Texas Mathematics Teacher

Volume LXI Issue 2 Fall/Winter 2014

Find the Mathematics...

... in a Drink!

see page 13

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Executive Board 2015

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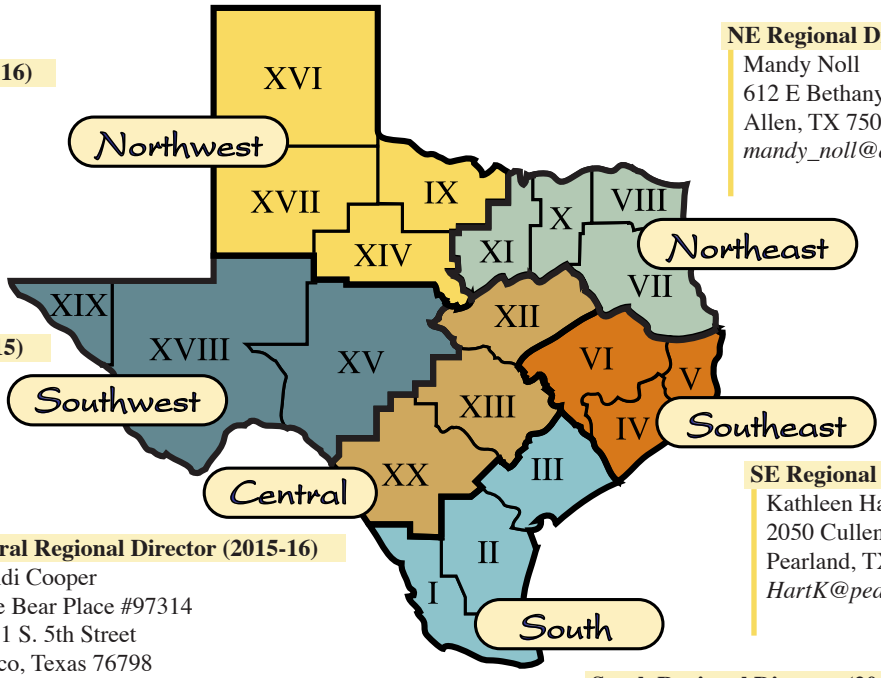

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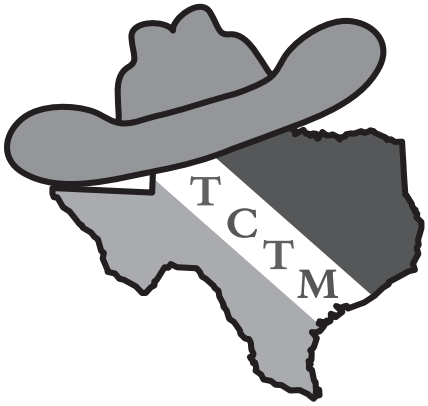

Texas Mathematics Teacher

A PUBLICATION OF THE TEXAS COUNCIL OF TEACHERS OF MATHEMATICS

Volume LXI Issue 2 **Fall/Winter 2014**

cover photos by Mary Alice Hatchett and Cynthia L. Schneider

Articles

Features

Departments

TCTM Applications

All applications (including TCTM membership) are available online at <*www.tctmonline.org*>.

Letter from the President

Dear TCTM Colleagues,

It is my pleasure to address you, the members of Texas Council of Teachers of Mathematics (TCTM), for the first time as your incoming president. I am honored to serve and look forward to this opportunity to meet and grow with you as math educators.

I am always amazed at how many teachers who visit the TCTM booth at CAMT are not aware of the many opportunities provided with a membership to TCTM. If you take a look at our website, you will find that we do offer so much. TCTM has something for everyone – from the pre-service teacher to the veteran teacher. I am including an excerpt from the website which summarizes this information.

Why should I become a Member of TCTM?

The Texas Council of Teachers of Mathematics (TCTM) is a professional organization that encourages an active interest in mathematics. But that's not all. We also offer:

- TCTM Grant (up to $1200)
- Mathematics Preservice Teacher Scholarship (up to $2000)
- Leadership Recognition with the E. Glenadine Gibb Achievement Award and the TCTM Leadership Award
- The Texas Mathematics Teacher Journal
- The annual Conference for the Advancement of Mathematics Teaching (CAMT) with exhibits and door prizes
- Learn about best practices
- State advocacy with the State Board of Education and the legislature
- Clear distinction as a professional
- TCTM online resources with PDF classroom activities
- Opportunity to make contacts with great teachers through social media and at the CAMT and local affiliate conferences

Joining the National Council of Teachers of Mathematics and/or your local affiliate organization will give you access to even more content.

