

CAROLE'S COMMENTARY: CHALLENGING STUDENTS IS NOT A NEW IDEA

For many years, I have promoted the idea that students, at all levels, need to be presented with interesting and challenging mathematics. And the mathematics should be embedded in contexts of great interest to students, and when possible, connected to content in other areas of mathematics as well as to other disciplines. This idea contrasts with methods of practicing skills, apart from context, and not demanding more from our students.

This is not a new idea. In fact, I did some search, and lo and behold, what I found amazed me. Great scholars and leaders have promoted this idea since the first century!

Plutarch (46-119 AD), Greek philosopher and prolific author, stated:

The mind is not a vessel to be filled, but a fire to be kindled.

Francis Bacon (1561-1606), philosopher and statesman, promoter of the scientific method for acquiring knowledge, stated:

Who questions much, shall learn much, and retain much.

John Stuart Mill (1806 – 1873), philosopher and economist, stated:

A pupil from whom nothing is ever demanded which he cannot do, never does all he can.

Oliver Wendell Holmes, Sr. (1806 – 1873), physician, poet, humorist, stated:

Man's mind, once stretched by a new idea, never regains its original dimensions.

Helen Keller (1880 -1968), author and teacher focusing on disabilities – blind and deaf, stated:

A well-educated mind will always have more questions than answers.

Maxime Lagace (1993 – Present), Canadian hockey player, stated:

The more you make it easy for your kids, the more you remove the struggle necessary for learning.

What amazes me even more is that we haven't made much progress toward achieving that goal.

How can we achieve the goals identified by these leaders in the past thousands of years?

Here are my suggestions:

- First, work with colleagues to identify projects, puzzles, and games that will challenge your students. Many of those can be found in the web site of the Center for Mathematics and Teaching.
- Second, provide sufficient time for students to collaborate with peers and others (e.g., students from other classes in your school and other schools).
- Third, permit students to use devices for information searches, as well as for calculations.
- Fourth, require a product, as for example, a detailed description (written or oral) of procedures and processes employed. I've used oral presentations to family and friends, with students given 10 minutes to present and up to 5 minutes to respond to audience questions. I did this with elementary, middle, and high school students.

Good luck with your work. Keep me posted of your ideas, and if you have any questions, do ask me.

All the best,
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