
Upper East Tennessee Council of Teachers of Mathematics

NEWSLETTER

VOLUME 17 ISSUE 2

OCTOBER 2016



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WHY MISS OUT ON MOOCs?

Available now: The Friday Institute at NC State University is offering TWO Massive Open Online Courses for Educators (MOOC-ED) for in-service and pre-service middle and high school mathematics teachers' professional development.

Both courses are FREE, open on September 26th, and will remain open until December 19th, with ongoing registration open until December 1. Both courses could be taken by individual teachers or teacher educators and could count toward at least 20 hours of continuing education. Courses available:

- **Teaching Mathematics with Technology**
Lead designer and instructor: Karen Hollebrands
- **Teaching Statistics Through Data Investigation**
Lead Designer and Instructor: Hollylynn Lee

To learn more see <https://place.fi.ncsu.edu>

SURVEY SAYS:

The University of Texas at Austin is surveying both current and pre-service teachers of K-12 math about how they use literature in their math instruction. Upon completion, you can enter a \$50 gift card drawing! To participate click here:

<https://redcap.prc.utexas.edu/redcap/surveys/?s=3XELT7T43D>. For questions, contact srpowell@austin.utexas.edu

GET \$\$\$ FOR TEACHING & IMPROVEMENT:

MET GRANT APPLICATION DUE!

Applications for [Mathematics Education Trust Grants](#) are due November 4. Funding ranges from \$1,200 to \$24,000 and is available to help mathematics teachers, prospective teachers, and other mathematics educators improve teaching and learning of mathematics through grants, scholarships and monetary awards.



MAKE YOUR VOICE HEARD!

In the upcoming online [NCTM election](#), individual NCTM members will have the opportunity to vote for one candidate for Director in each of the following categories: President-Elect, High School, and At-Large. If your individual membership was current as of August 31, you will be eligible to vote in this year's election, which opens September 30.



Opening a world of
opportunity: Meetings & more.



NCTM Regional Conferences:

Phoenix: Oct. 26-28, 2016

Philadelphia: Oct. 31-Nov. 2, 2106

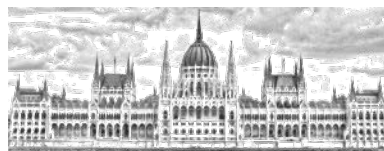
Themed "Great Mathematics at Your Doorstep," the NCTM Regional Conferences are a great opportunity to network with peers in face-to-face settings, and explore new ideas and resources that can support your students for greater college and career readiness and success.

INNOV8 CONFERENCE:

Engaging the struggling learner.

St. Louis: Nov 16-18, 2016

- *Hands-on experience implementing research-based math education practices.*
- *Connect with peers facing similar challenges and collaborate for more effective solutions and practices.*
- *Return to classroom, school and district with an action plan and commitment to implement.*



Budapest Semesters in Mathematics Education (BSME)

A semester-long study abroad program in Budapest, Hungary, designed for undergraduates and recent graduates interested in the learning and teaching of secondary mathematics. For more information, including the online application, see bsmeducation.com





"R" U ready to code?
They were!

This summer, CUAL professor Ryan Nivens partnered with Dr. Godbole from CEMSE and Dr. Hendrickson from the Mathematics & Statistics department to offer a workshop on the statistical programming language "R." They brought in 30 teachers from 10 different districts for 5 days and created some lesson plans, presentation materials, and computer code. Surveys of the teachers showed that they LOVED the workshop and planned to implement what they learned with their high school students.

"Even coding novices were pleasantly surprised at how much and how easily they learned."

--Dr. Ryan Nivens

30 teachers. 10 districts. 5 days. One awesome experience!



Looping it up

By
Cheryl Honeycutt

I first heard about looping when my dear friend started teaching in an elementary school. Looping is when a class of students are placed with a specific teacher for more than one year. At the time, I was not sure of my feelings regarding the looping process. There are a lot of my students that I am READY to see leave at the end of the school year. Then, there are those that I would take into my home to raise the rest of their adolescent life. As with anything in the educational field, or life in general, there are always pros and cons.

This past year, I got to experience the looping process. My school, or county, does not typically practice looping but certain situations created this experience for me. My first year teaching, I taught 6th grade math and science. The next year, due to the shuffling of teachers within the school, I was moved to 7th grade math and science. So, essentially, I looped with these students. I was pretty excited to see my “babies” again. To say that these kids change from sixth grade to seventh grade is an understatement!

