



# UETCTM News

## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

## *President's Message*

Thank you to all our UETCTM members. Your membership allows our organization to provide monthly meetings and programs. If you have not renewed your membership or joined UETCTM, please make an effort to send your renewal to Jerry Whitaker or join using the form on page 24.

TMTA is encouraging 1st through 8th grade students to practice their math facts using free games on [www.sumdog.com/tn](http://www.sumdog.com/tn). The school with the highest student math scores between December 5 and 15 wins a trophy and \$750 worth of math software. This is an excellent way to give your students practice in math facts, and is an excellent opportunity to win software to enhance your classroom instruction. Information on this contest is on page 2.

Additionally, the Knowles Science Teaching Foundation (KSTF) is accepting application for teaching fellowships. If you are interested, information is available at <http://www.kstf.org/programs/teaching.html>.

Sincerely,

Ryan Nivens

Center for Excellence in Mathematics and Science Education

Department of Curriculum and Instruction

Claudius G. Clemmer College of Education

East Tennessee State University



**UETCTM MEETING**  
**Monday, Nov. 14, 2012**

**Daniel Boone High School**  
**1440 Suncrest Drive**  
**Gray, TN 37615**  
**423-477-1600**

$\pi$  4 p.m. Refreshments and gathering

$\pi$  4:30 p.m. Business meeting

$\pi$  5—6 p.m. Program(s)



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- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application



## TENNESSEE MATH CONTEST

December 5 through December 15, 2011

We're running a math contest for all schools in Tennessee.

To take part, students answer math questions on the free Sumdog website.

The school scoring highest wins a trophy, and math software worth \$750.

We average the results across competing students, so all schools have a fair chance of winning.

**SIGN UP NOW!**

[www.sumdog.com/tn](http://www.sumdog.com/tn)



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- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

## MEMORY OR STRATEGY

By Allison C. Brooks  
Bristol TN City Schools, 4th



I had spent 10 years teaching first grade and loved watching my students learn to read. When I learned I was going to be transferring to Holston View and would continue teaching first grade I was thrilled. I was in my comfort zone, that is until the first day of the 2009-10 school year, when I suddenly learned I would be moving to third grade. There was only one very frightening thought that went through my head – MULTIPLICATION!

I spent an entire weekend fretting over how I was going to teach multiplication. Having flash backs of flash card drills, timed tests, and fact clubs was overwhelming to me because I was never able to “memorize” my multiplication facts like my teacher expected me to. I can remember sitting in math class with sweaty palms and fast breathing because math “just isn’t my thing”.

I knew, even as a third grader, that I had to do something in order to pass the all mighty timed multiplication test. I could draw pictures and I could skip count, but I knew I couldn’t do any of these strategies quickly enough to trick my teacher into thinking that I knew my facts.



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- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

I wish I could pin point an exact “aha moment” that the whole concept of multiplication occurred to me, but it was that moment that changed me as a third grade math student and, in effect, would later have an impact on my ability to teach students multiplication. I had finally discovered, on my own, a strategy that worked for me and that I could use quickly. Because I discovered this strategy for myself, it has stuck with me throughout my life.

What is my strategy you ask? Simple. It's counting sets of objects. It is a strategy that I perfected so well that my teachers throughout my schooling never realized I didn't have my facts memorized, but had rather created my own fact finding machine in my head. If someone asked me what  $7 \times 9$  was it was no problem because I knew my base sets of 2's, 5's, and 10's. It was very easy for me to manipulate this problem into  $7 \times 10$  to get 70 and then to count back a set of 7 to get 63. If the problem was  $6 \times 7$  I could start at  $5 \times 7$  and then add on another set of 7 to 42. How about  $7 \times 8$ ? I would start at  $7 \times 10$ , but this time I had to quickly count back two sets of 7 since 8 is two away from 10. I knew that multiplication dealt with sets of objects and I discovered a way to manipulate those sets into groups that were easy for me.

My own learning experience has affected me as a teacher because I know students learn differently. I was one of those students. It has been



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- $\pi$  Math Fun
- $\pi$  President's Message
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- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

important to me to make sure that my students have different strategies to solve a problem. What works for one may not work for another. I encourage my students to find a strategy that works for them and that they can use competently for multiplication or any other mathematical concept. Use it, teach it to others, own it for a lifetime. Yes, I do give timed multiplication tests, but my students know that they are free to use any strategy they feel comfortable with to calculate the answer. So I leave you with one question. Memorization or strategy?

