

From the Preface...

“Mr. Wilson, you’re full of crazy.”

Alexa, 4th grader

When I heard the quote above, I was thrilled. It meant Alexa was engaged in what was going on in the classroom. Now, not all of my teaching gets that kind of reaction, but if you asked my students, most would say they’ve seen that side of me at one time or another. And that’s okay with me.

That’s because I am one of the few people who have been lucky enough to find their calling. That calling has allowed me to be “crazy” again: playful and joyful, yet focused and determined to have my students learn more than they ever imagined they could in a classroom.

My journey to teaching is an utter reversal of fortune for a man who thought his life had been wasted. The journey helped me find the passion in my life. This is the story of the lessons learned in the midst of that journey and the effects of applying that passion to the teaching and learning that occur in my classroom.

For many years, I was one of those lost souls in the world of making money to survive, not one of the blessed souls who had

found what he was meant to do. Now that I've found teaching, I want to yell at the top of my lungs, "It can be done! Go for it!" It has been so humbling, and the gratitude I feel is almost indescribable.

After choosing to enter the educational certification process and becoming a new teacher at the age of forty, I thought I had at least somewhat of a grasp on how to teach. During the first years in my new career, it became apparent I had a whole lot more to learn. Now, most of the way I teach has been molded by being in a classroom full of students, with a foundation based on my time in the certification process in college. On-the-job training for teachers is priceless, painful, fun and never-ending. This inside-the-classroom training is the basis for this book; it forced me to rethink my philosophy and has sparked my heart to come alive to create a unique environment for learning in my classroom.

First as a fourth through sixth grade classroom teacher and then as the Math Teacher Leader at an urban school in Milwaukee, I honed my craft to be unusual on purpose. The last thing I wanted was my students thinking learning is boring and useless. On the contrary, I wanted them to be excited to come to school and to love learning. Although some of my methods may be unusual, the results from students and affirmations from parents have told me I need to share my heart and my approach to teaching and learning, to help other teachers and students.

After walking down to a quiet art room to remind a student with diabetes to eat her afternoon snack:

Me (whispering): “It’s so quiet down here.”

Student: “It’s because we save our loudness for you!”

Sophie, 4th grader

If you are reading this book as you enter the teaching profession, know that it is written to help you become a great teacher for your students—guiding them to be curious, challenged, interested, active and engaged learners. I want to help you become a teacher that blows kids away by how much fun they can have in class, while still achieving deep understandings.

If you are reading for another reason, I hope my story of a change of heart and reinvigorated enthusiasm for life will be a spark for you to go after what you have wanted to do. In my own life journey, I *had* to make the change; my life was lost if I didn’t. If you are in the same boat, maybe this is the time to change.

The biggest thing I ask of you is to be open to really thinking outside your comfort zone, in a fun, creative way. I guarantee your life will be richer if you come from the best part of you—your heart and soul.

From the Introduction...

“There is no way I’m on earth to do this!” As tears streamed down my cheeks, day after day, I knew there had to be more to life than sitting in front of a computer, writing about a machine

that spit out radiator tubes. “Do you actually think I care about this stuff? C’mon, this can’t be what I’m here for!”

After seeing my watery, solemn eyes while eating breakfast in the company cafeteria, a co-worker asked what was wrong. I couldn’t explain to her, or to anyone, the despair of feeling useless, like I was wasting my talent; I didn’t know how to tell her that I *knew* I had more to offer the world. I was wasting something in me, not necessarily knowing what that something was. But I knew I needed something with more heart in it. To me, the corporate world had little or no heart—at least, not the kind of heart I had or wanted to share with the world.

**An adult classmate in my first education class,
recounting why she decided to change careers in mid-life:
*“I didn’t want to base the rest of my life on a decision
I made when I was eighteen years old.”***

One of the words I’ve used to describe teaching is “relentless.” The needs of students are relentless, the need for good lessons is relentless and the pressure to be a professional is relentless. This relentlessness can be both positive and negative—positive because it pushes me to work hard and put everything I’ve got into my teaching, and negative because that pressure can stress me out or get me too frustrated trying to meet all the needs of students at the same time. But even though relentlessness is part of the job, I wouldn’t want it any other way.

The relentlessness helps me focus and forces me to create a learning environment that is fresh, dynamic and unpredictable.

