

BROWN: Proper feedback vital for students' success

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You might think that during the summer all would be quiet on the teaching front, but you would be wrong!

It's still a busy time for me because I have students, most often graduate students, that I supervise on a variety of research projects. I take my supervision of students very seriously as it gives me an enormous opportunity to teach them the scientific process of doing math.

There are successes, but often only after many dead ends and wrong turns. With appropriate feedback, students can improve skills way beyond expectations.

Which brings to mind the whole controversy about the feedback students in public schools across the province get on report cards. When my sons come home with theirs, I most usually look at the grades and don't bother with the comments because there is little content in the feedback teachers give.

Almost all of the phrases are stock ones, discussions about "meeting expected learning outcomes" some of the time, most of the time and so on. Blah, blah, blah.

When I look back at my own report cards, many of which my father saved for me, things were so different. They were hand written, of course, as back then we could read and write cursively!

And the comments were personalized. None of this cookie-cutter stuff. I'm reading Ms. Shapiro's comments back from Grade 4, where she said, "His work is always accompanied by a spirit of enthusiasm."

Nice! And it means something to me now, as it did back then. It was meant to improve me, and I think it did.

The state of one's knowledge is a dynamical system, which is a mathematical term for something that changes over time. We learn, we grow, sometimes we forget, but all in all, it is a process.

Dynamical systems is a topic that I have taught students at university, and there is much that mathematics has to say about predicting what happens in such systems over time.

Will they grow? Will they decline to nothing? Will they settle down? Or will they be chaotic, with long-term predictions being like rolling a die?

For example, if you repeatedly square a number, those near zero settle down closer to zero — for example, $1/2$ squares to $1/4$, which squares to $1/16$ and so on — while those numbers X near one (but not equal to one) will fly down to 0 if X is smaller than one, and scoot off to infinity if bigger than one.

Feedback has a large influence on the long-term behaviour of learning. I've seen, in the course of my studies and career, how the right comment can push the student to learn more, to work harder, and the inadvertent unhelpful one can drive a student in the other direction.

I read that Education Minister Ramona Jennex said of the jargon-filled report cards: "What is it that parents need? What do we need to change?"

My point is that the feedback is most important to the students, rather than the parents.

In the dynamical system of learning, it is the students who need proper, individualized feedback, the kind that is tailored to move their acquisition of knowledge in the right direction.

Then and only then will our students' learning head toward their highest level of achievement.

About the Author »

By **JASON BROWN**

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Ian Fraser · 23 days ago

Just a little feedback on your column. Surely you didn't mean 1/4 squared gives 1/8. As a recently retired math teacher I have seen that mistake too many times. I can only hope it was an oversight that was not caught in the proofreading of the article.

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