

Productive Struggle

Productive struggle in mathematics is the ideal spot we all experience when we have just enough support and prior knowledge to engage with a challenging problem. It leads us to use some creative problem solving so we will stretch our thinking and develop the skills needed to persevere. In class or in life, when students face problems they do not immediately know how to solve, we do not want them to give up. We also do not want to rush to “save” them. Doing the thinking for a child by explaining what must be done or providing a formula ensures there is zero thinking and, thus, no learning.



You do not have to be a “quick thinker” or “good memorizer” to be successful in Math. Stanford Professor [Jo Boaler](#) and her team warns that instruction based solely on speed and memorization can lead students to misunderstand and dislike math. The highest achievers are those who can see the bigger picture and make connections between different mathematical concepts. There is also a growing body of [research](#) that shows that getting students to the point of productive struggle is one of the keys to achieving deeper learning and creative problem solving.

Just like in the classroom, you as a parent can provide opportunities for your child to share their reasoning and celebrate their different ways of thinking. This encourages the process of productive struggle. Children engaged in this process, build the creativity and confidence that allows them to attempt new challenges and problems they have never seen before.

Here are [messages](#) our children should hear:

- “Problem solving is what we do when we don’t know what to do.”
- “You worked really hard on that problem to find a solution. That is impressive.”
- “How does it feel to know that you wrestled with that tough problem and figured it out?”
- “I’m glad you made that mistake. Your brain grew at that moment. ”
- “Doing mathematics is about being challenged. This is hard. This is fun!”



So, let’s value and celebrate the productive struggle our children experience and forget the “that was easy” button.

#MathFail?

This month’s #MathFail? is maybe not a “fail”, but rather how the image is used to represent various proportions. Can you fix this image to best represent the fractions of blood types?

Try engaging your child(ren) in discussions about the image. What do they notice? What questions do they have? What would their image look like instead?



Credit: Dan Finkel @MathforLove