Know that you are not alone in the challenges that you face as a math educator. TCTM is here to help you meet those challenges and tackle the obstacles that stand between you and success for you and your students!

Sincerely,

Martha Godwin
TCTM President
<Marthagodwin78@aol.com>

Website: *<www.tctmonline.org>*

Facebook: *Texas Council of Teachers of Mathematics*

Twitter: *< tctmonline >*

Affiliate Groups

These are local affiliated groups in Texas. If you are actively involved with them, please send future meeting and conference information to Cynthia Schneider at <*cschneider@utexas.edu*> so we may publicize your events. Contact information for each group is also available on the NCTM website, <*www.nctm.org*>. Contact information for regional directors is located on the inside front cover of this publication.

NORTHWEST REGION
Service Centers 9, 14, 16, 17
Kristina Gill, Regional Director

Texas South Plains CTM
Contact: Treasure Brasher, <*tbrasher1@suddenlink.net*>

NORTHEAST REGION
Service Centers 7, 8, 10, 11
Mandy Noll, Regional Director

East Texas CTM
Contact: Martha Godwin, <*mgodwin@qcisd.net*>.

Greater Dallas CTM
Contact: Richard Newcomb, <*RNewcomb@cistercian.org*> .

SOUTHWEST REGION
Service Centers 15, 18, 19
Christopher Hiatt, Regional Director

Greater El Paso CTM
Contact: GEPCTM President, Craig Rhoads, <*crhoad@sisd.net*>

SOUTHEAST REGION
Service Centers 4, 5, 6
Kathleen Hart-Abel, Regional Director

Fort Bend CTM
Contact: Alena McClanahan, <*alena.mcclanahan@fortbend.k12.tx.us*>.

SOUTH TEXAS REGION
Service Centers 1, 2, 3
Shere Salinas, Regional Director

The South Texas Region is on Project Share! The group is "Texas Council of Teachers of Mathematics: South Region."

Coastal CTM
Contact: Faye Bruun, <*faye.bruun@tamucc.edu*>,
or visit <*cctm.tamucc.edu*>.

CTM @ Texas A&M University at Corpus Christi (Student Affiliate)
Contact faculty advisor Faye Bruun, <*faye.bruun@tamucc.edu*>.

CTM @ Texas A&M University at Kingsville (Student Affiliate)
Contact NCTM Representative: Susan Sabrio

Rio Grande Valley CTM
Contact: Lucy Munoz at <*hlucymh@aol.com*>,
or visit <*www.rgvctm.org*>.

CENTRAL TEXAS REGION
Service Centers 12, 13, 20
Sandi Cooper, Regional Director

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or visit <*www.aactm.org*>.

Alamo District CTM
Contact: ADCTM president Linda Gann, <*linda.gann@boerne-isd.net*>

Central Texas CTM
Contact: President of CTCTM Sandi Cooper,
<*sandra_cooper@baylor.edu*>, or visit <*www.ctctm.org*>.

STATEWIDE

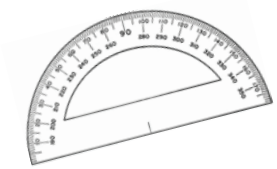
Texas Association of Supervisors of Mathematics (TASM)
Contact: Linda Sams <*linda.sams@cfisd.net*>, or
visit <*www.tasmonline.net*>.

The Association of Mathematics Teacher Educators of Texas (AMTE-TX)
Contact Trena Wilkerson at <*Trena_Wilkerson@baylor.edu*>,
or visit < *www.amte-tx.org*>.

NATIONAL

National Council of Teachers of Mathematics (NCTM) visit <*nctm.org*>.

National Council of Supervisors of Mathematics (NCSM) visit <*www.mathedleadership.org*>.



The Crossroads of Problem Solving and Student Discourse

Pretend you are observing a fifth grade mathematics classroom. The teacher, Mrs. Smith, is walking around the room, observing her students as they work a rich mathematical problem. Students are actively working in small groups. Mrs. Smith calls for volunteers to share their answers. All volunteers have a chance to share, and then the class moves on to another activity.