During my first four years of teaching, I taught in a fourth to sixth grade Montessori classroom, so there were students at all levels of development. That experience shaped my ability to differentiate subjects and lessons...shoot, I had to! I learned to use my creativity in a variety of ways at the Montessori school. But I wasn't Montessori-trained and after four years there, it was time for a change. I wanted to move out of my hometown, too, to grow personally and professionally.

From there, my experience took me to a downtown Milwaukee urban school, as the Math Teacher Leader and sixth and eighth grade math teacher. I hadn't thought about the level of math that eighth graders learn since I was in junior high school, so I had to relearn things, such as exponential growth, linear equations and inverse relationships. Many teachers seem to fit into this category, teaching math they haven't thought of in years. That can be a scary, insecurity-inducing aspect of teaching.

The first years of teaching are tough and challenging, no matter the preparation, no matter the attitude, no matter the excellence a teacher strives for. I learned things I never expected. Learning in college education classes is one thing, but taking that learning and putting it into practice is a whole other thing. It was at these two schools, the Montessori school and the school in Milwaukee, that I learned how to teach math creatively, without a book, and it has made all the difference in student learning.

After pondering my philosophy and approach to teaching in general, and to teaching math specifically, some themes run through everything I do. I design my classroom to have a lot of heart. My main goals are for students to love learning and to want to come to school because they never know what might happen. The following chapters go into more detail about how heart affects my classroom approach (Mumbo Jumbo: Chapters 1-6), and how math can be taught creatively, without books (Banana Peppers: Chapters 7-12). Although the second half of the book focuses on math instruction, it is filled with ideas that can be applied to all subjects.

I've written this book to relate many strategies to help take teaching and learning to a new level, but I must mention something of utmost importance: connecting with students. Since much of my teaching is based on relationships, the first two chapters discuss the process and thoughts that go into connecting with kids. To get into more detail about the heart I put into teaching, Chapter One talks about what I believe are the basics of building connections with students using heart, trust, expectations, stories and humor. Chapter Two continues the discussion on connection by describing an experience when I dressed up as The Grinch Who Stole Christmas. Chapter Three is all about foundational classroom elements where it's okay not to know something, learning is fun and expectations are high. Chapter Four explains my view of room dynamics and classroom management. In Chapter Five, I share a learning experience and

how it shaped my thoughts on being a reflective teacher. Chapter Six is all about working with parents.

The second part of the book focuses on engaging math instruction. Chapter Seven shows how integrating subjects and differentiating learning according to students' abilities is critical in any subject. Chapter Eight begins my explanation of teaching math in a unique way by sharing a special fourth grade box project. Chapter Nine gives examples of how I bring real-world math into the classroom. From there, Chapter Ten goes into extreme detail about how to understand student thinking and use explicit math instruction. In Chapter Eleven, there is a glimpse into how to take student ideas and integrate them into instruction. Chapter Twelve provides many examples of how to make math instruction creative, engaging and relevant.

In reading this book, I truly hope you'll encounter new ideas and, if you are teaching, be moved to take an approach that takes into account your students' thoughts, feelings and desires.

From Chapter 3...

Foundational Classroom Elements

While I was watching students roller skate:

Student: *“Mr. Wilson, how come you’re not skating?”*

Me: *“Well, I have bad knees and a bad back.”*

Student: *“Mr. Wilson, you skate with your feet!”*

Olivia, 3rd grader

Security in *not* knowing, and the learning process

After making a mistake in my corporate job,
and owning up to it with my boss:

“Only the dead don’t make mistakes.”

Don Wandler, my former boss

As students come into class every year, their thoughts and feelings may turn to being nervous, not knowing how things are going to operate in a new classroom, how they will fit in, whom they will befriend, will they be successful, or will they be supported or bullied. They have a whole lot of guts, even if they don’t see it. With all these possible thoughts and feelings going through students, our job is to not deter their spirit, but engage it and help them become the people they were meant to be. I write this because sometimes teachers have high aspirations for their students, but then set up the year making their students feel

insecure, and lose some of their courage. Examples from my sister and other friends might best demonstrate this concern.

There are students who love math and are amazing little calculators and problem-solvers, even at a young age. They seem to have an innate math ability. The majority of the time these students are secure about their abilities—I was fortunate to be one of those kids. But many students don't have that obvious ability, although they may have a hidden ability that just hasn't been nurtured, encouraged or challenged enough. A misguided elementary teacher once told my sister her math ability was poor, instead of letting her know she could improve. Another friend had a teacher who handed back math tests from best to worst, and since she was given back her tests last, everyone in class knew she had done badly. They are both now over 50 years old and still remember the experiences; those instances affected their self-confidence in using math for the rest of their lives. These comments aren't just related to math. A co-teacher of mine shared a story of a teacher who told her as a kid that she couldn't carry a tune. She never got over it and doesn't like to sing because of this remembrance from so long ago.

