



## Frequently Asked Questions

### Purposeful Practice

*"The teacher's ability to deliver effective mathematics instruction is the most powerful factor in determining how well students learn mathematics. Effective mathematics instruction is enhanced when teachers develop and deepen their own understanding of mathematics, of student learning, and of strategies that promote mathematical proficiency. This understanding can help to ensure that teachers are informed and critical thinkers who are able to make wise choices about activities, strategies, and resources and who are able to provide a comprehensive program that supports children's development of mathematical proficiency".*

*Guide to Effective Mathematics Instruction, Volume 1. 2006. p. ix.*

#### 1. What is purposeful practice?

Purposeful practice is practice that is thoughtful and deliberate while being responsive to individual students' needs to enhance students' conceptual and procedural understanding of mathematics. Comprehensive mathematics instruction begins with assessment for learning to determine students' strengths and needs, and informs the level of support required within the gradual release of responsibility. In this responsive practice, the instructional decisions are based on descriptive evidence of learning that guides the teacher in differentiating instruction. Through purposeful practice there is a greater likelihood for all students to understand and make sense of mathematical concepts and ideas.

*"Teachers are designers. An essential act of our profession is the design of curriculum and learning experiences to meet specified purposes. We are also designers of assessments to diagnose student needs to guide our teaching."*

*Wiggins, G. & McTighe, J., 1998*

## 2. How does purposeful practice support students' mathematical thinking?

[Mathematical thinking](#) is central to the learning and teaching of mathematics. If student learning and understanding is the intended outcome, and we believe that learning is a product of thinking, then we need to purposefully align our instruction and assessment practices to support student thinking (Ritchhart, Church, & Morrison, 2011). Students' mathematical thinking is developed and made visible through the three-part framework. This framework incorporates the use of rich tasks with clearly established success criteria and learning goals. It is through this framework that student thinking is made visible and teachers are able to differentiate their instruction and assessment as they respond to and adapt to individual students' needs. Purposeful practice enables teachers to further develop student thinking by differentiating what each student practices as they make sense of mathematical concepts and ideas. It is only when students make their thinking visible, through purposeful practice, that we can properly assess their understanding, provide descriptive feedback, and improve student learning.

*"For thinking to occur students must first have something to think about and be asked to think. We as teachers must create opportunities for thinking."*

*Ritchhart, R., Church, M., & Morrison, 2011*

## 3. How can we support student practice within the consolidation phase of the three-part lesson framework?

During the consolidation phase of the three-part lesson framework students reflect on their thinking and the thinking of others to enhance their understanding of mathematical ideas. They are also given the opportunity to practice applying new ideas and strategies. Part of a comprehensive mathematics program involves planning to ensure that students receive sufficient, multiple and varied opportunities for practice. The outcomes of practice that support mathematical thinking may include, but are not limited to, visualization, metacognition, development of alternative and flexible strategies. (Small, 2013). Purposeful practice, within the consolidation phase, supports the development of students' mathematical thinking and has the potential to increase students' mathematical understanding, creativity and confidence in the way they think about themselves as mathematicians.

*"Children need time to practise and consolidate skills, balanced with time to put those skills to use in a problem solving context."*

*The Report of the Expert Panel on Early Math in Ontario, 2003*

## References

Devlin, K. What is Mathematical Thinking. Retrieved from.

<http://devlinsangle.blogspot.ca/2012/08/what-is-mathematical-thinking.html>

Fisher, D. Effective Use of the Gradual Release of Responsibility. Retrieved from:

[https://www.mheonline.com/treasures/pdf/douglas\\_fisher.pdf](https://www.mheonline.com/treasures/pdf/douglas_fisher.pdf)

Ontario Ministry of Education. (2006). A Guide to Effective Mathematics Instruction, Volume 1.

Retrieved from:

[http://www.eworkshop.on.ca/edu/resources/guides/Guide\\_Math\\_K\\_6\\_Volume\\_1.pdf](http://www.eworkshop.on.ca/edu/resources/guides/Guide_Math_K_6_Volume_1.pdf)

Ontario Ministry of Education. (2003). The Report of the Expert Panel on Early Math in Ontario

(2003). Early Math Strategy. Retrieved from:

[http://eworkshop.on.ca/edu/resources/guides/ExpPanel\\_K-3\\_Math.pdf](http://eworkshop.on.ca/edu/resources/guides/ExpPanel_K-3_Math.pdf)

Ritchhart, R., Church, M., & Morrison, K. (2011). *Making Thinking Visible*. San Francisco, CA: Jossey-Blass

Wiggins, G. & McTighe, J. (1998). *Understanding by Design*. VA: Association for Supervision and Curriculum Development.