

Special issue: Innovative Teaching Personal Essays

## Creating a Climate of Caring in the Classroom

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One's attitude towards mathematics can affect one's performance. Many pre-service elementary teachers report that they have "math anxiety", and many times they can describe a bad experience in a math class or pinpoint the year it happened. Frequently, students who have a bad experience in a mathematics class tend to have a bad attitude towards mathematics. Research shows that teachers who dislike mathematics will inadvertently teach their students to dislike or fear mathematics (Gresham, 2007). Because I teach the mathematics courses to future teachers in the fields of elementary, middle, and special education, I focus on creating a climate of caring in the classroom with the goal of enabling these future teachers to have a positive experience in my mathematics classes, and thus ensure that this dislike of mathematics is not perpetuated.

A positive experience means that the student has been empowered to be able to do the mathematics, understand the mathematics, and know why it is important to know the mathematics. An empowered student is more likely to enjoy the subject. The challenge is to take students, often with very deficient backgrounds in elementary mathematics, to this empowered, deep understanding of the basic concepts while being careful to positively affect their attitude toward mathematics.

This innovation plan includes several strategies that have been implemented, tested, and proven to help students overcome some of their math anxiety and their dislike for math. I continually read and participate in student success seminars/symposiums to stay abreast of the latest ideas and then implement one or two ideas a semester. Although I have always tried to do my best, my 4-H training leads me to a belief that I can “make the best better”. During my doctoral work I had first-hand experience with implementing innovative activities. I was asked to be on a team of facilitators for the Ohio Math Academy Project (OMAP) which was a professional development opportunity for in-service teachers. At that time, Ohio had just published its Academic Content Standards and OMAP was intended to help teachers implement these standards into their classroom in a meaningful way for the students. Because the OMAP team supported each other’s efforts, we could try new ways of presenting activities without fear. The enthusiastic response of the teachers and their many “ah-ha” moments encouraged our efforts in innovation. In my own classroom I focus on helping students succeed in learning and liking mathematics. So, I’m careful to keep the ideas that have worked, but I also want to make the best better, so I try one or two new ideas each semester. Thus, I’m not overwhelmed with trying too many new ideas simultaneously, and those I implement, I can test for their effectiveness. Hearing so many students say, “I never liked math before this class, but now I have become more interested and confident in math” is all the encouragement I need to sustain these innovations.

The innovations include three components. First, I acknowledge that math anxiety is real. I always knew that many people don’t like math – just mentioning that I teach math gives me plenty of feedback on that! About a year ago, I attended a Brain Research talk and learned that I needed to make clear to students that I understand that anxiety is real and that we were going to

address the issue together. I explain to students that the problem with anxiety is that it takes up working memory so not much brain power is left to focus on mathematics. We talk about breathing exercises and eating peppermints while taking quizzes/tests. We discuss that even experts struggle (Lin-Siegler, et al, 2016). The day before the first test, I ask the students to be ready the next day to start the test with a cheer of “I’m excited!” In doing this, we acknowledge the increased heartbeat but change the focus to “I’m excited” which changes a threat mindset to an opportunity mindset (Brooks, 2014). The ensuing laughter this cheer causes seems to break the anxiety for the students.

Secondly, we view mistakes as an opportunity to learn (Dweck, 2006). I use shuffled name cards so that everyone has an opportunity to contribute to the class. This ensures that I include everyone in the discussion and demonstrates my belief that everyone can succeed. Students can elect to answer the questions I pose, have scaffolding help, or phone-a-friend. Sometimes questions arise from the discussion and I will use the cards and/or ask for a volunteer. From student work either in class or on homework, I often choose “my favorite no” to highlight common misunderstandings in how to do the mathematics. Together we look at these examples to highlight what is correct and then address what needs to be remedied.

Thirdly, I implemented a classroom structure that includes caring for the individual. On the first day of class each student chooses their favorite Crayola<sup>(R)</sup> (because I want the very best for them) crayon. With closed eyes, they smell the crayon and recall their childhood dreams. I tell the students that sometime during the semester they will encounter some difficulty, a poor quiz score for example. When they do, they should take out the crayon and relax for a moment remembering their childhood dreams. I want them to be able to move beyond discouragement.

This crayon activity was motivated in 2008 by the book *The Last Lecture* by Randy Pausch. Although Pausch used the crayon differently, I saw the crayon as a natural fit for elementary teachers, and I loved the smell of a crayon but the effectiveness was a serendipitous discovery. The first semester I tried the activity, students must have used the crayon spontaneously because in their semester evaluations of instruction, they wrote that this activity really helped them even though we only talked about it on day one. Every semester I get positive feedback about the helpfulness of the crayon. Years after having the student in class, former students tell me, “I still have that crayon you gave me!”

Decades ago when I first began teaching these mathematics concepts courses, the attitude of instructors was that students just needed to work harder and the attitude of students was that they were just “bad at math” and many students failed the course. I did not want to believe that someone could not succeed in mathematics, so I attended workshops and conferences looking for ways to help my students. Brain research seminars indicated that math anxiety contributed to poor performance and that developing a growth mindset could actually encourage understanding of mathematics and persistence in solving problems. So I decided to try addressing math anxiety in the classroom and help students to develop a growth mindset. Mitigating anxiety through aroma therapy with the crayon was a serendipitous discovery. My semester evaluations became very positive, and my student success rates increased. Sharing successful ideas with colleagues also encourages collaboration which helps sustain innovations.

I teach students mathematics, with the emphasis on the students. Long after they leave my classroom they will remember how I made them feel. My goal is to help them feel empowered, respected, and capable. It’s okay to have to work to learn mathematics, at some point we all do, but I want them to know that they **can** persist and be successful at doing math. I

don't want their math anxiety to become their students' fears. As future teachers, I want them to be able to share their positive attitude and their Growth Mindset with the next generation to help these children enjoy mathematics. I hope they keep that crayon handy and teach their students to breathe in the calming aroma.

## References

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