All three of these women grew up thinking they weren't good at something. Those thoughts came from one moment in their lives when an elementary teacher told them that they weren't good at a subject. Think about what those young girls were telling themselves internally that year in their lives. And then think about what kind of year we want our students to have in our

classrooms. Words, facial expressions, body language and routines can make a big difference to students. To be honest, I've had my moments thinking or reacting in a way that wasn't as positive or optimistic as it should have been. I care about each student, but frustrations have gotten to me at times, too—I've had to work at improving myself in this regard.

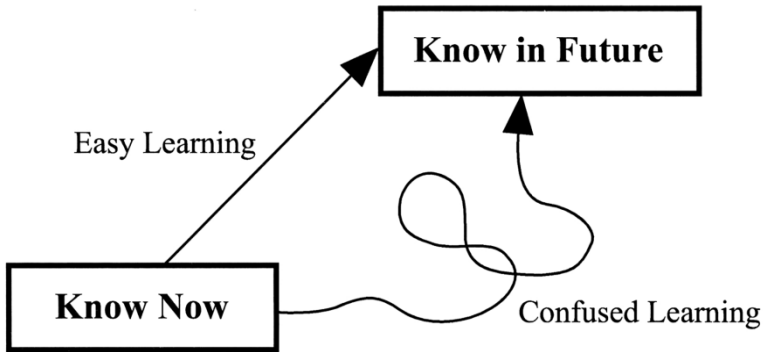
At the start of a school year, I make sure to let students know it is okay to *not* know something. In fact, I try to model some things that I continue to work on or am currently not good at, like playing an instrument or acting. I might even share some of my own insecurities about certain things. This makes me human and shows them it is okay to struggle with things. Kids that might struggle in math or may be “average” sometimes think they should already know lots of things that they really aren't required to at that moment in their lives. They sometimes have these unrealistic notions that others don't have the same insecurities. I explicitly let these students know that *not knowing* is part of learning, and I want to help them bust through their illusions that they can't be good at things.

But how do I do this? By being open about it and being real about it. Students need to see the conviction that I am *not* going to let them fail or struggle beyond their capabilities. I work to get students to trust that I will be there for them, and that they can trust me to lift them up, even if they say things like “I can't” or “I don't get it.”

There are plenty of times when I have had to say, “Don’t worry, you will get it. I’ll help you. Trust me.” I tell kids they’re going to have to trust that I will help them learn. I tell them they will learn, because I believe in them, and I believe in my own ability to help them. I do not let them see any insecurity in my belief about them, because I *know* it to be true. Kids love this! They need someone who will believe in them even beyond what is visible or imaginable to themselves.

In class, we talk a lot about not knowing things. If students knew everything, why would I need to teach them? It’s pretty obvious, but many students need to keep hearing that it’s okay to fail and try again. It’s okay not to be great at something. Progress is the goal. My goal here is to set students up for success, no matter how small. Some students who are high achievers might not need to hear this as much because they are so successful, but even for them it can’t hurt. For others who struggle in different subjects, it gives them a break. It lessens the pressure they may feel, from me, their parents, other teachers, other students, their siblings or even themselves.

My first day schedule always includes a time to talk about not knowing. We talk about the learning process and what it may feel like. I use this drawing to graphically model the process. Most kids have never seen learning put this way.



Before explaining the drawing, I ask students what they think it represents. I ask students if they've ever learned something that came easily to them. Most will raise their hands for something like kicking a soccer ball. I explain that this "easy learning" is the straight line from the bottom "Know Now" box to the top "Know in Future" box. "Straight line" learning is fun, exciting and encouraging. Students would like learning more if it was always like that. Too bad that's not always the case.

Students are then asked if they've ever had a tough time learning something, and I add an example from my life. Most kids will again raise their hands, mentioning all kinds of things. I draw a crazy, mixed up, roundabout line between the boxes, and ask them what they think the curved lines means. Many answers are offered.

