



UETCTM News

UPPER EAST TENNESSEE COUNCIL OF
TEACHERS OF MATHEMATICS News



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What do airplanes have to do with this?

Mathematician U. was a great friend of his five-year old grandson. They discussed everything including math and U. was very proud of the boy's math talents. The child went to kindergarten and in two weeks he asked U. to help with the difficult math problem: "There are four airplanes flying, then two more airplanes join them. How many airplanes are flying now?" U. was very disappointed by the simplicity of the problem. "What confuses you?" he asked. The child says: "I know, of course, that $4 + 2 = 6$, but I cannot figure out what the airplanes have to do with this!"

<http://www.math.utah.edu/~cherk/mathjokes.html>





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UPCOMING EVENTS

2014 NCTM RESEARCH CONFERENCE

- APRIL 7 - 9 • New Orleans
<http://www.nctm.org/researchconf/>

2014 NCTM ANNUAL MEETING & EXPOSITION

- APRIL 9 –12 • New Orleans
<http://www.nctm.org/neworleans/>

NCTM REGIONAL CONFERENCES & EXPOSITIONS

- 2014
Indianapolis, IN • Oct 29-31
Richmond, VA • Nov 12-14
Houston, TX • Nov 19-21
- 2015
Atlantic City, NJ • Oct 21-23
Minneapolis, MN • Nov 11-13
Nashville, TN • Nov 18-20
<<http://iem.nctm.org/link.php?M=3004392&N=1763&L=893&F=H>>

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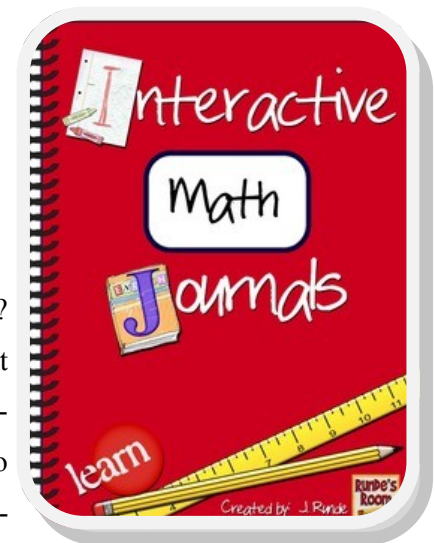
A Tech-Savvy Way to Journal in Your Math Classroom

By C. Ronea Murray: *A teacher in the Kingsport City School District*

All teachers regardless of their concentration understand how important it is for our students to be effective communicators. Mathematicians often see things from a different point of view than the “average Joe.” Therefore we need to make sure that our students have good communication skills so that no matter what their career path is they are effective communicators.

Teachers all across the state of Tennessee are currently brainstorming ways to make their students better communicators. Journaling is a great way to help our students improve their verbal skills; however, let’s be honest: How many math teachers truly use journaling on a daily or even weekly basis? It can be very time consuming, and with all the concepts we need to teach, frankly, journaling is not a high priority to most mathematics teachers.

What if there were an easier way to journal in your mathematics classroom? Would the students really give their mathematics journaling assignment 100%? Could journaling be an effective way to work on our students’ communication skills? We all know that our students are very tech savvy. So what if there was a way to use technology to journal? Well, most of us teachers then ask, “Is it expensive? Is it difficult to use? Would the students use and enjoy journaling if it were presented in a tech savvy manner?”



<http://www.teacherspayteachers.com/Product/Interactive-Math-Journal->

Technology is here to stay, so teachers need to jump on board and find easy, fun, and fast ways to implement it into our classrooms. Since journaling is a great opportunity for our students to work on their verbal



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interpretations of mathematical concepts and they love technology what if we merge the two ideas (journaling and technology) together? Make journaling an electronic journal.

