Case Study: Christine, Grade 7

Student Background: Christine is a 12-year-old in 7th grade who has significant physical disabilities. She is in a wheelchair and has no use of her arms or legs. She has a high number of seizures that sometimes take away from her ability to respond to instruction. Christine missed over two months of 6th grade due to hospitalizations. Christine has vision and will sometimes make an "ee" sound for yes. Her teacher, Mr. Costas, has asked for an assistive technology evaluation for Christine to obtain more options for her communication. Meanwhile he has been working hard with Christine to get her to move her eyes right or left to indicate an answer using pictures or objects or to vocalize "ee" when he taps the right answer. Christine has a head switch to use to operate the computer, but has not mastered doing so without physical guidance. To date, Christine has shown minimal responses to either read-aloud stories or any math work. She received the lowest possible raw scores on last year's state alternate assessment. In contrast, the teacher has already been surprised in the first week of school to see how Christine will sometimes watch him closely as he teaches. He thinks Christine might have more interest and ability than has been discovered so far.

High-Quality Planning and Instruction: The 7th grade mathematics class in Christine's school is working on Grade 7 Eureka, Module 6, Lessons 23-24. There is a large gap, however, between the grade level expectation to solve real-world problems involving area, volume, and surface area and Christine's lack of the most basic numeracy skills.

Louisiana Student Standard	Louisiana Connector
7.G.B.6 Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (Pyramids limited to surface area only.)	**LC.7.G.B.6b** Find the surface area of three-dimensional figures using nets of rectangles or triangles.

Her teacher, Mr. Costas, consults the crosswalks in order to target the "just right" Louisiana Connector. Once done, he wants to understand the task more deeply before crafting the appropriate learning target, assessments, and activities, to ensure Christine is able to engage with the material. He consults the Essential Elements Card that delineates the most basic concepts needed to address the content, which can be helpful for a student like Christine. For example, there is an Essential Elements Card in geometry for 7th graders that might be helpful in planning for Christine. What it shows is that the representations needed for this skill include the "use formulas for surface area" and "understanding symbols from formula".

To give the lesson purpose, the teacher plans an activity in which the student needs to find the surface area, such as choosing which sheet of wrapping paper will be large enough to wrap a gift. Because Christine has begun to watch the teacher closely with her eyes, the teacher is going to use an enlarged object of a shoebox and have Christine look toward the length as the teacher points to it. Then Christine will lift her head to indicate the width. The teacher will then show Christine two pictures, one showing the length and one showing something else, and have her turn her eyes toward the length. Because Mr. Costas is not sure what Christine understands, he will then show her the height. He will check understanding by having Christine nod when he indicates the height. Finally, the teacher will have Christine watch as another student calculates the surface area of the shoebox by plugging the numbers into the formula on the whiteboard screen.

As Christine's understanding of the math concept increases, as well as her ability to manipulate objects on the screen using a switch, Mr. Costas will help Christine show the surface area. To build Christine's numeracy skills, the teacher will

also have her communicate the first number in the height and the width by having her choose between one of two numbers with her eyes.

The work is slow and methodical but, as routines are established and practice is repeated, it becomes clear that Christine is able to identify length, width, and height on a rectangular figure. The next step, Mr. Costas believes, will be computation of the surface area for another real-world problem.