By the way..... this sweaty palmed third grade math student absolutely loved teaching third grade math and is eager to conquer fourth grade.



# UETCTM News

## IN THIS ISSUE:

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- $\pi$  President's Message
- $\pi$  UETCTM Meeting
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- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

## USING FLIP CAMERAS TO FURTHER MATH INSTRUCTION IN THE CLASSROOM

By Allison Hodge  
Bristol TN Schools, 2nd



I spent some of my planning time this past year observing my fellow teachers at school to see how they incorporated technology into their everyday lessons. My favorite thing I observed was the use of the FLIP camera in the classroom. One of the math teachers used the FLIP to add a little “flavor” to his lessons. He would make up raps and songs about the lesson or dress up as a new character. His students loved it!

Since every grade level was given a FLIP camera to share, I decided to try it out in my classroom. I started out with one lesson. I was showing my students how to use the “Hop, Skip, Jump” method to subtract. I made a video talking about “friendly numbers” and the basics of the new method. In the video, I also did some examples, step by step, and paused so that the students could walk through the problem with me. I used this as a math station and it was a hit! We posted it online so that parents could practice the new method, too. It was great to watch the students work through the problems with me as I explained them on the video. They even raised their



# UETCTM News

## IN THIS ISSUE:

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- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

hands to answer questions I asked! It was great to be able to work with one group and have another group working on the same thing. It was like having two teachers in the room!! I decided to take it a little bit further and make a short video for each lesson the next week. It only took about ten minutes when I came in in the morning. The students were even more involved that week than they were the week before! So, taking it a little bit further and leaving my comfort zone of control, I handed it over to the students. We have mini lessons on how to use the camera and appropriate behavior for making videos. The students also had to decide together, in their small groups, what problems they were going to do and assign roles to each group member.

For the math station with the FLIP that week, each group go to make videos demonstrating the "Hop, Skip, Jump" method. They wrote the problems, did the work, and solved and explained the problems. We posted these online so that the students and their parents could watch them from home and get extra practice. They felt like movie stars having their videos on the internet.

The FLIP camera became an everyday resource in my classroom. It made math fun for everyone and got students actively involved in their learning. My students remembered this method of subtraction the best because of their active learning with this project. The students were able to take control of the math and loved it!



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## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

## DOES $X + Y$ ALWAYS = $Z$ ?

**Andrea Burlingham**  
**Kingsport City Schools, 3<sup>rd</sup> Grade**



**A**s I ponder on this question, I can't help but think about the math journey I have taken over the years. My first memory of learning math begins in 2<sup>nd</sup> grade. We were learning about subtraction and the number zero. Needless to say, I did not have a positive experience at all. In fact it was horrible! The teacher got so upset with me that I received my first and last paddling...she took a ruler and hit my hand because I admitted that I did not understand how to work the math problem. I guess this punishment was to help me learn how to subtract and to like math. Well, this tactic did not work! Not only did I leave that classroom hating math, but I left many other classrooms feeling very dumb when it came to math. My journey does not end there. I decided to become a teacher and help young minds learn all they can while in my class – that includes math! Interesting thing happened when I got my first teaching job...it was in a 2<sup>nd</sup> grade class. Now I would have to face my worst fear – teaching math!! The thought crossed my mind to just skip the chapter in the math book on subtraction



# UETCTM News

## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

using zeros and hope that the students in my class learned that skill from another teacher. However, the work ethic in my heart would not let me do only part of the job I was hired to do. Therefore, my second graders and I muddled through subtraction using zeros.

Over the next several years I tried my best to teach that skill. I would tackle it from a linear perspective – I taught it the way I learned it. No, I did not paddle any hands...my lessons were just very basic and very boring. Solve the problems my way and you will get the correct answer. Boy, that caused my students a lot of confusion and resulted in my getting mad because I was so convinced I had all the math answers. I was not willing to change my ways. I wanted my students to see math from my perspective, and my perspective was the right perspective.

During my ninth year of teaching I attended several math professional development sessions, and all I heard was there is more than one way to solve a problem and get the answer. You can solve math problems using the traditional algorithm, but there are many other ways that can be faster and easier. Really? You must be joking.... faster and easier? Are you kidding? This only child can't stand to be wrong, and I had to face the hard fact that I had been teaching students from only one perspective - my perspective - and my perspective was very linear. What do I do now?