I then explain to them that the new line is also learning, but it involves confusion. And that is okay. In all honesty, lots of

learning is confusing, chaotic, and senseless until somehow an “aha” moment breaks through the nervousness and confusion, for a moment of clarity. I ask students if they’ve ever felt like they’ve been “in the confusion” in class. Most will jump to tell you they’ve been confused while learning something. I make sure they know this is natural and happens to everyone. I don’t gloss over this, but explicitly tell them that confusion is okay. A discussion about confusion sets up students to being open to that part of the learning process, or at least it introduces them to the concept. When challenge and confusion come, and they will, I reiterate the concept of learning with confusion being okay. I explain this over and over again. After a while, students begin to trust in my realistic view of learning.

From Chapter 4...

Room Dynamics

*“Instead of asking us to get in line,
you should just ask us to get in clumps,
because that’s what we do anyway.”*

Ella, 4th grader

I’ve come to believe that my educational philosophy and classroom management can be integrated and combined to create something bigger than both, something I call “room dynamics.”

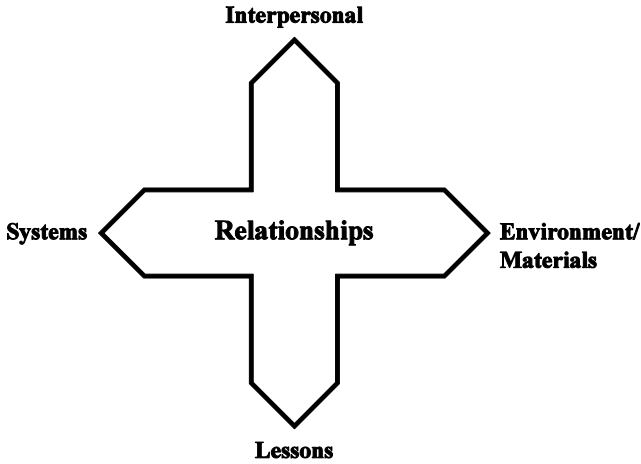
I truly believe 75% of the time a lesson doesn't go as planned, or I become frustrated with students behaving in ways contrary to my expectations, it is because my classroom dynamic was flawed.

Most education certification programs have their teacher candidates create their education philosophy and classroom management plan. This is a necessary step in formulating a vision for the classroom. But it's one thing to come up with a plan before becoming a full-time teacher; it's a whole other thing to fine tune, or even blow up, the original plan after experiencing a real classroom of students. While in my education program, I came up with a plan that included engaging activities and deep thinking. But it was limited. I didn't know my ideas would merge into something more.

I've come to believe the entire learning/teaching process can be put into terms of relationships. And those relationships are tied directly to room dynamics. Of course, building relationships between students, parents and myself, as well as building student-to-student relationships, is key; this entire book is about those kinds of relationships. Functioning interpersonal relationships set the tone for how people relate in the classroom. Are we all supportive, kind, forgiving and light-hearted? Do we encourage a classroom environment in which making errors is okay? Or are people overly competitive, reactionary, mean-spirited, and humiliating? A teacher has a lot to do with setting this tone early in the year. Throughout the years, I've done well in many cases, and have had to improve in others.

Three additional relationships described in this chapter are different than the interpersonal ones people usually think about. Relationships between people are the majority of the issue, but there are other relationships as well. If my students don't buy into things in the classroom, it may not matter that I have a great lesson planned or have a great system for signing in for hot lunch; there may be too much chaos or apathy to make things work the way I designed them.

The other relationships that are almost as important as interpersonal are: 1. how students relate to systems within the class, 2. how students relate to the environment and materials in the room, and 3. how they relate to lessons during the learning experience. The systems set up in the room guide the structure, the environment sets the tone of comfort and accessibility, while the lessons guide the learning. How students relate and engage with these three factors transforms good learning into great learning.



From Chapter 10...

Understanding Student Thinking and Using Explicit Instruction

*“Three is faster than zero, because three has
only one syllable and zero has two.”*

Alexa, 4th grader

Students give us hints into their thinking all the time. Do we listen? And I mean really listen? Sometimes it’s very easy for teachers to act like we’re listening when we really just have our own agenda in mind. Sometimes the day just seems too rushed to hear everything students have to offer or ask, and that is a shame.

In our society today, it seems everyone is in a time-crunch. But then a student asks a fantastic question, and it stops us in our tracks and makes us realize there's more to learning than getting through everything. If we aren't listening well enough, we need a wakeup call to change our rushed schedule or our response to students. In math instruction, this can be extremely important.