The possibilities are endless with today's technology. Teachers can develop a blog that students are required to blog on each day or week. They can tell what they did well on, what they struggled on, and even give feedback to the teacher as to what concepts they need additional time on. If the teacher is not up to writing a blog, how about using Twitter, Facebook, Pinterest, or even text messages? The teacher can simply print off all the students' responses and use the feedback for planning out his/her classroom activities. The students will love journaling if it is presented in a tech savvy manner. What do you have to lose? Students are very vocal and will help you through the process. So this year, why not try something new and approach journaling from a tech savvy approach?



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Communication

By Annette True: *A teacher in the Kingsport City School District*

संचार "जानकारी प्रतीकों, संकेत, या व्यवहार का एक आम प्रणाली के माध्यम से व्यक्तियों के बीच बातचीत की है जिसके द्वारा एक प्रक्रिया है."

Mawasiliano ni "utaratibu ambao habari ni kubadilishana kati ya watu binafsi kwa kupitia mfumo wa kawaida wa ishara, ishara, au tabia."

La comunicación es un proceso por el cual se intercambia información entre individuos a través de un sistema común de símbolos, signos o comportamiento.

If you were not able to understand any of those, here is the definition in English. Communication is "a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior." (Miriam-Webster online dictionary)

Communication or lack thereof is the basis for many of our issues (in any area - not just math education). Communication affects everything we do every day. Although we have become more interconnected with the aid of technology, it seems that it has become more difficult to communicate effectively. However, there are a few simple things you can do that can improve communication with parents and students.

Parent Communications

As a young child heads off to kindergarten, the need for communication between parent and teacher is great. However as students age, the communication begins to break down. It seems the older the student, the less communication occurs. One easy way to rectify this situation is a daily email newsletter. A simple table in a word processing program, a distribution list, and a few minutes a day is all you need. You can even do it ahead of time and schedule it to send later in the evening in a lot of email programs. In the newsletter, include a few sentences



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about what you are doing in class, any homework assigned, and any important announcements. This allows parents to know what is going on with their child. Many parents commented that this was helpful in many ways. One parent said that even though she might not know how to do what we were working on in class, it gave her the vocabulary to talk to her child about it intelligently. Another parent commented that he found it extremely useful in knowing what was going on in class. Finally, another parent stated that she liked it because it was so brief and to the point. She even said that if it was longer, she might not read it. A parent survey at the end of the year found that all parents (that responded to the survey) loved it and wished more teachers took the time to do something like it.

Student - Teacher Communication

Teenagers are difficult to communicate with in any setting. To make the situation worse, school, math, and being a teacher compound the problem. One thing that is easy to do and students generally like is a survey where they get to tell you, the teacher, what they like and what needs attention. It may seem risky to put yourself out on a limb like that, but I have learned so much about myself, my students, and my teaching by doing this. Even though students are usually brutally honest, they are usually very insightful. Including surveys periodically can give valuable feedback in a variety of areas. While you can find questions online to use (and that is a good place to start), the most effective surveys ask questions that you personally want to know, things that apply to your classroom and your teaching. Not to advertise, but Quia.com is a website that allows you survey students and it compiles your results in many forms (not to mention there are several other helpful things it does like allows you to make quizzes and it grades them for you). This data is so useful that if you are willing to take a little risk to learn more about yourself, your teaching, and your students, it could revolutionize your world.

Although these two strategies take very little time, they can make a major impact on your teaching and the relationships you develop with your students and their parents. Take the time, and take the risk. You will be rewarded.


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Life In a Professional Learning Community

By Cyndi Drozdowski: *A teacher in the Kingsport City School District*

Why bother with a Professional learning community, you might ask. What will I gain from it? How will my students benefit? I can tell you from firsthand experience that a learning community or team, will give both you and your students an advantage over any one that has an isolated teacher providing their instruction.

A little  history first, just in case anyone doesn't understand the concept of

This community is an ongoing collaboration between individuals to provide the most successful learning opportunities for all students.

Professional learning communities. This term has come to us from the business world. The term started as a group of individuals that work together toward the common goal of student learning. This community is an ongoing collaboration between individuals to provide the most successful learning opportunities for all students. This term has grown to include many other scenarios. Even a group of individuals that simply share a common interest in education.