When the school year started, it took me a while to adjust to how high they had grown and how low some of their voices became. Once the shock wore off, I began to quickly see the pros and cons of looping. I might add, that I now feel the pros far outweigh the cons!



The year I looped up was a unique year because it was the first official year of Common Core State Standards, or in my case teaching in Tennessee, TN Ready Standards. Because of the shift in standards, there were many gaps and a few overlaps.

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Looping it up (continued)

This did not really become too terrible of an obstacle for me because I already KNEW what my students had learned (or didn't learn) the prior year. **Talk about being ahead of the game! This would be my Pro #1 of looping up.**

Back to the beginning of the year, we saved almost a week of instructional time NOT having to go over all those classroom rules and procedures. I must say, it was pretty fabulous! Obviously we had to refresh because if they can forget math skills over the summer, they can for sure forget a few rules. **But, it seemed to come back real easily and quickly. This would be pro #2!**

And now here is my first Con....that student (or students) that just drove me crazy last year were back again. However, this time they came back with the hormones! In all honesty, it was not too bad having these challenging students but I will say that looping one more time with them might just do me in! That being said, this con most definitely does not outweigh all the pros.

PROS > CONS

As far as the curriculum goes, it was beneficial in all aspects knowing what these students' prior understanding was. When I lesson planned, I knew what they did not learn the previous year that is needed in order to understand the current skill. For example, the first thing that I taught in 7th grade Math was Integers. They were to learn how to add, subtract, divide and multiply. A skill that goes hand in hand with integers is Absolute Value. This skill was now a 6th grade standard but was a 7th grade standard the previous year. I knew that my students did not know this well. So, immediately, I was able to see my very first gap in the standards. In my mind, this put us ahead of the game because I was able to build this into my lesson planning instead of finding out in the middle of my lesson and having to step back. **This would be BIG Pro....#3.**

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Looping it up (continued)



On the flip side, studying Circles was a 6th grade standard the previous year and now is a 7th grade standard. Guess which lesson I turned into a review lesson instead of a teaching lesson?? I knew that we worked very hard on this skill the year before and I also knew that they should all be very comfortable with it. **Not only did I save time to work on skills they REALLY needed, I did not bore 90% of my class teaching something they already knew. As most educational professionals know, this is a classroom management disaster in the making...pro #4.**

As you can guess, there are many more pros and even cons of looping up a grade with your students. My experience was a very beneficial one and I would do it again if asked. It is quite challenging to learn and come up with another whole year of lessons but that is nothing compared to the wonderful experience I had. By the end of the year, all the management aspects of my classroom were completed without even asking a student. For example, the date would be changed on my board before I could get to it, daily supplies would be passed out, and the students just KNEW what to do and what was expected. My classroom ran like a well-oiled machine. I look forward to a new year with a fresh group of students!

■
“My classroom ran like a well-oiled machine.”



I was THAT student

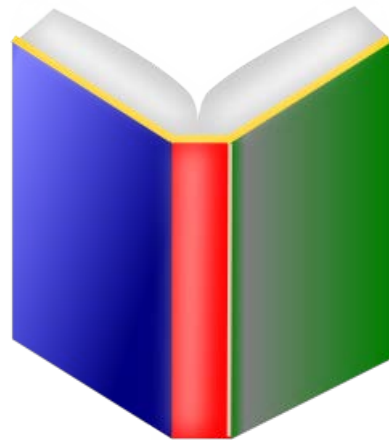
By
Rhonda H. Shaver

I hated math. I loved reading. I was good at reading, but not math. Therefore, I continued to hate it and pressed through my school years only taking what I needed to get by. I was that student.

I remember endlessly practicing worksheets full of addition, subtraction, multiplication, and division problems. It made no sense to me, but I followed the routine over and over again. More often than not, I made those same mistakes that students do with the traditional algorithms. Then, there were word problems. Word problems were torture. Have I mentioned that I hated math?

Thankfully in high school, I had a teacher who made a difference in changing my distaste for the subject. She actually made me understand and like algebra ...at least a little. I really did enjoy her as a teacher, so I took more math in order to have her again. The end of my senior year came, and I had made it! There was no way I was going to college, because that

would mean more math. The problem was that the only career that I ever wanted was to be a teacher, and I needed college for that. Yes, college meant more math, but I made the attempt. I struggled through the advanced math of my freshman year, with my high school teacher tutoring me all the way. I had never worked so hard on any class in school, and it was the best "C" I ever made!



"I hated math. I loved reading. I was good at reading, but not math."