At first glance, this lesson looks like a quality lesson. In fact, many of us have probably done something similar in our own classrooms. As you look more deeply into Mrs. Smith's lesson, consider these questions:

- How deep was the students' mathematical thinking?
- How did she address the children that had the incorrect answer?
- Were connections made between different solutions and methods or was this a missed teachable moment?
- Did students recognize if there was a most efficient way to solve that problem?
- Were students able to take what they learned and apply it to a new context or more difficult problem?

How do you help your students move beyond the "showing and telling" of a solution to a problem to analyzing mathematical relationships that connect and communicate their mathematical ideas? How do you find a rich problem that lends itself towards deep mathematical thinking, problem solving, and communicating? How do you find a problem that also requires some analysis and application rather than straight-forward calculation or regurgitation of facts and definitions?

The article *Orchestrating Productive Mathematical Discussions: Five Practices for Helping Teachers Move Beyond Show and Tell* (Stein et al., 2008) explains how intentionally mapping out a structure for walking students through a problem solving model can help unveil students' authentic mathematical thinking. In addition, this structure will assist classroom teachers with incorporating the new process standards with the mathematical content standards. Utilizing the suggested Five Practices while guiding students through rich mathematical problems will transition your classroom from a "show and tell" presentation into a problem-solving journey of discussion and debate through student discourse. Taking your students on this journey may result in the dedication of several class periods to one single problem. In the era of standardized testing and *covering* standards, many teachers are hesitant to make this time commitment but doing so is essential to building depth in mathematical understanding.

If a teacher is going to devote several class periods to a single problem, the problem should be a problem worth spending that much time on! The "right problem" allows for students to show what they truly understand, reveals misconceptions, and lends itself towards student discourse. Malaspina, Gaita, and Font (2012) indicate characteristics that rich mathematical problems (the "right problems") possess. Their suggestions include:

a. The problem has an attainable solution without being overly difficult.

b. The perception of the problem is interesting and relevant.

c. The problem leans toward the use of logical relationships rather than the mechanical use of algorithms.

d. The problem is clearly perceived.

e. The problem favors discovering an intuitive way to find the solution.

After applying the recommended guidelines when selecting a problem for your classroom, you are then ready to dig deeper into the Five Practices to help teachers move past simply "showing and telling" during problem solving (Stein et al., 2008).

Step 1: Anticipating Student's Mathematical Responses

Before assigning the problem to your students, and as a part of your lesson preparation, spend time solving the problem in a variety of ways. Be sure to anticipate incorrect student responses as well as correct solutions. Peer discussion with other mathematics teachers, special education teachers, or a math coach can provide more insight about what vocabulary, misconceptions, and problem-solving approaches your students may encounter. During that peer discussion, include opinions of a logical progression of how you would want students to present their approaches and answers at the end of the task. What would make most sense to your students and lead them towards a more thorough understanding of the mathematics required to solve the problem?

Step 2: Monitoring Student Responses

As students are working through the problem, you should be walking around the room monitoring not just student behavior, but student responses, strategies, and discourse as well. "The goal of monitoring [student responses] is to identify the mathematical learning potential of particular strategies" (Stein et al., 2008).

Some possible question stems are:

> "Can you share your thoughts on this part of your work?"
>
> "Why did you choose to do it this way?"
>
> "What are your next steps going to be?"
>
> "How do you know if your answer is reasonable/ correct?"

Give students a heads up that there's a possibility you might call on them later to explain their strategy to the class. Make anecdotal notes as you monitor the classroom, including how the students' work aligned with the anticipated responses. Be thinking of who you would call on to explain their solution to the class.

Step 3: Purposefully Selecting Student Responses for Public Display

Using your anecdotal notes from monitoring student responses, group students based on what strategies they used. It's okay to highlight some responses that are incorrect, if they will unveil rich discussion or new understandings. Through purposefully selecting groups of students to present their responses, the teacher maintains control of the pacing, direction, and mathematics of the class discussion, while allowing students to lead the class in their thinking. Track student participation over time to ensure discussions are not being monopolized by a select few.

