

HOW TO AVOID

RUSHING TO THE ALGORITHM

So you can build resilient problem solvers

1

FOLLOW THE CURIOSITY PATH

Sparking curiosity is your first step to building resilient problem solvers. Students' curiosity must be peaked if they are going to stick with the problem. By withholding information to create anticipation and moments of noticing, wondering and estimation is the sure fire way to spark that curiosity! **PRO-TIP:** Cover up information in the problem. Reveal it as students ask for it!

2

LIMIT PRE-TEACHING

The most common mistake teachers make is to pre-teach all of the content up front so that students have the skills you want them to use in the problem. Avoid pre-teaching and allow students to attempt using their own strategies first. Your class will atmosphere will transform. Students will feel that their ideas are valued. **PRO-TIP:** Use random groupings so students can share their strategies with peers.

3

MAKE THE UNFAMILIAR FAMILIAR

Routinely have students solve unfamiliar problems through a supportive productive struggle process. We assume that students will just be good problem solvers but when do we every teach them HOW to be problem solvers. They need practice with support being in tough situations that turn out positive. As an example, if I didn't push my students to solve these problems routinely on their own to start our lesson then they would not only miss gaining the experience to persevere but I the teacher would also miss gaining valuable information about what my students know or don't know. **PRO-TIP:** Be consistent. Problem solving must be a regular part of learning not just a once a unit or end of unit thing.



LOWER THE STAKES

In order for students to take risks and learn how to persevere the stakes for failure have to be low. It has to be painless to make mistakes. How are we doing this in our math classes? **PRO-TIP:** One easy-to-implement technique to make risk-taking low stakes is to bring **dry-erase boards** into your classroom. The non-permanence of the boards makes risk taking easy and it's one of our favourite things. Students can attempt strategies quickly and wipe away quickly if needed. You can read more about the research behind non-permanent surfaces from Peter Liljedahl. <http://www.peterliljedahl.com/>



SHOW WHAT YOU VALUE

Create an assessment routine that promotes growth instead grades. Students quickly learn what you value. If we're saying to them daily that we value the process of their learning over the final answer then how to we prove it to them? Your actions speak loudly. Give your students room to show that they have persevered while solving problems. **PRO-TIP:** Learn how you can implement an assessment routine that promotes growth and resilience by watching Conall's Assessment story: <http://makemathmoments.com/conall>