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I was THAT student (continued)

Although I made it through that first year, I still didn't want to take more math. I was so over it that I decided to give up on my dream of becoming a teacher, mainly because I couldn't handle the stress of more math classes. I was a bright student, but my math background was weak, and as the skill sets became more advanced, it made less sense to me. I quit college to pursue a job in the business world. I was very good at that; however, I quickly learned that being good at something doesn't mean that you have a passion for it. I still wanted to become a teacher.

Time went by, and I became a wife and mother. My family became my passion, and I was a teacher to our children. We loved to read and write, but I still didn't like math. As my children grew I helped them with grammar, spelling, reading, and writing. My husband helped them with math. We made a good team, but always lying in wait was the desire to be a teacher

The year that our youngest began school, that flicker in my heart became a flame, and I was compelled to go back to college and complete my teaching degree. At the age of 41, I took on a growth mindset and decided that I would pursue my dream.

While taking my first elementary math course, I was amazed. Math was different than I remembered. The buzz was that it was "new math," and it sparked quite the controversy with the general public. I, however, grew quite fond of it. **This new way of thinking actually made sense to me, and I discovered that some of the ways my mind solved math problems were really okay.**



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I was THAT student (continued)



“At the age of 44, I saw two dreams come true. I not only was finally a college graduate, but I also was a teacher. This girl that almost let her fear of math keep her from living her dream graduated on the Dean’s List, as a member of two National Honor Societies, and Summa Cum Laude with a 4.0.”

I guess you could say that “new math” made it all connect for me. Every year, I see my students who love reading, but don’t like math and believe they aren’t good at it. I want to make it connect for them much earlier than I was privileged. I am now more prepared to teach them in ways that they can understand. I shared my story with one struggling student. I explained that when I was a little girl like her I didn’t like math, but now it was my favorite subject to teach. It was my hope to inspire her to take on a growth mindset and become whatever she wanted to be when she grew up – maybe even a math teacher. I know, because I was *that* student. ■



Getting to First Base

By
Mary HatziKazakis

The middle of July brings a “one last shot for fun” mentality among students and teachers. One more trip to the pool, one more picnic in the mountains. Yet I sit, not poolside or mountainside, with several dozen of my colleagues in a two-week math course. The befuddled expressions from my non-teacher friends are inevitably followed by predictable questions: Why do you have two weeks of math training this summer? Aren't you still teaching first grade? Is there some kind of new way to teach kids $1 + 1$? Is this because of (horrified gasp) Common Core?? Oh friends, if you only knew.

The thoughts of first graders are deep, deep thoughts. We could easily have devoted every minute of the two weeks only discussing one thing: what are numbers, really? Place value, for example. Sometimes a 2 means two...other times it's representing 20...how can we keep track of what we're looking at? A typical first grade student is confronted on a daily basis with charts, number patterns,

addition and subtraction, that presuppose an understanding of place value. In those tender brains they are forced to contemplate how a 10 can be 10 individual pieces or just one group. They need time to let that sink in, and they need many ways of showing it so that it makes sense. They need time to explain it to others, be able to move around the units and be facile enough with the concept to be able to add and subtract, write higher numbers, understand what zero is about. Making meaning of math requires a journey for each of us. A journey that will periodically involve some confusion, but the confusion is necessary in order for deep understanding to occur.

“Confusion is necessary for deep understanding to occur.”

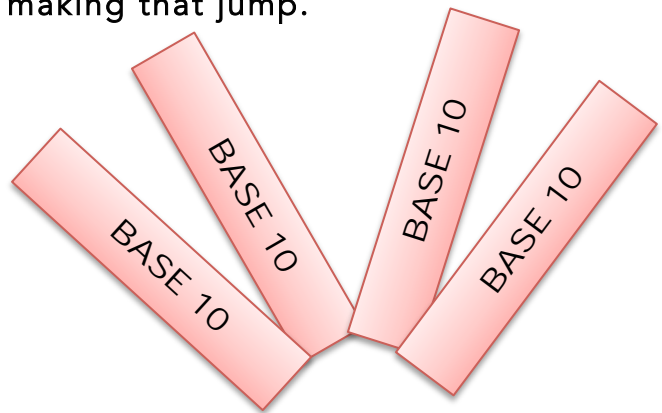


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Getting to First Base (continued)