Step 4: Purposefully Sequencing Student Responses

Now that you've chosen students to present, you must be intentional with the order in which those students will contribute their solutions to the class. A few suggestions might include:

- Start with incorrect responses first, followed by correct responses.
- Start with the most widely-used method, followed by lesser-used methods.
- Start with the easiest, most straight-forward method, followed by more complex methods that might work well with more challenging problems.

Step 5: Connecting Student Responses

According to the TEKS adopted in 2012:

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

- communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
- analyze mathematical relationships to connect and communicate mathematical ideas; and
- display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

To help accomplish and embed these process standards into mathematical problem solving, assist the students in making connections between the strategies shared. Also, guide students in making judgments about the most effective approaches and strategies that would allow for more efficient problem solving.

In time, incorporating these Five Practices into your class will help transform students' mathematical thinking during problem solving. If you are new to thinking about problem solving using this problem solving structure, start off by trying out one or two of the steps in the beginning. Reach out to other mathematics teachers or a math coach to help dialog about implementing this process. Then try gradually adding the other steps into your classroom problem solving structure. Again, come back to other professionals and reflect on the process.

Students need time to not only work the mathematics, but time to discuss and reflect on the journey of their mathematical thinking. Incorporating a structured problem solving model like the Five Practices opens up the opportunity for rich mathematical thinking, new ideas, and efficient strategies to come to the forefront in your mathematics classroom.

REFERENCES

Malaspina, U., Gaita, C., and Font, V. (2012). *Elements to stimulate and develop the problem posing competence of pre service and in service primary teachers*. Paper presented at ICME-12, Seoul, Korea.

Stein, M. K., Engle, R. A., Smith, M. S., & Hughes, E. K. (2008). Orchestrating productive mathematical discussions: Five practices for helping teachers move beyond show and tell. *Mathematical Thinking and Learning, 10*(4), 313-340.

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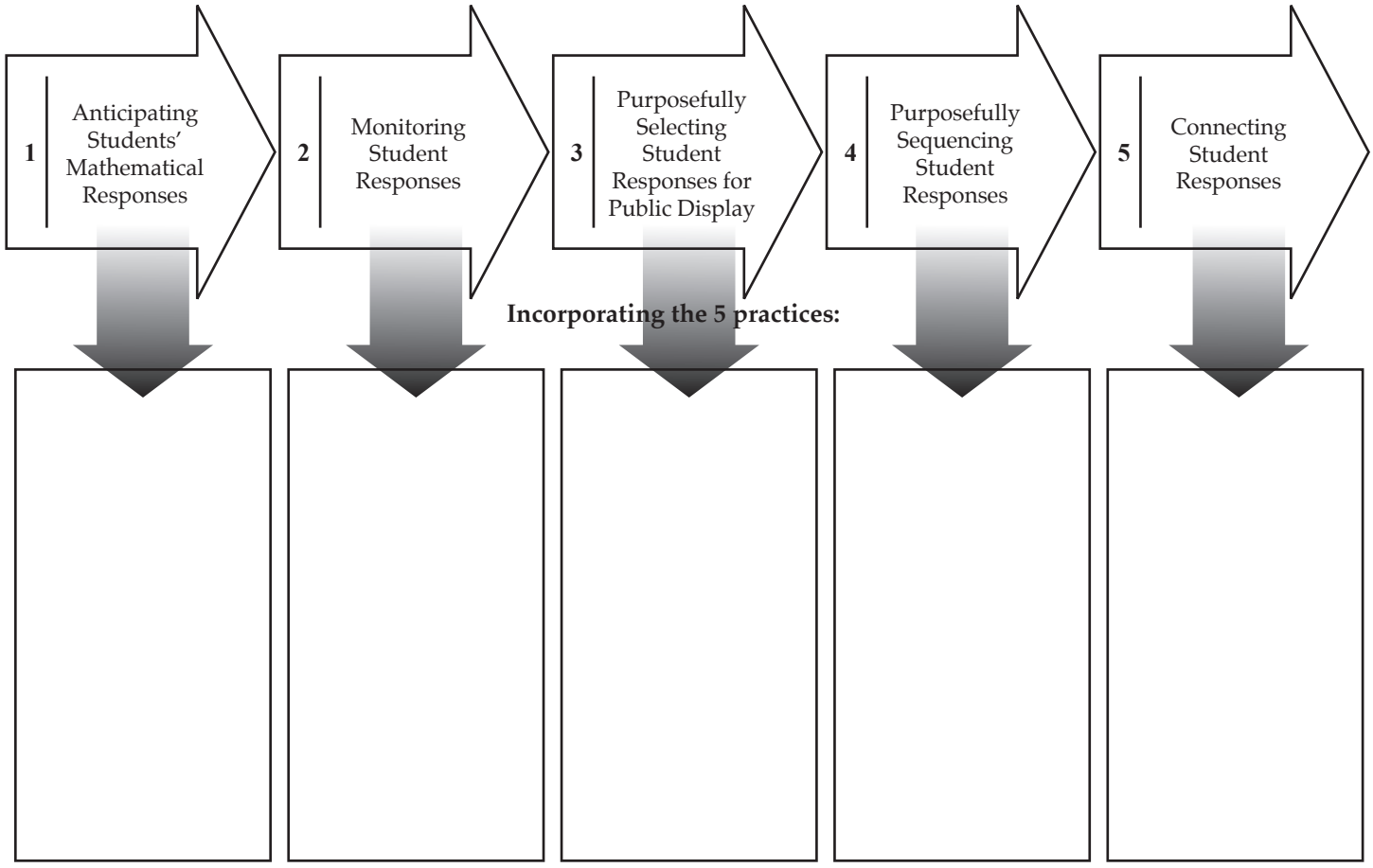
Five Practices for Helping Teachers Move Beyond "Show and Tell"