A true PLC is focused on the learning of each student in a group. That is their sole purpose of existence and the responsibility of all members of the group. Members collaborate to determine exactly what the students should learn, monitor the learning of each student, provide appropriate intervention when students struggle and provide extensions when a student masters the content.

I had the good fortune to walk into a school that utilized this approach, but I have also had the chance to see it evolve and to be an integral part of this process. As I came to a much larger school, I soon saw a need for such collaborative work. If you have 12 teachers teaching the same subject, it only makes sense to use all of the strengths of the group to work for all of the students.

We have subject based PLC for our school and I have worked on the geometry team for both years that I



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have taught there. There was an effort made to keep the number of teachers small, and we have only 5 members. Everyone on the team has a say in all decisions made, but there must be some give and take in decisions made by the team. We must agree on everything from timing of material taught to timing of a test and how material will be assessed. Although the instruction method is up to the individual teacher, we do share ideas of how something might be taught. I can see this being much more beneficial as we move forward with Common Core. We work together to make decisions, but split up task to save on some of the work. Although one person makes the notes or task for the lesson, you are free to edit and use these notes how you wish. This group works well together, and we all provide suggestions and ideas for teaching material.

It is possible that the teams get too large, and that would slow down the process. Yes, a larger group would give you more input and more hands to share the work, but it also brings in more options and more chance for members of the PLC to slow down the decision making process. Everyone should be heard and agree with decisions. I feel that the ideal size of a PLC should be between 5 and 8 members. Too few and the benefits are not as strong. Too many and there is a good chance more time spent on debates than on creating learning opportunities for the students.



of
“The most powerful strategy for improving both teaching and learning, however, is not by micromanaging instruction but by creating the collaborative culture and collective responsibility of a professional learning community (PLC).” (DuFour and Mattos, p35).

DuFour R, & Mattos, M. (2013). How do principals really improve schools? *The Principals*, 70 (7): 34-40.

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The Changing Role of Calculators in the Classroom

By Dean Hogan: *A teacher in the Washington County School District*

Calculators have long had a place in mathematics classrooms across the country. However, the role calculators play in the classroom is definitely changing and this change is the source of much debate among today's educators. When to introduce calculators and how often students are allowed to use them are two of the topics that are most often discussed.

As a math teacher I have always wanted my students to learn the math by hand and to use calculators as a tool and not as a crutch. My goal was to teach them by hand and after they were comfortable solving this way I would introduce the calculator. I wanted the students to see calculators as a time saver, not a necessary tool that was required for solving.

Early in my career this was easier to accomplish. I would ask my students if they carried a calculator with them everywhere they went. Of course I knew their answer would be no. At this point I would stress to the students the importance of learning to do their math by hand instead of relying on the calculator for everything.

Then we entered the cell phone age. Students began to all have cell phones. These cell phones were basic, but all had four function calculators on them. Now when I asked the students if they planned to carry a calculator with them at all times, they all said yes. This forced me to adjust my argument and accept that people would have calculators with them everywhere they went. This was okay because algebra went beyond what four function calculators could do. I was now okay with students using the calculators for the simple computation involved in algebra. They still had to know the math to solve problems.

At this point I started letting the students use basic calculators more often. We also started using graphing calculators but I purposely did not show them a lot of the functions available on the calculator until they had lots of practice working by hand. This seemed to be a good balance. The students used calculators to save time on computations that they were capable of doing by hand. However technology kept improving and kids went from basic cell phones with basic calculators to smart phones with internet capability. Now they had access to more advanced calculators, apps, and Google.