One thing I do every so often is to take a class period to intentionally stop and take a "breather," to listen and clarify. The first time I did this, I wondered if there'd be enough questions to fill a lesson period and keep everyone's attention. It's easy to feel insecure going into an open discussion with kids, not knowing if anyone will share. Going in, I made sure to have a lesson ready in case the discussion totally bombed and we were sitting there wasting time, but it didn't happen that way.

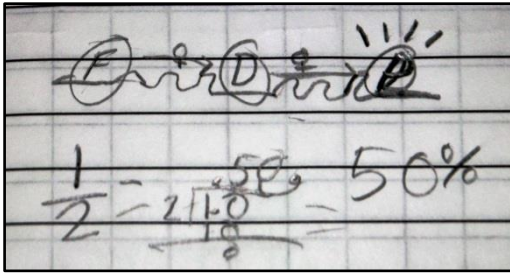
Kids seemed thrilled to take a breather and have the opportunity to ask questions. It seemed like they had never had the chance to do it either, to just catch up and smooth out some of their confusions or doubts. They asked a variety of questions, things I never would have considered. Some had trouble verbalizing their questions, but they still craved clarification. And they wanted to be involved; they weren't just sitting there hoping to be invisible and watching the clock. They genuinely wanted to get things clarified for themselves.

For example, I've found almost all students, even those with advanced math ability, need explicit instruction on how to decipher word problems, especially multi-step ones. Many

students show good progress in procedures, but have a bit of a struggle when trying to apply them in word problems. This is a spot where a full-group session can be useful, where students can share their perception of what a word problem is asking, and clarify what needs to be done. In full-group sessions on word problems, students are taught to look for numbers that are useful in answering the question, and also for those numbers that are unusable. I make the analogy of those games where a coin is dropped into a panel with obstacles that alter its path; the coin can end up in several different spots at the bottom.

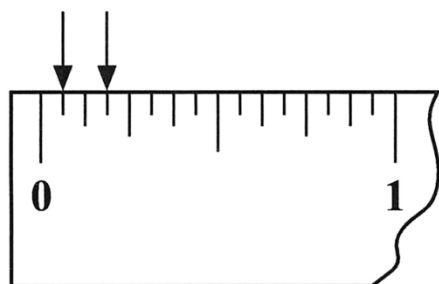
Students are guided to use their brains to filter information and use procedures to get that coin into the correct spot at the bottom of the game. This is just one strategy that can be used in a full group with different numbers for different levels of math ability, if necessary.

While this strategy can be used to solve problems, it may not always get to the root mathematical reasoning that students need to master. This is why multiple approaches always need to be used and taught explicitly. During our discussions with students, we often will tell them their questions are our priority, but in reality we don't take nearly enough time to answer these questions. And students learn not to ask. To counter this, we need to set up interactions so they can ask. The rest of this chapter is dedicated to examples of listening to students and observing them in a real class.



While teaching a student how to change fractions to decimals to percents, she drew hills between F...D....P saying:
"Numbers are going over mountains to become percents in the land of paradise."
Elena, 4th grader

When counting sixteenths of an inch on a ruler, many kids learn to look at just a specific length mark on the ruler to tell them what fraction of an inch a certain distance is. This is logical, since the different lengths ($\frac{1}{16}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$) on a ruler are designed to make recognizing them easier. But many students don't quite get the logic that the marks are measuring out distances between marks, not just one spot on the ruler. For instance, if students count only the visible $\frac{1}{16}$ marks from the end of a ruler, they'll count $\frac{3}{16}$ as $\frac{2}{16}$ because they will see only two of that length marks from the end of the ruler (a $\frac{1}{8}$ mark is in between them). If this isn't explained, understood and practiced, many kids go on making mistakes with rulers.



This is a prime example of the basic theme of this chapter—very intentional instruction and discernment of student thinking. There are many intricate details and levels of instruction that delve into students’ thinking that teachers need to pay attention to for students to truly reach exceptional learning in the classroom.

Before I was a teacher, a German student visited the company where I worked. Several colleagues and I took him to a Milwaukee Brewers baseball game and then attempted to teach him the rules of the game. It took about an hour, and we didn’t come close to explaining everything. To us, as Americans growing up in the 1960s and ‘70s, baseball was an easy game to understand. To my German friend, the depth of each aspect of the game made it more complicated as we went along; balls, strikes, foul balls, tagging up, force outs, and grand slams were just too much to absorb in one sitting. His questions as we went along gave us an insight into what he was thinking: Why does a foul ball on a third strike not count as a strikeout? What does

over-running a base mean? What is a “trap”? These questions led our teaching and got us deeper into baseball.