This was brought home to me in a very powerful way when one day of our two weeks was spent learning a new way to count. Yes, said the instructor, we are going to take a leap of faith and learn a different number system. To say it was a foreign language seems cliché, but it's true. Using words like "flub" and "skoobot", we struggled through several exercises. It took us a while to discern that this was a base-five system, and it took us even longer to realize that we were doing just what our students tend to do, which is not to trust the grouping of numbers, but to keep recounting by ones. Former students' faces paraded through my mind. I thought about the frustration when they tried over and over again to see that the rods in base-10 blocks are truly a group of 10, to look at a hundreds chart and see how the patterns are there

that are built on those groups of 10. Little fingers trying to use the hundreds chart to find 10 more or ten less than any given number will not just move up and down the chart, but point to each square and count by ones...for a long, long time. Watching them, I would cringe. "Just count the groups!" I was yelling silently in my mind. Yet as I found myself doing the exact same thing, I could see why a long period of counting by ones is what makes sense. **After my experience with the base-five system, I saw that physically holding on to and moving those groups was what finally allowed my mind to start making that jump.**



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Getting to First Base (continued)

I had to be confused to understand my students' confusion. That, more than anything else, is why the two weeks carved out of the summer have been worth it. We don't often actually get the chance to view things as our students see them, do we? The accumulation of our years and experience blurs the reality of how many steps are involved until we "just know" things about math. Pause and think about all those steps. Give your students the time, opportunity, tools, manipulatives, questioning, and above all, embrace the confusion. When it clears, the learning will be meaningful and powerful. ■



"Pause and think about all those steps. Give your students the time, opportunity, tools, manipulatives, questioning, and above all, embrace the confusion."

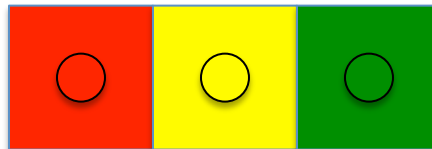


ORPDA

By
Hannah Sifford

“Star, at, pound, caret, flub.” I felt like I was in another country -or maybe on another planet- when I heard my professor counting. Our goal was to determine the base of the Orpda number system, and then figure out how to count in Orpda. Just like that, a room full of teachers of various backgrounds and experiences was left feeling like a class of kindergarteners. I was clueless on where to start, and it took several activities using math manipulatives for me to even begin comprehending Orpda.

Every August I get a room full of first graders, and every August I am reminded of how much first graders grow throughout the year. I easily forget how basic first grade begins and what little understanding they have of the base ten number system. The thought often rolls through my mind, “Why don’t they get this? It’s so simple!” After struggling to learn Orpda, I now have a better understanding of what those six year olds are thinking when I introduce a new concept.



Snap cubes and other manipulatives were an imperative part of learning Orpda. I still wouldn’t know what caret-at means if it weren’t for those tools. Now I fully understand how important math manipulatives are for students. Before MathElites I was quick to pull manipulatives away too soon for fear of them becoming a crutch. I won’t make that mistake again. Students need that support for however long it takes them to grasp a concept.

I was excited to start the MathElites program because I knew I would gain a lot of resources and ideas to use in my classroom. However, by biggest take-away from the program has been sympathy for my students. When I’m teaching a new concept and I get those blank stares, I’ll remember Orpda. ■



The Importance of the One Hundreds Chart

By
Alison Horne

As I think back to my early years in the classroom, I had a one hundred chart on my wall in my classroom; however, I did not use it very much at all. I have since changed how I view and use this wonderful math tool. In the early childhood grades especially, the majority of our standards that have to be covered can be taught by using the one hundreds chart. There are so many wonderful ways in which to use it. Now in my classroom, not only do I have the one hundreds chart displayed, but each child has their own copy at their desk. Each day we take about five minutes to engage in a one hundreds chart activity. The students have improved their number sense so much since we began this routine.

Here are some of the quick activities we do in our classroom when working with the one hundreds chart:

- Counting by 1's
- Counting by 2's
- Counting by 5's
- Counting by 10's



Understanding going up



- What number comes before/after a certain number?
- Addition
- Subtraction
- Looking for number patterns; e.g., what numbers all have 5 in them?
- Find the missing number; e.g., take a number away and have them guess what is missing.
- Ten more/Ten less
- Cut apart the one hundred chart and use it like a puzzle
- Follow directions by coloring the given numbers to make a picture

There are so many more activities that can be done with the chart, so get your students excited about using it. Make an effort every day to use it in a creative way. They will love it and you will see their number sense improve greatly.