Adapted from "Orchestrating Productive Mathematical Discussions: Five Practices for Helping Teachers Move Beyond Show and Tell"

6th Grade Financial Literacy Lesson: How do I pay for college?

The new math standards for kindergarten through eighth grade are on everyone's mind. For all grades, one of the biggest changes is the addition of the personal financial literacy standards. I realized that new lessons and activities were going to have to be created for every standard; however, I wanted to make lessons that were engaging and creative while at the same time making sure that mastery was reached. I made a lesson that addressed TEKS 6.14G, "explain various methods to pay for college, including through savings, grants, scholarships, student loans, and work-study." Below are the lesson design and the rubric to go along with it.

Engage: Present the following questions using a poll format with or without technology: How are you going to pay for college? Make a list, from the students, of various ways to pay for college. (Note: Parents paying for college may be an option, but we want the students to broaden their horizons.)

Activity: Using a tablet or a computer, each student will research the pros and cons of each of the following: savings accounts, grants, scholarships, student loans, and work-study. Students will look for a description of each item and paraphrase in their own terms. After students have found all of their information, they can choose how they want to convey their information, i.e. power point, brochure, picture collage, song lyrics, video, etc.

Prior Knowledge: How to research online, communicating mathematical ideas

Vocabulary: Savings account, grants, scholarships, student loans, and work-study

Assessment: Do the students understand the differences between savings accounts, grants, scholarships, student loans, and work-study? Were the students able to grasp each item in order to list pros and cons?

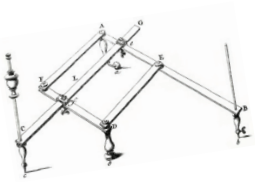
Differentiation: Have the students work with a partner or give the students a list of websites that you want them to use

Materials: Rubric, tablets or computers

Karen Mayton • <karen.mayton@MidwayISD.org>
District & High School Assessment Coordinator
• Midway ISD

Rubric for How do I pay for college?

Category	Comments	Awarded Points
Savings Accounts (15 points)		
• Description		
• Pros		
• Cons		
Grants (15 points)		
• Description		
• Pros		
• Cons		
Scholarships (15 points)		
• Description		
• Pros		
• Cons		
Student Loans (15 points)		
• Description		
• Pros		
• Cons		
Work Study (15 points)		
• Description		
• Pros		
• Cons		
Creativity (15 points)		
Context & Grammar (10 points)		
	Total:	



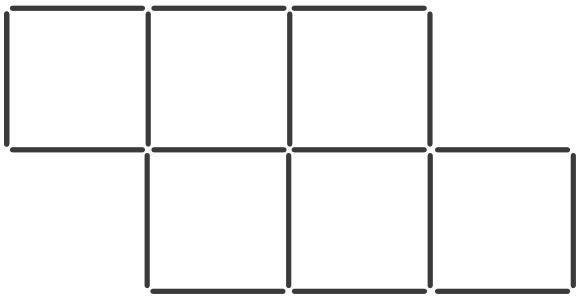
Puzzle Corner

Sticks #23 Puzzle

We are interested in how your students responded to this problem and how they explained or justified their reasoning. Please e-mail copies of your students' work, include your name, grade level, campus name and district name to Mary Alice Hatchett, Director of Publications, *Texas Mathematics Teacher*. Selected submissions will be acknowledged and published in subsequent issues.

