Changing the Focus from Grades to Growth

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My Growth as a Teacher

"The main goals of mathematics education are to prepare students to: solve problems, communicate and reason mathematically, make connections between mathematics and its applications, become mathematically literate, appreciate and value mathematics, make informed decisions as contributors to society."

- Alberta Mathematics 10-12 Program of Studies

I teach Pre-calculus and Physics to spectacular CCS students with big plans for their futures. It is a significant responsibility and many students and parents often express anxiety about how success in these courses will impact university admission. The stakes are high. I have frequently seen students in tears - low test marks, overwhelmed by academic demands, pressure from parents, and just plain being a teen. Early in my teaching career, I prioritized student mental health above all other course goals. ***It is difficult to care about trigonometric identities or the applications of Millikan's parallel plates experiment when you are not convinced that you have a future.***

Assessment - the way in which teachers identify and measure student progress and competency - in my classroom it has been pretty conventional over 16 years of teaching. Quizzes; Corrections on the Quizzes; Chapter Test; Repeat for the next chapter; Final Exam. This shifted slightly when I dropped the quizzes out of the equation and gave open book assignments to relieve a bit of the stress of quizzes. For years, I would caringly provide feedback on the quizzes or assignments while also assigning a mark to each paper. When I returned the papers I received a variety of responses. Some students quibbled over their marks. Some stashed the assignment into their binder (or recycling) without looking at it. Some snatched other people's papers to see what they got (not a very kind practice). Some asked to be excused and I would see them return a few minutes later with red eyes (this could occur when marks were anywhere between 40% and 95% - depending on the student expectations).

After all this learning, studying, and stressing, the takeaway was a number between 0 and 100; not the fact that they had actually learned something new that they did not know a week earlier.

When the pandemic hit and classes were abruptly consigned to remote learning, teachers were faced with an opportunity to reassess our practices. Actually, we were forced to do this. Tests do not work well remotely as I discovered in the first week when some dishonest practices were uncovered. I took a cue from my professors in my masters program and began assigning projects in order to assess learning. I found it to be effective in stimulating study, but I had no way of knowing whether the feedback I was providing was having any impact on correcting their understanding.

With a virtually empty school, we teachers spent more time conferring with one another about how we were assessing learning. Our valiant principal, Jadan Barthel, invited us to participate in a three part, six hour series on assessment sponsored by the Edmonton Regional Learning Consortium. Via Zoom, Rick Wormeli sped through slides referring teachers to countless books and academic studies, shared stories of observed practice, and ultimately recommended one advised method of assessing: Descriptive Feedback With No Grades. The studies confirm it.

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Calgary Christian School

"Students learn best when they are provided with feedback and no grades are assigned."

I had heard a lot of this before. I attended high school redesign symposiums and teacher conferences on assessment. I read papers and chapters on these ideas. I even faintly remember my measurements professor during my B.Ed. urging future teachers to try this (I probably got an 85% on that assignment). The difference this year, however, was that we had very little time to actually consider it and, without better options, were forced to give it a try.

The math teachers at CCS assembled a few times to chat about rubrics - the stated values and expectations we were looking to measure. My only previous experience with rubrics was my experience teaching World Religions and also when marking the written portion of diploma exams for the province.
We turned to our program of studies and focused our attention not on the outcomes (for example, completing the square in quadratic equations), but on the seven mathematical processes that serve students in their pursuit of learning the outcomes:

- Communication
- Connections
- Mental Math & Estimation
- Problem Solving
- Reasoning
- Technology
- Visualization

Shifting our focus to these actual life skills and learning needs will help students develop as people. It also ought to help teachers identify gaps in student learning and to track growth.

Today, I assess learner work with a highlighter in hopes to point students toward improved learning. They don't lose points for getting a wrong answer.

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Instead, I note how well they are reasoning and how proficiently they communicate their ideas. Together we can suss out what they should be practicing in order to build problem solving skills.

I have been told that students will not study or practice without a test looming in the future. In fact, what we've confirmed, is that the opposite is true. I have never had more engagement with lessons in class than I have this year. When students fall behind because of difficulty or any number of life events, I don't have to delay a test. Instead, I can assess where they are and help them catch up. Back when I gave tests, I found that some students did not sense any urgency to learn anything because they weren't being assessed on a daily basis. They would save all their "learning" until just prior to the test. In the two weeks preceding a test, I would schedule blocks of time for math help which few people attended. But on the morning of a test, students showed up en masse, anxious to ask questions or be retaught concepts they were about to be tested on.

As a pathway of learning in advance of the provincial diploma exam, this new method of assessment does prompt questions from parents and students. I certainly understand the concern. However, I also know that if my students are getting regular feedback on their learning and regularly reviewing cumulative material, they are going to be amply prepared for an exam. I schedule practice exams throughout the semester to help review the outcomes and allow students to experience diploma-style questions.

Of course these practice exams don't count for points, but they do count for experience and students can even learn from them. I also have provincial field tests scheduled for my Grade 12 classes in which a provincial worker will try potential diploma questions on my students to collect data for future exams. Also of note, the Math 30 diplomas have a written portion which counts for 30% of the exam (or 9% of the final grade) and I have confidence that my students will knock that portion out of the park!

There isn't space in this article to consider all the brain science and psychology that supports these practices. There is a lot. Books by Stanford professors Carol Dweck (Mindset: The New Psychology of Success) and math education specialist Jo Boaler (Limitless Mind: Learn, Lead, and Live Without Barriers) speak to how important it is to not box students in with grades. Allowing room for and encouraging growth and opportunities to fail (without actually failing a test or a course) is where the learning happens. Something good happens in the brain.

I believe we have something more at CCS. We have faith in a Spirit that wants to guide us to truth and a God who loves us throughout our journey. **We have a community that supports those experiencing difficulty and celebrates learning. I'm not really sure what else we need.**

I do not have it all figured out. I will be modifying assignments and assessments and feedback and rubrics and lessons and classroom experiences for the rest of my career. I have colleagues to discuss things with and articles to read. I'm still learning. And more importantly, so are my students.