for more than 15 years. She started teaching English as a volunteer at her children's high school after

spending 14 years in South America. Realizing that foundational math was an excellent path to learning English, Betsy discovered a passion for teaching math. She tries to keep up with the professionals by following the youcubed group at Stanford and others. Reach Betsy at betsy.rocks@comcast.net.