Please prepare a sketch of your solution.

Arrange 18 craft sticks to form 6 squares, as shown.

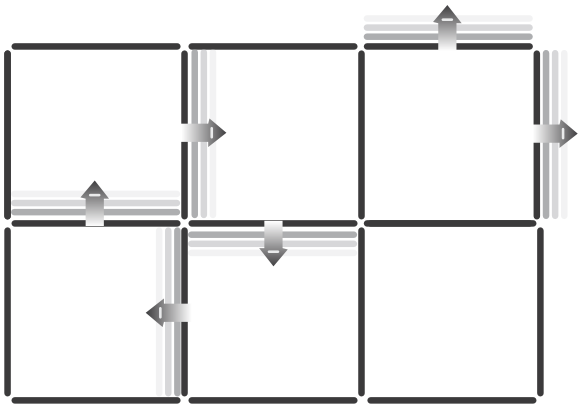


Puzzle: Now remove four sticks, leaving three squares.

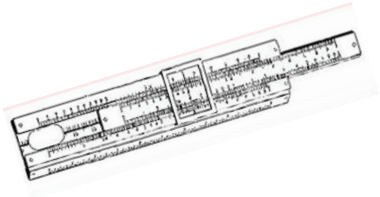
Sticks #22 Answer

Arrange 18 craft sticks to form six squares.
Now remove six sticks leaving two similar squares.

Shown is a diagram of **a solution.**



Arrows indicate a moved or removed stick; plus-sign on a stick indicates new position.



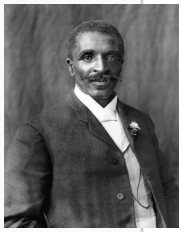
Quotes for Thought

"Nobody can go back and start a new beginning, but anyone can start today and make a new ending."

Maria Robinson
American author

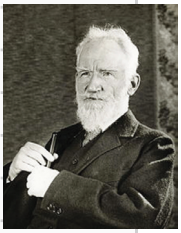
"How far you go in life depends on your being tender with the young, compassionate with the aged, sympathetic with the striving and tolerant of the weak and strong. Because someday in your life you will have been all of these."

George Washington Carver
American scientist & inventor (1864 – 1943)



"A life spent making mistakes is not only more honorable but more useful than a life spent doing nothing."

George Bernard Shaw
Irish writer
(1856-1950)



On The Cover

Find the Mathematics… in a Drink

When you look at this cover, what questions do you have? What *math* questions come to mind?

Make a list of your student responses.

Some of those responses may include:

1. How many choices of drink are shown?
2. How many two-choice drinks are available – one from the top photo and one from the bottom photo? Does it matter which drink is selected first?
3. Which soda is the most popular in the U.S.? Does it have the same popularity with your class?
4. About how many cups of coffee a year are consumed by Americans?
5. About how many gallons of soda are consumed by Americans in a year?
6. About how many 16 oz cups of soda does an American consume a day?
7. For each soda drink head there is a five gallon syrup bag in a box (BIB) – how much finished product does this make?
8. For a 20 oz cup of soda, how much does it cost including one free refill?
9. Which drink: soda, diet soda, black coffee or coffee with sugar and cream, has the most caffeine? least caffeine?
10. What's the calorie difference between black coffee and diet soda?

As students begin to focus on the question they find the most interesting, ask what information will they need to be able to answer that question and where could they find it? Have resources available or suggested resources. Textbooks and worksheets tend to provide all the information needed to solve a given problem – but in real problem solving that is not the case.

Solutions and suggested resources may be found on page 23.

