

Engage Your Students: Introduce The Friend You Love to Hate

Creating Meaningful Connections To Math Through Emotional Experiences

by David Gibson

Mathematical application is the crutch many teachers use to attribute relevance to mathematics. We, as math teachers, are often bombarded with the question “when am I ever going to use this”, coercing us towards a “here is an example of where you would use this in real life” statement which usually ends up as a feeble attempt to give the content meaning. We pride ourselves in our ability to draw connections between mathematics and the real world regardless of how contrived they may be in nature, believing that doing so will further engage our students. This strategy is supported by the B.C. IRPs that suggest, “When mathematical ideas are connected to each other or to real-world phenomena, students begin to view mathematics as useful, relevant and integrated” (Math 10-12, pg. 7). Whereas I don’t agree that a connection to an expected life circumstance could give students the *appearance* of being engaged, I question whether students find learning about taxes or adding up a grocery bill engaging. Is that why we became mathematics educators, to merely convey the necessary algorithms to our otherwise disengaged students in order to prepare them for the harsh reality of calculating a 15% tip?

There is an even greater injustice to mathematics that occurs every day in classrooms by way of the conjured real life situations. Contrived set-ups such as: “A train leaves from Chicago at 6:53am and another train leaves Los Angeles at 5:36am.....” or “Sally’s age is three less than twice the sum of the digits of Bill’s age two years ago...” seem to be attempts to, very unsuccessfully I might say, add meaning to algebraic processes that are otherwise algorithmic mathematics. When’s the last time you calculated the surface area of your wall with a binomial expansion to calculate exactly the amount of paint to buy? How are we supposed to convince anyone, especially our students, that we speak about the age of an individual in terms of the difference of previous ages with respect to someone else’s next birthday? Dig deep into the wealth of experience you possess in the subject and come to one honest conclusion: those questions made you dislike math more than feel a connection to it. Where then does one find value in all the misconceptions you hold about algebra, miscalculations you’ve made repeatedly in statistics, or

uncertainty you have in your ability to grasp the most basic concepts of mathematics? The answer has always been found in the question itself: the ride.

Mathematics is an emotional rollercoaster with the same effect on individuals as the physical representation of the thrill ride itself. We spend so much time coming up with realistic examples that we've forgotten the reason most of us teach the subject today; it is because of the emotional turmoil we've gone through over years of study. The naysayers might claim "I've always been good at math so I've only felt happy" and to that I say shenanigans! What self-respecting mathematician doesn't remember those hours upon hours locked away in the dark dungeon that was formerly your bedroom or dormitory, dancing close the edge of madness because a seemingly simple proof just doesn't want to work ?

Personified, mathematics is like the brother we've had a quarrel with; we experience our fair share of black eyes from it but keep coming back for more . It is your favorite sports team that just doesn't perform during the big game, causing you to have a fit of blind rage, shouting senseless babble directed at no one but meant to be heard by everyone. It is the heartbreak you felt when you lost your favorite toy, or the disappointment you felt when you realized your keys are not going to be found. It is that sick feeling you get when you're afraid of what might come next but are too excited because of the greatness that could result. It can give you that feeling of dread, the feeling that you're not really up to the task but you need to do it anyways, like a dentist's appointment. In all aspects, mathematics, in its essence, is an unnatural act in which we willingly tend to but yet will almost certainly make us feel less smart and inevitably confused.

For as much pain as we feel from it, mathematics also provides us with plenty of heartwarming moments that revitalize our spirit and remind us why we even started a relationship with it in the first place. At its most basic construct, mathematics is a "feel-good" moment waiting to happen. At the moment when you realize you've finally solved that pesky question that was nagging at you for days, the feeling, if only for a moment, is euphoric. It's that cold drink after a hard day's work in the hot sun, or that excitement you feel when you know you've accomplished something that others may not have been able to. It's all the cliché's of "conquering mountains" or "making it to the finish line," with the added exhilaration of that last jump at the bottom of your ski run.

Perhaps the most attractive element of mathematics for many of us is the perceived sense of certainty it provides. Success or failure, mathematics is your safety blanket you grasp and feel content that everything is as it should be. It is that hug you receive from a loved one when you feel

overwhelmed by the complexities of life, assuring you of simpler times ahead. It is the comfort you feel in knowing an encore is guaranteed at a rock concert, despite your lackluster efforts at cheering at the end . It is that same routine you have day after day, the same road home that is consistent in its ability to make you feel comfortable yet accomplished for surviving another day with it.

So how do we engage our students in meaningful discussions about mathematics, and in turn how do we make connections to their real lives and promote value in mathematical reasoning regardless of the topic? “Learning mathematics within contexts and making connections relevant to learners can validate past experiences and increase student willingness to participate and be actively engaged” (IRP Math 10-12, pg. 7). Validate those past academic successes and failures as mathematicians and as educators , but more importantly validate the emotional turmoil that one must go through to achieve success in the subject. Math is one of the few topics in life that individuals come in saying “I’m not very good at it.” Validate this, embrace this, and in fact confirm this through your own experiences of hatred and love for the subject. Make your students aware that, regardless of how effective you are at mathematics, success did not come without countless failures. It is important to make them aware that even the greatest mathematicians have had those nights where mathematics just doesn’t make sense. Convey to your students that mathematics is not discriminatory; it punishes every single one of us at some point for believing we understand it; however, it is from this punishment that we will gain a more intimate relationship with mathematics and have a deeper understanding of its practice. Most importantly make it clear to your students that math is more than algorithms, variables, and numbers; it is the discovery and reshaping of our thinking processes and perspectives.

Mathematics is full of wonder and beauty; however, if we do not show our students the many facets of its persona, they will get too enamored with the negatives associated with it. With knowledge that all individuals, from elementary students to mathematicians, have a complex relationship with the subject, students will feel added gratification from any improvements they make . Draw from personal experience and communicate these stories to them, and make them aware that discovery isn’t completed in one night, but will gratify them with personal growth and added appreciation for the subject as a whole. Now that’s a connection worth discussing.