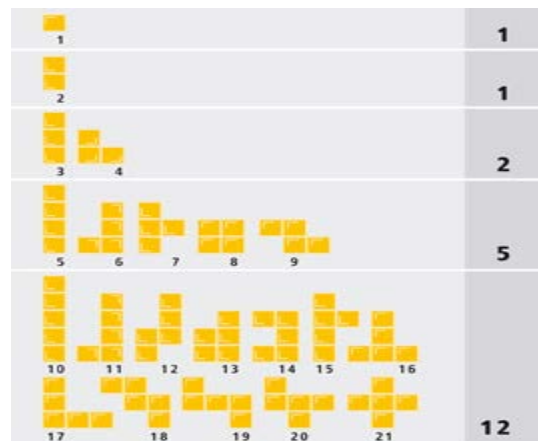
BLOKUS: An exciting tool for teaching math

By
Lisa Bevins

I was introduced to the idea of using a game called Blokus to teach math. Blokus can be used to teach perimeter, area, integers, ratios, percents, and other math concepts. I was amazed at the possibilities.

I had the privilege of representing my school at MathElites during the summer of 2016. This is a great program and I learned so many new ways to look at math. One of the ideas was to take a game and make it a teaching tool.

Blokus is a game that teaches spatial reasoning and analytical thinking. The game includes 84 geometrically shaped game pieces in 4 colors (21 pieces in each color), a 400 square board, and an instruction book. The board is a 20 by 20 square. Each player will choose a color (red, yellow, green or blue). Each of the 21 shapes range from 1 to 5 squares. For example, there is one piece with one square, 1 piece with 2 squares, 2 pieces with 3 squares, 5 pieces with 4 squares and 12 pieces with 5 squares. See the diagram above of how the pieces are numbered.



According to the instruction book, blue will always go first and then follow clockwise. I don't think it really matters, but there are two distinct rules to follow. Each person must lay their first piece in their respective corner on the board and game pieces can only touch on their vertices. Game piece faces will never touch. The idea is to place all of the pieces on the board. The winner is the person who has the least squares left, not game pieces. There are bonus points for using all game pieces and for using the single square on the last move. It's different every time, which makes it exciting and new every time, and ultimately a great tool for learning these topics in math.

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BLOKUS: An exciting tool for teaching math

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Now that we know the rules of Blokus, how can it be used in the classroom. The game pieces can be used to talk about perimeter and area. Students could play the game and place their scores on a number line. Students can find the mean, median, mode and range after several students have played. Four students can play each game and it only takes 10-15 minutes to play. One idea would be to have enough games for all students. Have them play and then give them a set of questions to answer. Another idea is to have this game set up as part of a center. Students could find the ratio of game pieces used to game pieces not used or find the percent of game pieces used. This is a great way to show transformations. The pieces are easy to pick up and move. The pieces could be placed on grid paper so student could see how a figure is transformed.

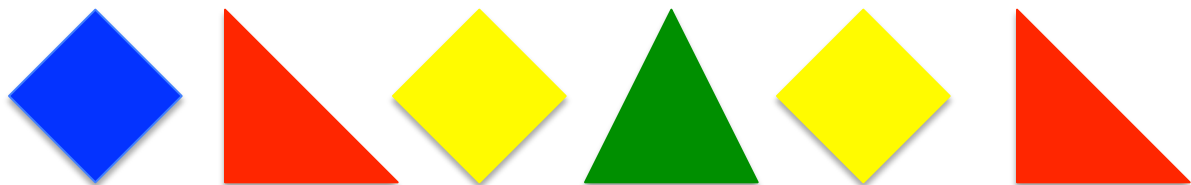
Younger students might be able to apply the shapes to number sense. For example, take the pieces with 5 squares. Students could look at the pieces and see that $2 + 3 = 5$ or that $1+3+1 = 5$. They learn to look at the way the game piece is designed. Symmetry is another idea that could be used in any age group. A student who is 5 years old can play this game and learn something from the game.

“Students can find the mean, median, mode and range after several students have played.”

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BLOKUS: An exciting tool for teaching math

(continued)



Older students can use the game pieces to make rectangles. Start out with an easy rectangle, like a 2×15 . Once the student get the idea, ask them to build a 4×9 or 7×12 . Students can make their own rectangles. This again leads to perimeter and area. Students can make other shapes, not just rectangles. They can make a shape and then find the perimeter of that shape.

There are so many possibilities with this simple game. I plan on purchasing several Blokus games for the 2016-17 school year. I am currently teaching 7th grade math, but I have taught math and science in grades 4-9.