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- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

My next few years of teaching became some of the best years ever. A new way of looking at things emerged for me. I looked beyond the linear perspective and asked myself and my students, "Does this make sense? Is this the only way to find the answer? How else could you solve this problem? Can you explain how you got to that answer? Do you understand how you got the answer? What do you already know that can help you get started solving that problem?" There were many days when I wanted to throw in the towel and quit. How could I possibly teach this way? I could not fathom how there could be that many ways to solve one math problem! At the end of the day the only thing I could do was look beyond my "one and only linear perspective" and accept that there are many ways to solve a problem. Wow, my learning curve was huge, and boy, was my linear thinking evolving! My mind was free to explore a whole new world of problem solving!!

This journey of asking questions, solving problems many different ways, and exploring all possible solutions before deciding on how I want to proceed has only just begun for me. I find that every day I am faced with many problems to solve – some not as easy to solve as others! So, as I ponder on the question "*Does  $x + y$  always =  $z$ ?*" *The answer for me is, "well sometimes...!"*



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- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

## AN OUT OF EDEN EXPERIENCE

By Ashley Carter  
Kingsport City Schools, 2nd



As a young child, I can remember hearing the Bible story about Adam and Eve living in the Garden of Eden. God told Adam and Eve they could eat from any tree in the garden, but not to eat from the tree of knowledge of good and evil or they would surely die. The serpent came along and deceived Eve into eating from the tree. Eve, in turn, persuaded Adam to also partake of the forbidden fruit. After they ate the fruit, their eyes were opened. They realized they were naked and they were ashamed.

While sitting in my Mathletes course at ETSU, I had a similar experience to Adam and Eve. I ate from the tree of math knowledge and realized my numbers were naked, and I was ashamed!

It wasn't totally my fault. When I was in elementary school, I came in contact with lots of naked numbers. Moving on to middle and high school, there was more of the same. By the time I reached the college level, I knew what to expect: naked numbers. The problem was I didn't know my numbers were naked until sitting in Dr. George Poole's Mathletes course for current third and fourth grade teachers.



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## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

George, as my professor prefers to be called, identified naked numbers the first day of class. Naked numbers are numbers we write down without attaching a unit of measure. For example: "3". In my ignorance, I didn't see anything wrong with writing a number this way. As I previously mentioned, I was pretty comfortable seeing naked numbers. To be perfectly honest, I was pretty comfortable *teaching* with naked numbers. It wasn't until George asked us the question, "What does that three mean?" that the wheels in my head really started turning. *Couldn't that three be whatever the student wanted it to be?*

We third and fourth grade teachers, who thought we at least had simple numbers figured out, argued that students need practice with recognition, computation, and operational procedures. George opened our eyes to the fundamental piece of learning that we were missing when we left off the unit of measure with our numbers: Piaget's Conservation of Number. He reminded us what we first learned in our early teaching courses in regards to Jean Piaget: children learn conceptually in stages. George also reiterated that numbers are used in four different ways: to determine how many, how much, what position, and for identification purposes when telling who or what.

*No wonder my students struggle with word problems and memorizing multiplication facts! I had a great epiphany that day. Having taught*



# UETCTM News

## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

both fourth and third grade, I noticed my students struggling through words problems. They struggled with determining what operation to use, which numbers to manipulate, and how to answer the question being asked. After realizing students, me included, have been subjected to naked numbers for so long, especially in the early K-2 grades, it is no wonder they struggle with word problems! All of a sudden we teachers are attaching a unit of measure to these numbers. They actually *mean* something, or *stand* for something. How are the students supposed to know what to do with the numbers when they have minimal experience with numbers that are used different ways?

Unlike Adam and Eve, I feel that eating from the tree of math knowledge has been very beneficial to me. My eyes have been opened and I see the value of “dressing up” my numbers. But how will I take this valuable piece of fruit and make it meaningful for my students? I must not forget George and his reiteration about Piaget’s Conservation of Number. Students must be given experience with numbers being used in different ways, but it should be scaffold through the early grades. By *always* attaching a unit of measure to numbers and equations, our concrete thinking youngsters will develop the conceptual understanding they so desperately crave. Once they understand the *why*, the sky is the limit for these unique little mathematicians.



# UETCTM News

## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

My two week Mathletes course was invaluable for many reasons.

The two most important ideas I took away from this course was 1. No more naked numbers and 2. Never forget Jean Piaget's Conservation of Number.

We should never forget that students learn differently and at different rates.

We should always look to understand how the student is thinking instead of pushing our thinking on the student. And by "dressing up" those naked numbers, we are giving our conceptual learners what they really need.

With this new understanding, I now go forth with this new mantra, "As God as my witness, my numbers will never go naked again!"