At the same time that smart phones started to show up in every student's hand, the standards in our math classrooms became more rigorous. Students were expected to cover certain topics in algebra that work very well with graphing calculators. I still wanted to teach my students to work by hand first and learn the technology second. However, the topics I teach this way are slowly changing. I can remember exactly when I was forced to accept this technological change and try to work with it. A student that





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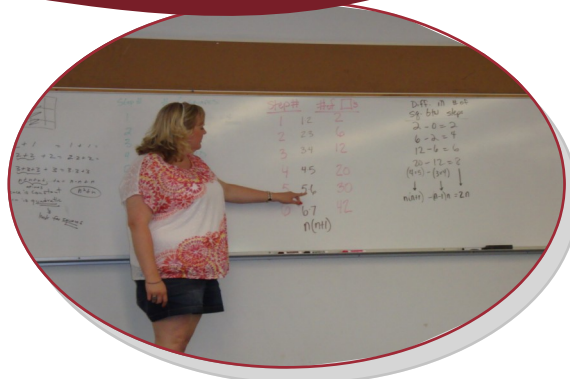
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generally did not do much work came in with a full assignment completed on matrices. I questioned the student about how he accomplished the work and he proudly showed me on his cell phone an app that did all sorts of operations with matrices. I was surprised at first, but then two other students showed me two different apps that they used to complete their work. I wasn't upset that they used the apps instead of working by hand because they took the initiative to figure out how to solve a problem. I was glad that they had taken the time to get online and figure out how to solve a problem.

Problem solving skills are really what I hope my students take away from any of my classes so I was pleased with their initiative. I still show students how to do things by hand on most topics but we also spend a fair amount of time working with the calculators. I don't often tell students to use their phones and find apps to use but when they do, I take the time to talk about using tools and the resources available to them to assist in problem solving.



MATHLETES 2013



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Mathletes: Pre and Post Common Core

By Denise Strong: *A teacher for the Bristol Tennessee City School District*

As a repeat participant in Mathletes, I wasn't sure how much more I could take from the program. However, with the impending Common Core implementation I figured it wouldn't hurt to go again. On the standards side of things, we as teachers are shifting from teaching a large number of standards in a short amount of time to teaching concepts through student-led discovery, in hopes of deeper knowledge and lifelong understanding. I know it sounds very grand and glorified, but it really makes so much sense. When our parents told us not to touch the hot dish, we continued to try. It wasn't until we touched that dish and "discovered" the hurt, that we actually learned our lesson.

In the summer of 2011, I took part in my first exposure (since college) of discovery based learning. The first time through Mathletes was a great experience, which I took a lot from but didn't do enough with. My anxiety toward discovery based learning stemmed from a concern of what my students would do during the activity. I was concerned that the topic of conversation would be completely off task, and the manipulative would be used as a toy not a learning tool. In my past experience, parts of the manipulative would go missing, or be broken. Now I don't want to paint this picture of terrible students, and a chaotic classroom that I have no control over. But for the most part my room is completely in my control, and I have very few issues. But my classes tend to be filled with students who don't particularly see the relevance of Algebra in their lives. I often worried that I would be teaching the manipulative and not the concept. I feared the math would be lost. As much as Mathletes inspired and invigorated me, I took it as "Just not my style". My kids still seemed to grasp the material, and achieved rather well considering their predictions. So I felt I did my job.

Now with the second opportunity at Mathletes and Common Core on its way, I told myself to keep an open mind and really open up to the idea of hands on discovery. The difference for me came when I acted as a student, not a math teacher. When participating in the activities I was determined to think like a student, and not to "skip" to the skills they are supposed to be finding. While doing this it was rewarding to have little victories as a "student" and even more so to talk to other people and see how they came to their conclusions. I guess because I was always strong at math, I never realized how many different ways you can come to the same correct conclusions. Then we started addressing my other concern of manipulative. And to my pleasant surprise teachers traded stories of similar hesitations and experiences, and this really made a huge difference for me to realize how to overcome these issues. Then there was the greatest part, two days filled with sharing our tasks in order to give and receive feedback. For my own task the feedback was rather positive, this was reassuring with the pressure of creating tasks in two short weeks. But it was more beneficial to see different interpretations of what it meant to be a task. I was worried it was always going to be long and drawn out, but it didn't have to be.

Overall, my experience with Mathletes was positive during both experiences. As it pertains to Common Core, I would definitely say it was much more of a learning experience because it HAS to be relevant in my classroom. And to be honest I am actually eager to begin integrating hands on learning into my curriculum.