Blokus will work with any grade level. I can see many possible ideas and plan on trying each one of them sometime during this school year. I would recommend this game to everyone who teaches math because students can learn so much just by playing the game. Blokus is not expensive, so if you would like to try something different and exciting, buy the game and let the learning begin. ■



Mathitudes: How growth mindset can help RTI students.

By
Teresa Bumgarner

A Response To Intervention (RTI) class is a different environment than a mainstream class; there can be anywhere from 2 to 6 students in the class, and they all struggle with the subject that is being taught in class. The students' confidence level is low and their attitudes can be very negative about the subject. The teacher in an RTI class has to be upbeat, positive, and encouraging to keep the students interested and invested in learning. RTI math students can struggle with basic math concepts such as addition, subtraction, multiplication and division. Students come into class with a fixed mindset that they will never be successful in math. This is where growth mindset becomes a key part of their learning and improvement. The students have been convinced that they are not good at math and will not even understand basic math concepts. Growth mindset is something that will not happen overnight and is a process that involves the classroom environment, the teacher's interactions with students, and the students' attitude.

Growth mindset involves saying it is ok to make mistakes and you can learn but it will take practice, time, and determination. The student has to change their attitude of "I CAN'T do this" to "I CAN do this" and the teacher has to praise hard work, effort, and the thought process not just right answers.

"RTI math students can struggle with basic math concepts....They come into class with a fixed mindset that they will never be successful in math."

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Mathitudes: How growth mindset can help RTI students. (continued)

This past school year I was given the privilege of being a RTI math teacher and helped develop the curriculum that would help struggling students. My students were in Tier 3 and low Tier 2 in math at the beginning of the year. As I got to know my students, I quickly realized that they felt defeated in math before we even started class. They would come into class grumpy, dreading class, not wanting to work, and with bad attitudes about math. The majority of students that I worked with struggled with basic processes and concepts. They relied on a calculator to do all basic math operations. That is when I realized that attitudes (mindset) about math had to start changing for students to be successful. I couldn't just concentrate on what they were getting correct. I had to start recognizing that they got the process correct to solve the problem; I knew that as their mindset and confidence changed the correct answers would be there.

I had to build an environment that students felt safe to try something they knew they didn't understand and that was below their current grade level. These students were aware that they were behind for one reason or another. I placed motivational posters throughout the room, I created anchor charts that explained step-by-step procedures for example, adding with regrouping, and I had to find ways to help students that had struggled with keeping problems lined up when solving.



"I placed motivational posters throughout the room."

Continued on page 21

Mathitudes: How growth mindset can help RTI students. (continued)

I did not allow any students to make fun of someone because they didn't understand how to solve a problem, and I encouraged them to ask each other questions. This built a safe learning environment and students started working together to understand basic math skills. When students observed that they were not the only ones that didn't understand how to do something in the class, or that they weren't the only ones making mistakes, mindset and confidence started to change.

When students would say, "I can't do this, I don't get math" I would say, "We don't say CAN'T in this class, we say we CAN with practice and understanding." As the students progressed and started feeling successful about what they were doing in class their mindset did start to change. I no longer heard as many say, "I CAN'T" and I started hearing more of, "I will try" or "I can get this once I understand and practice."

Students started sharing with other students what they had figured out and what helped them understand what they were doing. As a group we started putting their problems on the board and explaining everything they did step by step and their reasoning.

As I changed my mindset about encouraging their effort and thought process not just concentrating on them getting right answers, the class environment and students' mindsets changed even more. We concentrated on understanding why we had to do certain steps to regroup when we added or borrowed from another place value when subtracting. They started to understand place value and how it affects basic math operations. They started to understand that multiplication was a short cut for addition and how all the basic operations worked together or opposite of each other.

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Mathitudes: How growth mindset can help RTI students. (continued)

Students that started out the year in Tier 3, which were 2 to 3 grade levels below their current grade level did move up to 2 Tier by Christmas. I did have some students that were in Tier 3 move up to Tier 1 and exit the RTI program altogether. The mindset of the teacher and students can affect how well students learn and grow in a classroom. If one student in class has a fixed mindset they will not show as much growth as a student that has a growth mindset. The teacher has to build a safe learning environment and work towards having a growth mindset. The time it takes to change your mindset and class environment is worth every second because the change in student work, effort, and learning are worth the time. ■



“The teacher has to build a safe learning environment.”

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Complete application and return to Amy Glass with a check for \$10 made payable to UETCTM. Mail completed application and check to:

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