# UETCTM News

## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

## STUDENT LEARNING MAPS

**Chelsea Lee**  
**Johnson City Schools, 4th**



This past year I wanted to use some type of graphic organizer or learning map that would help students understand new concepts being taught in the classroom. I also wanted the student learning map to be a great tool for them to use to revisit and review something we had already studied. Our school uses a Learning-Focused Model. During our lessons there is an Essential Question(s) students should be able to answer at the end of a lesson or unit.

I use a student learning map for each new unit or concept that we study. For example, if we are doing a unit on fractions, each student will receive a student learning map that contains useful information they can use throughout the unit and after the unit. All students learning maps consist of 2-4 essential questions, key vocabulary, and an example box. I ask each student to glue this in his/her math notebook. I hand out student learning maps at the beginning of each unit or concept. We continue filling them in with information as we go through each unit or lesson.



# UETCTM News

## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

The first piece of the student learning map is the essential questions. Dr. Max Thompson explains how essential questions are concepts or skills in the form of questions. These questions that we ask are the focus of the lesson we are going to teach. The essential question never has a yes or no answer. You want students to be able to answer the question based on what you want them to know and/or do at the end of the lesson. If my essential question is "How do I add fractions?," I would want my students to be able to answer the question with different strategies or procedures that we explore during the lesson. The answer could also be an individual discovery.

The next piece of the student learning map is the key vocabulary words. Math vocabulary is always introduced at the beginning of a unit or lesson, but sometimes not revisited or used enough during the lessons. Students are asked to draw a picture or write a definition in their own words that helps them to understand the meaning of the vocabulary word. I want students to incorporate these words into their discussions during our lessons.

The last piece of the student learning map and maybe the most important is the example box. This is where the student actually answers the essential question. In this box, students are asked to draw pictures, write and solve problems, show strategies, and anything they discover during our



# UETCTM News

## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

unit or lesson. If the essential question is “How do I add fractions?,” the student is asked to explain or teach someone what they have learned about adding fractions. Some students will only be able to draw a picture or solve a problem. Other students will be able to explain in great detail or have multiple representations on how to add fractions.

We want these student learning maps to be meaningful and useful for the student throughout the year. If we learned about place value at the beginning of the year and now in the middle of the year we are working with decimals, I want my students to be able to go back and review their student learning map and use it as a resource. These are great study guides and provide student made examples.



# UETCTM News

## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

## TEACHING THE TEST NOT STUDENTS NEEDS

By Eric Campbell  
Washington County Schools, 6—8



**L**raphing linear inequalities, linear equations, supplementary angles, and transversals are a few examples of situations students come across in 8<sup>th</sup> grade. The num-

ber one question students will ask is, “When am I ever going to use this”? There is not one teacher in my school who could pass a test on this type of math. This type of math is not used in everyday life unless someone goes into a math field.

The state requires a broad area of math to be covered in 8<sup>th</sup> grade. These concepts need to be taught so the students can succeed in high school. Math in high school has never been harder in Tennessee. The state requires four high level math classes which will cause many students to struggle. The time spent on the state requirements cause the teachers to overlook math that the students need to know to prosper when they are on their own.

Some people would have a hard time completing a high school education today. They may be great at working on a car or fixing things



# UETCTM News

## IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
- $\pi$  Does  $x + y$  Always =  $z$ ?
- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

around the house, but they may not have book knowledge. I have the ability to do well in school, but I am not good at working on cars or building things. Everyone has different strengths and the state department does not take this into account.

The students need to know how to balance a checkbook, figure out a mortgage on a house, figure out how much they will be paying on student loans with an interest rate of 6.8%, and figuring out how much they will need to have taken out of their check to cover taxes. These are just a few examples of life situations that would benefit them in the working world. Many people have no knowledge of how these concepts work. There are more people now who file bankruptcy because they do not know how to do math to manage money. This affects everyone's life. This is a major failure on the part of the state department. Teaching these concepts will help our society as a whole succeed in everyday life.

In conclusion, we need to stress more math that will be useful in every student's life. There is only a small percent of students who will go to college and take high levels of math. They need to know concepts that will help them with financial situations or other important aspects. Our society would be better off learning the math concepts that will stick with students for the rest of their lives instead of concepts they will never use after high school.



