

ABC, 123 – Literacy matters in math

For parents of students in all grades

What is mathematical literacy?

The OECD Programme for International Student Assessment (PISA) (OECD, 1999) defines mathematical literacy as:

an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded mathematical judgments and to engage in mathematics, in ways that meet the needs of that individual's current and future life as a constructive, concerned and reflective citizen. (p. 41)

Mathematical literacy encompasses the ability to:

- estimate in numerical or geometric situations
- know and understand mathematical concepts and procedures
- question, reason and solve problems
- make connections within mathematics, and between mathematics and life
- generate, interpret and compare data
- communicate mathematical reasoning

Mathematical literacy also includes understanding the value of mathematics and having the inclination and the confidence to use it.

How do you help your child to be mathematically literate?

Everyone can learn math. First and foremost, believe in your child's ability to learn mathematics.

Everyone can improve when provided with good teaching, coaching, encouragement and practice.

Do have high expectations for your child. Research shows that when you believe your child can learn, he will rise to the expectation.

Do talk with your child's teacher about how you can help and support her mathematical development.

Do talk about mathematics in a positive way. Your positive attitude and valuing of mathematics are infectious.

Do share your day-to-day math experiences with your child, and discuss

- Video and computer games
- Television shows, e.g. The Learning Channel
- Books – "Counting on Frank & "Stormy Weather":

Do encourage personal responsibility for learning. Emphasize that effort is as important as ability.

Do talk with your child about the importance of homework. Encourage a regular time and place for completing homework. Even when homework has not been assigned, encourage daily review and practise of mathematics. Encourage your child to check the answers and ask for help when he is having difficulty.

Do support your child through homework by listening and asking questions:

- Allow your child to struggle through the process of problem-solving.
- Discuss mistakes as learning opportunities.

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- Help your child by asking questions:
 - What do you need to find out?
 - Tell me what you know...
 - Show me what you started...
 - What can you try first?
 - Can you make a drawing or picture?
 - Will a list or table help?

Do encourage persistence. Some problems take time to solve. Taking a break often provides fresh enthusiasm and alternative strategies.

Do build on your child's strengths and what she already knows. Make links between math and daily life.

Do explore your child's thinking process:

- Why did you...?
- What can you do next?
- Do you see any patterns?
- Does the answer make sense?
- Tell me in a different way.
- What would happen if...?

Do appreciate the value of *not knowing* and use these occasions as opportunities for growth rather than anxiety. Develop strategies and resources for getting help with problems.

Do provide help to your child with strategies, not answers. Provide as much support as is necessary, e.g. peer support or tutoring. Encourage a variety of problem-solving strategies:

- guess and check
- look for a pattern
- make a diagram or model
- act it out
- work backwards
- simplify the problem
- eliminate possibilities
- make a systematic list
- get advice or research
- sleep on it

Do invite your child to share his thinking and understanding - or lack of it - in a safe and relaxed atmosphere.

Do correct wrong answers in a positive fashion. The goal is to help build your child's confidence and develop positive attitudes toward math.

“Do List adapted from “Why is Mathematical Literacy Important TIP sheet, 2005”

Additional Resources

- The Myth of Ability Nurturing Mathematical Talent in Every Child - *John Mighton*
- Mathematics Assessment Myths, Models, Good Questions and Practical Suggestions - *National Council of Teachers of Mathematics*
- Think Literacy Cross Curricular Approaches Grades 7-12 Subject Specific Examples Mathematics, Grades 7-9 - *Ministry of Ontario, 2004*
- Leading Math Success Mathematical Literacy Grades 7 -12 - *Expert Panel on School Success in Ontario, 2004*
- Elementary and Middle School Mathematics Teaching Developmentally - *John A, Van De Walle*

Useful Websites

www.edu.gov.on.ca
www.eqao.com
<http://mathonline.peelschools.org>
www.ilc.org/cfm/AAT
www.curriculum.org/occ/tips/index.shtml
www.peelschools.org/parents/tips/math

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