This story reminds me of students in the classroom learning the basics of mathematics, or other subjects, as the concepts and procedures keep building on each other. It’s a teacher’s crazy job to keep getting deeper, but this can overwhelm students. To be a great teacher includes trying to think as kids might as you plan lessons, paying close attention to students’ comments during lessons and then reflecting about the lessons afterward.

Each of us sees numbers in our own unique way, and although we as teachers may think we have the best way of seeing a problem, there are plenty of alternative ways to view numbers. While working with a third-grader on multiplication facts, I could see she didn’t know the facts automatically, but was using some mental strategy to think about the numbers. We stopped and had a conversation so she could tell me what she was doing in her mind. She was manipulating numbers in a way I had never seen before. We talked about how there are many strategies to solving problems and that as long as she got correct answers her strategy would work. But I also mentioned that as she got older and math became more complex she might need to use different strategies to speed things up and use her mind for more complicated processes. She got that. And by the time our tutoring hour ended she was working on three-digit by two-digit multiplication for the first time ever. When her mother picked her up, she said, “It’s fun!” The point is, we spent time talking about her thinking.

Even in a full group setting, these short conversations with students can go a long way in letting all students know they can see things differently and not be unusual. The conversations also help us discern where students are in their thinking.

A teacher's discernment is very important. It's important to concentrate on what students are saying, but also on what they aren't saying by paying attention to their inflections and facial expressions. I sometimes push or pry a bit by asking if they really get it or are just saying so. It's actually pretty easy to tell. And if they don't get something, I ask them to tell me what they're thinking at that point in time. Even this might be a challenge for them. This approach might seem obvious, but if we don't make a point of working this way, many teachable moments disappear without being taken advantage of.

"I thought parallel was only for horizontal lines."

Ricky, 4th grader

As students move through the school year, hundreds of questions and answers will be shared between all of us in the classroom. These questions and answers will come from a variety of angles; some will make a lot of sense, and some will come from left field. These student questions and answers contain vital information for a teacher. We want them to ask, so we need to make sure it's safe for them to do so.

After being in a classroom with elementary students, it still amazes me the different ways students may understand or view a

problem. Some students who are amazing at math may see things from such a complex, forward-thinking view that sometimes I can't see what they mean. Other students who may not be as amazing at math can also see problems in varied, valid ways.

Valid is the key term here because teachers need to respect students' perspectives. It's also our job to make sure students don't laugh at new and surprising views on numbers or ways to manipulate numbers that other students suggest. In one class, one student had some of the most refreshing ways of seeing math problems. I often had to stop and have the student repeat what he said to smooth out my own confusion on his perspective—even the teacher got confused. But once he explained what he was thinking more thoroughly, it actually made sense. This episode also helped my relationship with this student, gave him great acknowledgment of his own thinking and boosted his self-confidence.

In another class, we were discussing changing a mixed number to an improper fraction (i.e. $3\frac{1}{2} = \frac{7}{2}$). I wrote $3\frac{1}{2}$ down on the board and broke the whole number 3 into $\frac{2}{2} + \frac{2}{2} + \frac{2}{2}$ and then added the other $\frac{1}{2}$. Students were then asked how many halves the sum would equal; they answered either four or seven. Seven made sense to me, four did not. When asked about the answer of four, a student explained that she saw four sets of halves, which in her own perception wasn't wrong. Although not mathematically correct, I could see how she got her answer, so I acknowledged that and then clarified things for her. This is the

type of occurrence that can happen daily. A difference in perception can make a huge difference in a student's mind. If a perception is made a negative, that student might feel like the viewpoint was incorrect.

We have to be secure enough in our own understanding of math to be okay with a student seeing something in a different way. There may be as many views as there are students in the classroom. While we may not be able to listen to each and every view all the time, making an effort to see these views can open up understandings for many students. Some teachers come into the subject of math thinking they must show the students they know more than they really do, out of insecurity. New or different views might intimidate an insecure teacher, which may create an environment where students' questions are not acknowledged or validated. We can't let insecurity about our teaching keep us from being real. Students will respect a teacher that allows students to have different views and understandings. A teacher who is real and will listen to students is a positive influence for all students. Students notice validation of ideas or perceptions.

I hope you enjoyed reading excerpts from the book. Buy *Mumbo Jumbo & Banana Peppers* to hear more from Peter Wilson.