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- $\pi$  Teaching The Test Not Student Needs
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- $\pi$  Upcoming Calendar Dates
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- $\pi$  UETCTM Officers
- $\pi$  Membership Application

## SUMMER AND MATH: YES THEY CAN GO TOGETHER

By Sarah Christian  
Washington County Schools, 7th



**"I**f you don't use it, you lose it." I remember those words ringing through the house from my dad as I begged not to have to practice the flute in those awkward middle school years of my life. I would find that those wise words from my father rang true for many things. Like all good daughters eventually do, I would catch myself saying his very statement. This time, it was to a classroom full of 7<sup>th</sup> graders as we winded down the school year and I handed them a letter urging their parents to take time to make summer a math learning experience.

As teachers we find that the simplest of metal math seems to be more difficult than climbing Everest after a long hot summer for our students. In fact, some studies show that students loose up to the equivalent of 2.6 months of learning in math over the summer. So, in an effort to keep my students' minds working, I send home a letter encouraging parents to find ways to incorporate math into their child's summer. Some of the ideas I present include:



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- $\pi$  An Out of Eden Experience
- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application

**Shopping:** Even though it takes a little extra time, having kids figure out how much change they will get back, estimating sales tax, or even helping with the family grocery budget, is a wonderful way to incorporate math into summer days.

**Game Night:** Games such as Monopoly©, Yahtzee©, and various card games incorporate wonderful mental math skills. Playing these games allows for family memories and math fun to be made without anyone realizing it.

**Travel:** Whether it's a trip across town, or across the country, children and teens can use their math skills to estimate distance, predict mileage, and even figure fuel efficiency.

These are simple ways we as teachers can encourage and remind parents to keep math going throughout the summer, because as my father says, "If you don't use it, you lose it." Thus, the reason I'm a 7<sup>th</sup> grade math teacher, and not a concert flutist...



# UETCTM News

## UPCOMING CALENDAR DATES

### IN THIS ISSUE:

- $\pi$  Math Fun
- $\pi$  President's Message
- $\pi$  UETCTM Meeting
- $\pi$  Tennessee Math Contest
- $\pi$  Memory or Strategy
- $\pi$  Using FLIP Cameras to Further Math Instruction in the Classroom
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- $\pi$  Student Learning Maps
- $\pi$  Teaching The Test Not Student Needs
- $\pi$  Summer and Math: Yes They Can Go Together
- $\pi$  Upcoming Calendar Dates
- $\pi$  Article Submissions
- $\pi$  UETCTM Officers
- $\pi$  Membership Application



### UPPER EAST TENNESSEE COUNCIL OF TEACHERS OF MATHEMATICS

Monday, November 14, 2011  
Daniel Boone High School, Washington County Schools

Monday, February 6, 2012  
Mt. Carmel Elementary School, Hawkins County Schools, Mt. Carmel, TN

Tuesday, March 6, 2012  
John Sevier Middle School, Kingsport City Schools, Kingsport, TN

Tuesday, April 10, 2012  
Central Office, Sullivan County Schools, Blountville, TN

Monday, April 30, 2012  
Vance Middle School, Bristol City Schools, Bristol, TN



### NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS 2011 REGIONAL CONFERENCES AND EXPOSITIONS

Annual Meeting, Philadelphia, PA • April 25—28, 2012



### TENNESSEE MATHEMATICS TEACHERS ASSOCIATION

TMTA Fall Conference  
September 2012  
Tennessee Tech, Cookeville, TN

## Request for Article Submissions

**W**e are always looking for people to contribute articles to our ongoing "Math Perspectives" series. Every month, we would like four submissions for the series: a preservice undergraduate student, a preservice graduate student, a current classroom teacher, and one of our local math coordinators. Each person will voice their opinions, concerns, or observations upon a particular aspect of teaching mathematics. There are no set topics for this series.

Another section will be included in the next issue dedicated to mathematics problems. We are looking for submissions on favorite problems focused on various grade bands.

*If you or someone you know would like to contribute to this column, please contact **Ryan Nivens, Newsletter Editor.***

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# UETCTM

## Membership Application



***Mail completed form to:***

Jerry Whitaker  
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Washington County Schools  
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Blountville, TN 37617

***Membership Fee: \$10***

***Payable to: UETCTM***

Name: \_\_\_\_\_

Home Address: \_\_\_\_\_  
\_\_\_\_\_

Home Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_

School: \_\_\_\_\_

School Address: \_\_\_\_\_  
\_\_\_\_\_

School Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_

Email Address: \_\_\_\_\_

**The Upper East Tennessee Council of Teachers of Mathematics is an organization for anyone involved in mathematics education from preschool through college in the greater Tri-Cities region. We meet six afternoons per year in various locations across the region. The purpose of UETCTM is to promote excellence in teaching mathematics and to share best practices among mathematics educators.**