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Please enjoy this complimentary excerpt from *Productive Math Struggle*. This resource outlines how to identify what is and isn't productive struggle.

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What Productive Struggle Is and Isn't

We must know what productive struggle is to value it, plan for it, look for it, and support it. To define productive struggle, let's first consider each word separately. *Productive* tells us that something is worthwhile, that it makes progress, or achieves a goal. But what about *struggle*? On first glance, struggle might seem to communicate something entirely different, the opposite of progress—images of people thwarted, stuck, foundering, or confused. And it is true struggle is about all of these things. People struggle when they need to do something, get somewhere, but with no clear indication of what exactly to do next. It is, however, this lack of direction that also creates an opportunity for learning and here is where the productive part comes in. Productive struggle can be thought of as *purposefully reacting to an unclear challenge so that progress is made or learning advanced*. When struggle is productive, according to Jackson and Lambert (2010), it can empower students, helping them develop positive attitudes about learning and confidence in their own efficacy as learners.

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Jackson and Lambert (2010) characterize productive struggle as leading to positive dispositions about learning, empowering students with a sense of hope or efficacy, and ultimately yielding results. But, of course, not all struggle is productive. Struggle becomes unproductive when students make no sense of a problem or no progress toward the mathematics goal (Warshauer, 2011). Unproductive struggle can cause teachers and students to want to throw up their hands, asking “What did we just do?,” or worse yet, “Why did we just do that?” But beyond being frustrating, unproductive struggle also has the potential to be downright damaging. As Jackson and Lambert (2010) point out, when students consistently struggle and produce nothing, they get the message that learning is not possible, they are inadequate, and they may even begin to question their own personal worthiness.

It can cause someone to fall out of love with math.

Students, educators, and parents come to the idea of struggle with wide-ranging beliefs that can complicate how struggle unfolds in the classroom. Some people believe that a student can't succeed until he or she struggles. Others believe that struggle (unproductive or destructive) is how one “earns their stripes” or that everyone has to deal with struggle or that one should just get over it. These “positions” deflect attention from the real challenge, that is, how do we craft productive struggle and support students as they engage in it?”



How do you know if a student is struggling productively or unproductively?

What Struggle Looks Like

Knowing what struggle is and what it looks like are two different things. We need to be mindful of how we recognize and interpret the struggle in our math classrooms as it manifests in observable behaviors. Some student behaviors indicate that struggle is productive. Other behaviors may signal the opposite, as students try to avoid the struggle by diverting attention to something else. Here is where struggle can become unproductive and possibly destructive.

Unproductive struggle takes many familiar forms. For some students it looks the same each time. For others, it changes depending on a variety of internal and external factors. Obvious signs of struggle are frustration, anger, and possibly physical altercations. For many students, their reactions are the result of being unable to process or cope with the built-up frustration. Others, seeking to avoid the thing that triggers their struggle, might make a bathroom request or make up a reason

to visit the nurse. For some students, struggle overwhelms their emotions and so they cry or just give up and put their heads down. And for some students they distract or deflect the struggle by changing the unwanted attention to mischief or joking behavior.

Conversely, there are a number of different behaviors that communicate a student’s willingness to embrace struggle. A student who values struggle may draw a representation in their math notebook. They may get out of their seat to reference a chart that is hanging on the other side of the classroom. Or they may use crayons from their desks as a make-shift manipulative to model a mathematical situation while solving a problem.

These behaviors, when viewed through the lens of misbehavior rather than struggle, can be misinterpreted. For example, a student’s turning around to talk with a classmate could be viewed as avoidant behavior. But what if the student is asking their classmate a question? That is a good way to make sense of a problem. Or a student may be drawing on their paper, which resembles doodling from afar; however, the drawing turns out to be a number line that the student is using to solve a multiplication problem. Teacher assumptions about behavior can damage attempts to persevere through struggle.

You also have to consider patterns within the behaviors you observe. Does Hector immediately ask a question every time you tell students to get started? Does Robert always consult with the same group when he has a question? Does Brooke always need to go to the bathroom just before the class is about to play a fact game? You need to ask yourself if these patterns of observed behavior tell you something in relation to struggle. In many instances they will.

In Figure 1.1, we identify a few behaviors that might be evident in a math classroom. The behaviors aren’t definitive, and the list is certainly not comprehensive. However, the table may help you reflect upon why a behavior you observe in your own classroom might be happening. If you recognize a number of unproductive behaviors, you can work on diminishing their frequency as you help students develop a deeper appreciation for struggle and how it contributes to their learning. There are a number of suggestions in the upcoming actions that can help you do this.

Figure 1.1 • Behaviors Associated With Productive and Unproductive Struggle

	Behaviors That May Signal Struggle AVOIDANCE	Behaviors That May Signal Struggle DEFLECTION	Behaviors That Could Signal Struggle FRUSTRATION
UNPRODUCTIVE STRUGGLE	<ul style="list-style-type: none"> Asking off-task or unrelated questions Going to the bathroom, getting a drink, sharpening a pencil, going to the nurse Playing inappropriately with materials Putting head down Copying others’ work Talking with classmates 	<ul style="list-style-type: none"> Making jokes, silliness, teasing Asking unrelated questions, sharing unrelated stories Being rough with materials Acting out 	<ul style="list-style-type: none"> Arguing with statements or directions Acting out Breaking pencils, being rough with materials Teasing classmates Looking at what others are doing Putting head down Tearing up, crying
PRODUCTIVE STRUGGLE	<p>Behaviors That May Signal Struggle to UNDERSTAND the Problem</p> <ul style="list-style-type: none"> Asking on-task or related questions Using manipulatives Drawing a representation of the problem 	<p>Behaviors That May Signal CONSIDERATION of Possible Strategies to Use</p> <ul style="list-style-type: none"> Getting up to get manipulatives or tools Talking with a classmate Asking a classmate for assistance Walking around the room 	<p>Behaviors That May Signal How Students ASSESS Their Process or Strategy</p> <ul style="list-style-type: none"> Walking around the room Looking at reference materials (journals, charts) Using calculators or other tools Talking with classmates