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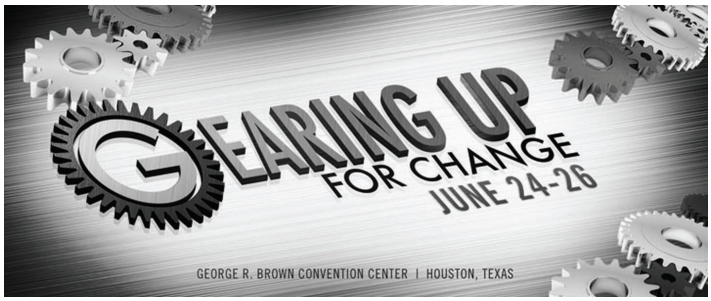
Independent K-12 Mathematics Consultant • Georgetown, TX

CAMT 2015

CAMT 2015: Gearing Up for Change
George R. Brown Convention Center

June 24 – 26, 2015
Houston, TX

The Conference for the Advancement of Mathematics Teaching (CAMT) 2015 will be held June 24-26, 2015, at the George R. Brown Convention Center in Houston, Texas. Take advantage of early-bird registration discounts before April 15.



This year's featured speakers include Diane Briars, Caroll Fisher Burns, Marcy Cook, Linda Gojak, Pam Harris, Mary Alice Hatchett, Ervin Knezek, Matt Larson, Bea Luchin, David Molina, Barbara Novelli, Alan November,Tom Reardon, Cathy Seeley, Debbie Silver, John Staley, Kim Sutton, Glenna Tabor, Jennifer Taylor-Cox, Cheryl Rose Tobey, and Dinah Zike.

The Elementary Administrators' Conference will be Wednesday, June 24 and the Secondary Administrators' Conference will be Thursday, June 25. Both will be held at the Hilton Americas. Registration to CAMT is complimentary to participants attending either of the Administrators' Conferences.

For more details, visit the CAMT website at *<www.camtonline.org>.*

CAMT 2015 Volunteers

Dear Members of TCTM,
It's time to VOLUNTEER!

We believe that there is an opportunity for everyone to find their niche in helping CAMT to be a success for everyone involved – here's how you can join in on the efforts (we would love to have over 250 volunteers ready to go!). We are looking for fellow mathematics educators to assist us with supporting participants in areas such as the following: Registration, Exhibits, or Speaker Check-In. Come work "behind the scenes." We need you! Please e-mail your name and contact information (be sure to include contact information for the summer) to Kelly Meshell, along with which of the following dates you are available to volunteer. Kelly will respond via e-mail or phone with a specific scheduled time and location.

Thank you for making every CAMT a wonderful experience!

2015 Volunteer Information

I am willing to volunteer on June	23rd PM	24th AM	24th PM	25th AM	25th PM	26th AM	26th PM

Name: First _____ Last _____

Address: _____

City _____ State _____ Zip Code _____

Contact: ( ) Cell Phone _____ Email Address _____

( ) Home Phone _____ District or Professional Affiliation _____ ESC _____

Please submit your form to Kelly Meshell,

by mail: **Kelly Meshell**
201 Llama Loop
Kyle, TX 78640

or by email:
< KMeshell@gmail.com >

Scavenger Hunt

Spring 2014 Winner
Carolyn B'Smith

Last Issue's Winner

Congratulations to **Carolyn B'Smith** from Brentwood Christian School, in Austin, TX. Carolyn won a $100 NCTM gift certificate. Her name was drawn from the correct submissions to the Tangram Scavenger Hunt in the Spring/Summer 2014 *Texas Mathematics Teacher*.

Tools of the Trade Scavenger Hunt

In this issue you need to find the matching tool and tool clue for the Tools of the Trade Scavenger Hunt. These picture solutions may be found throughout this issue. Submit the tool name with the page number via email to Mary Alice Hatchett at *<mahat@earthlink.net>* by February 1, 2015. All correct entries will be entered into a drawing for a $100 NCTM gift certificate. The winner will be notified by February 15, 2015.

	Tool (clue)	Tool Name	Page #
1	A semicircular tool used to measure angles.		
2	A tool used to draw precise circles and arcs.		
3	A tool used to show location of ordered number pair points in a plane.		
4	A tool used for measuring liquid.		
5	A tool used for measuring distance.		
6	A tool used for describing the time of day or night.		
7	A tool used for basic computation.		
8	A tool used in documenting procedure.		
9	A line of infinite extent whose points correspond to the real numbers according to their distance from zero.		
10	A tool used for weighing mass.		
11	A tool used for measuring the angular distance between two objects.		
12	A tool used for making a reduced, enlarged, or exact copy of a plane figure.		
13	A mechanical analog tool used for multiplication and division.		

