

## From the President's Pen



*Mathematical literacy* is a term you have likely heard or read about lately. K–12 mathematics teachers need to talk about what mathematical literacy means to us and to the teaching and learning of mathematics. Here are some questions to discuss:

- What does it mean to be mathematically literate in today's society?
- What knowledge, skills and attitudes are needed to be mathematically literate?
- How does the Alberta Program of Studies address mathematical literacy?
- How is this different from being mathematically literate 20 years ago?
- Will this change for future graduates?
- How would you determine if a child is mathematically literate in Grade 1, 5 or 8?

If we consider the definition for mathematical literacy from the Program for International Student Assessment (PISA), then students require more than skills, fluency and procedures to be mathematically literate. PISA states that mathematics literacy is

an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded mathematical judgements 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.

For me, *mathematical literacy* is a broader, more generous term than the popular, more frequently used term *numeracy*. Other areas of education are using the term *literacy* to describe the understanding and fluency in their area—technological literacy, scientific literacy and media literacy—and mathematics is another form of literacy. Why confuse the issue with a different name?

Richard L. Venezky (as quoted in Harris and Hodges 1995) describes literacy in the following way:

In current usage, the term implies an interaction between social demands and individual competence. Thus, the levels of literacy required for social functioning can vary and have varied across cultures and across time within the same culture.

Elliot Eisner (1997), a proponent for the arts in education, has more for us to think about when we think of reading something.

In order to be read, a poem, an equation, a painting, a dance, a novel, or a contract each requires a distinctive form of literacy, when literacy means, as I intend it to mean, a way of conveying meaning through and recovering meaning from the form of representation in which it appears.

His definition of literacy is also generous and easily includes mathematics as a form of literacy. Although his example seems discrete, we in mathematics education know the depth of literacy that is also required to powerfully read, understand and solve an equation.

The idea of mathematical literacy is not new or an addition to the work we are already doing in our mathematics classrooms. The K–12 Program of Studies already includes it, requiring us to examine the nature and processes of mathematics, and grade level outcomes. The *Alberta Mathematics Program of Studies* (Alberta Learning 1996) states that

students need to become mathematically literate in order to explore problem-solving situations, accommodate changing conditions, and actively create new knowledge in striving for self-fulfillment.

This discussion is just beginning. We must keep it going to clearly articulate our understanding of a mathematically literate student, graduate and successful member of society. This understanding includes all the rich dimensions of a powerful mathematical thinker and recognizes that mathematical literacy does not selectively focus on what is easily measured or tested.

## References

- Alberta Learning. *Alberta Mathematics Program of Studies*. Edmonton: Author, 1996.
- Eisner, E. *Cognition and Representation, A Way to Pursue the American Dream?* Alexandria, Va.: ASCD, 1997.
- Harris, T. L., and R. E. Hodges, eds. *The Literacy Dictionary: The Vocabulary of Reading and Writing*. Newark, Del.: International Reading Association, 1995.
- Program for International Student Assessment (PISA). *Mathematical Literacy* [online]. [www.pisa.oecd.org/pisa/math.htm](http://www.pisa.oecd.org/pisa/math.htm).

*Sandra Unrau*

---

---

### **Thomas Alva Edison (1847–1931)**

His guests were often wondering why the gate onto his property required so much strength to open. Being the genius that he was, he told one of his guests the gate was connected to a pump mechanism that pumped 20 litres of water into his cistern when the gate opened. One day he changed the pump capacity from 20 to 25 litres and thus he required 12 fewer visitors to fill the empty cistern. What was the capacity of the cistern?

---

---