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Ginni Story

By Ginni Story: *A teacher for the Washington County School District*

My Name is Ginni and I'll take all you'll give me!!

To keep a classroom fresh with new ideas from year to year, you have to either have an extraordinary imagination with a wealth of time on your hands *or* you have a vast array of resources to draw from. When I first started teaching eight years ago there was a wonderful teacher that took me under her wing. She had many years of experience behind her and was the *queen* of printed resources. She had years and years of old textbooks, workbooks and even old copies of her own tests.

Throughout my first year of teaching I would watch her print a page from ten different books and meticulously cut and arrange every handpicked question and glue them to a piece of paper for each of her worksheets and tests. Week after week I would watch her gather just the right question for her assessments, cutting, arranging and gluing. I finally convinced her that there was a wonderful advancement in technology called a *computer* and it is full of wonderful tools. She wasn't naïve, she knew what a computer was... she just didn't know how to use the programs that would benefit her and save her time. Honestly, she thought she was too old to learn. (Can you imagine a teacher saying that?) Well I convinced her otherwise and introduced her to a wonderful test generating program and showed her how to load additional test banks from various books. She now had multiple books to draw from at the touch of a button.

We taught each other a lot that year. She is now a whiz on the computer and I am a pack rat for resources. My eyes



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and ears are always open, listening and looking for books, videos, activities, websites, just anything that would help me be a better teacher. Something that would turn on the light bulb in my student's brains, something that would bring them out of the darkness into the world of understanding. That is the sole reason I became a teacher, to watch *that* process unfold before my eyes, knowing I had a small part in that illuminating process. Therefore, striving for new and improved resources is very important to me.

That is the sole reason I became a teacher, to watch that process unfold before my eyes, knowing I had a small part in that illuminating process.

I surveyed the twenty-five teachers in my Eastman Mathletes program at ETSU and asked them what their favorite teaching resource was. Ninety percent of those teachers said "other teachers." We are each other's best resource. However, there are tens of thousands of us across the country and most are eager to share the things that work for them. I'm not an expert on resources but I know they are out there.

Since we are each other's best resource, my suggestion is to write down the ISBN of those fantastic books other teachers have shared with you. For example, last week someone shared with me the book "When Are We Ever Gonna Have to Use This?" by Hal Saunders (ISBN 1-57232-364-7). It is a wonderful Algebra I resource with connections to so many real-world jobs and the problems, and/or formulas, associated with those jobs. You are probably wondering "Why write the ISBN number down if you have the title of the book?" Which leads me to a website I found out about from one of my colleagues called www.halfcom. On this website you can find new and used books for a fraction of their original cost. There are so many books on this site it will be easier for you to search by their ISBN instead of the title, although that works too. I will attach the title and ISBN of some of my most current resource books. However, books aren't the only written resource; there is the



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World Wide Web.

There are countless websites out there that are great resources for teachers. On the internet there is everything from videos, lesson plans, tutorials, even webinars. A majority of them are free but some of them are worth paying for, like the website teacherspayteachers.com. I could write for days explaining in detail all the websites that I find useful. Instead, I will put this essay to a close and leave you with a few of my most frequented sites along with resource books I own. Have a wonderful year and remember, "We are all in this together, so SHARE!!"

www.teacherspayteachers.com

www.mathmistakes.org

www.algebra1teachers.com

www.illuminations.nctm.org

www.kuta.com

www.khanacademy.org

www.todaysmeet.com

www.classzone.com

When Are We Ever Gonna Have to Use This?
ISBN 0960481206

Discovering Algebra- the investigative approach
ISBN 1559537639

Navigating through Algebra in Grades 9-12
ISBN 0873535022

On Core Mathematics Teachers Edition (gr. 8-12)
ISBN 0547617232

The Magic of Numbers (by Gross, Harris)
ISBN 0131777211

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Membership Application



Mail completed form to:

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3089 Highway 11W
Blountville, TN 37617

Membership Fee: \$10
Payable to: UETCTM

Name: _____

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School: _____

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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 -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.