



Risk Taking in the Mathematics Classroom

RESEARCH BRIEF | Winter 2026

What is risk taking in the classroom?

Risk taking is any action a student takes in the classroom where the outcome, response, or correctness is uncertain; this may include sharing ideas, asking questions, or attempting to do something new. Perceived risks vary but often include the possibility of making a mistake, appearing less knowledgeable than one's peers, asserting an incorrect claim, or taking a viewpoint no one else shares.¹

Why does risk taking in mathematics matter?

Research has found that girls are significantly less likely than boys to take risks in mathematics classes.² Girls may be more inclined to follow algorithms or set ways of solving math tasks, in part because they feel less confident or are focused on pleasing teachers and getting the right answer. Research suggests that risk taking may lead to greater job satisfaction, career success, and resilience.³

What practices support risk taking in the classroom?

- **Establishing an engaging community of learners⁴:** Students see one another as colleagues rather than competitors. Educators design opportunities for discussion, collaboration, and for sharing both processes and solutions. Students feel comfortable questioning one another, themselves, and the teacher.
- **Open ended, accessible tasks⁵:** Teachers design tasks for students to grapple with which have “low floors and high ceilings,” meaning they have multiple entry points and can be made more challenging as needed. These tasks, which have more than one right answer or multiple solution strategies, are not only more engaging, but also involve a productive struggle that supports students' self-efficacy and willingness to attempt an answer.
- **Individual think time and metacognition⁵:** Opportunities for students to think through or begin to work on a task independently ensure all students engage and think for themselves before hearing from a peer or teacher. Part of this independent thought time should also include students monitoring and evaluating their own learning process. Independent work and metacognition lead to strong self-efficacy and higher levels of intrinsic motivation in the classroom.

1 Beghetto, R. A. (2009). Correlates of intellectual risk taking in elementary school science. *Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching*, 46(2), 210-223; Leinwand, S. et al., (2014). *Principles to actions: Ensuring mathematical success for all*. NCTM, National Council of Teachers of Mathematics.

2 Di Tommaso, M. L., Contini, D., De Rosa, D., Ferrara, F., Piazzalunga, D., & Robutti, O. (2021). Tackling the gender gap in mathematics with active learning methodologies.

3 Lubinski, S. T., Ganley, C. M., Makowski, M. B., Miller, E. K., & Timmer, J. D. (2021). “Bold problem solving”: A new construct for understanding gender differences in mathematics. *Journal for Research in Mathematics Education*, 52(1), 12-61; Warrell, M. (2025, May 12). How The Risks We Take Shape Our Lives (And Why You're Taking Too Few) *Forbes*. <https://www.forbes.com/sites/margiewarrell/2025/05/12/how-the-risks-we-take-shape-our-lives/>

4 Leikin, R. (2009). Exploring mathematical creativity using multiple solution tasks. *Creativity in mathematics and the education of gifted students*, 9, 129-145; Smith, M. S., & Stein, M. K. (2011). *5 practices for orchestrating productive mathematical discussions*. Reston, VA: National Council of Teachers of Mathematics.

5 Hiebert, J., & Grouws, D. A. (2007). The effects of classroom mathematics teaching on students' learning. *Second handbook of research on mathematics teaching and learning*, 1, 371-404; Kullberg, A., et al., (2013). The same task?-different learning possibilities. In *ICMI Study 22*, Oxford, UK, July 2013 (pp. 609-616).

6 Schoenfeld, A. H. (2013). What's all the fuss about metacognition?. In *Cognitive science and mathematics education* (pp. 189-215). Routledge; Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational psychologist*, 25(1), 3-17.

At Hewitt by Mathematics Teacher Mike Del Galdo



In my 6th grade math classroom, I intentionally cultivate confidence by designing learning experiences that promote student choice, collaboration, and independence. One of the most effective structures I use is an adapted station model that removes the pressure of timed rotations. Instead of moving through activities on a set schedule, students select stations based on the concepts they want to revisit or the challenges they are eager to take on.

This approach gives students ownership of their learning and encourages them to engage with material at a level that feels meaningful and productive. As they work through stations, I reinforce a classroom culture in which students both seek and offer support. This collaborative environment helps them develop the confidence to ask questions, share strategies, and take on tasks that might otherwise feel intimidating. Throughout class, I circulate intentionally, offering guidance and scaffolding as needed so that students feel supported while still maintaining autonomy. **By combining student choice, peer collaboration, and consistent teacher support, I create a learning environment where students feel safe to take risks and push their thinking.**

At Hewitt by Mathematics Teacher Gene Volel



As a mathematics educator, I try to emphasize and model for students that discomfort is something they can lean into, rather than away from; that “not knowing” can be exciting rather than scary; and that getting something wrong is not only inevitable, but often a necessary precursor to getting it right.

I intentionally refer to the 8th graders as math “explorers” — not passive consumers but active co-authors of our mathematical discoveries — and encourage them to embrace the habits of mind and practices of successful mathematicians. **Students are assessed not only on their product, but also on their process⁷ and their ability to take calculated risks and think strategically.** Students lean into academic risk taking and take ownership over their learning by workshopping solutions at the board, even (and especially!) when they are not sure that they have the correct answer. As Hewitt girls engage in collaborative learning and confidently tackle increasingly difficult concepts and problems, they are actively disrupting the harmful narratives around gender and STEM.

The Student Perspective by Karis Bryant '30



In a math classroom at Hewitt, learning feels collaborative, thoughtful, and supportive. We spend time discussing different ways to solve problems, asking questions, and really understanding the *why* behind the math, not just the answer. Sometimes the work is challenging, but when something feels hard, teachers and classmates step in by breaking problems down, asking guiding questions, and reminding us that struggle is part of learning. There are definitely moments when I take risks, like sharing an answer I'm unsure about or trying a new strategy, and I feel comfortable doing that because the classroom culture is respectful and encouraging. **Mistakes are not treated as failures; they are seen as opportunities to learn and grow, which makes it easier to speak up and try again.** When I'm stuck, I use strategies like rereading the problem, annotating, trying a different method, or talking it through with a peer or teacher, and that support helps me push through challenges and gain confidence.

⁷ <https://www.nysed.gov/sites/default/files/standards-for-mathematical-practice.pdf>