TEA Talks

The Texas Education Agency (TEA) has several webpages important for mathematics educators

Curriculum

To find out more about the Texas Essential Knowledge and Skills (TEKS) and resources to support their implementation, see the TEA website at *< tea.texas.gov>*. For additional information, contact: Jo Ann Bilderback, Math/Science Manager at (512) 463-9581 or *<joann.bilderback@tea.state.tx.us>*.

Assessment

To find out more about the State of Texas Assessments of Academic Readiness (STAAR) and changes resulting from the new mathematics TEKS, see *< tea.texas.gov>*. For additional information, contact: Student Assessment Division at (512) 463-9536 or *<student.assessment@tea.state.tx.us>*.

Application Information

2015-16 Mathematics Preservice Teacher Scholarship

There are ten $2000 scholarships available for 2015-16. Any student attending a Texas college or university - public or private - and who plans on student teaching during the 2015-16 school year in order to pursue teacher certification at the elementary, middle or secondary level with a specialization or teaching field in mathematics is eligible to apply. A GPA of 3.0 overall and 3.25 in all courses that apply to the degree (or certification) is required. Look for the scholarship application online at *<www.tctmonline.org>*. The application deadline is May 1, 2015. Winners will be announced in July 2015.

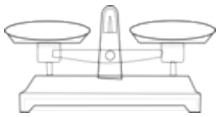
2016 TCTM Grant

This grant is for K-12 educators, university faculty and NCTM affiliate groups in Texas. Please note, pre-service teachers are not included as they can apply for the Mathematics Preservice Teacher Scholarship. The grant can be awarded to an individual, a group of teachers or to another NCTM or NCSM affiliate organization, if they are in Texas. Grant requests up to $1,200 will be accepted.

Uses include (1) improving mathematics classroom(s), or (2) helping your school achieve its goals related to mathematics, or (3) promoting mathematics teaching and learning, or (4) improving your ability to teach mathematics.

The online application may be found at *<www.tctmonline.org>*. The application deadline is November 30, 2015. Awardees will be notified by January 31, 2016.

NCTM Membership



What's an easy way to support TCTM? Join NCTM or renew your NCTM membership!

Sign up for your NCTM membership and use the link on the web form to indicate TCTM as the affiliate you wish to receive a rebate! Go to *<www.nctm.org>*.

TCTM will receive $5.00 if you are joining NCTM as a new member, and $3.00 if you are renewing. Now you can sign up directly with NCTM and give back to your state affiliate. However, you may only choose one state affiliate for the rebate (it will not be split).

Please remember, you cannot join your local affiliates from the NCTM website. You must join the local affiliates directly by the process they have established. You may join TCTM by either attending the CAMT conference as a paid participant, or by using our membership form found online at *<www.tctmonline.org>*.

TCTM Membership

Join TCTM or renew your membership!

Please join TCTM each year! Your membership includes this journal as well as updates on state and national opportunities such as grants, competitions, or professional development. You may join TCTM either by attending the CAMT conference as a paid participant, or by using our membership form found online at *<www.tctmonline.org>*. If you are a paid participant at CAMT your TCTM membership is automatic for the school year following CAMT. Remember to renew your membership if you do not attend CAMT or are not a paid participant. Our current membership dues are only $13.00 per year. If you are a new or returning member, please find our membership form online at *<www.tctmonline.org>*. Just fill out the form and mail your check to our current treasurer. Sorry, we are not able to process electronic payments, but you can join or renew for multiple years. You may also donate to our scholarship fund at any time.

Mystery Number Student Activity

Follow the instructions given to find the Mystery Number.

362	**420**	**317**	**361**	**424**
413	**471**	**368**	**412**	**475**
317	**375**	**272**	**316**	**379**
476	**534**	**431**	**475**	**538**
373	**603**	**730**	**901**	**435**

1. Circle one number in the table. (Don't pick the same number as your neighbor!) Cross out all other numbers in that row and column.
2. There are 16 unmarked numbers. Circle one of the unmarked numbers. Cross out all other numbers in that row and column.
3. There are 9 unmarked numbers. Circle one of the unmarked numbers. Cross out all other numbers in that row and column.
4. There are 4 unmarked numbers. Circle one of the unmarked numbers. Cross out all other numbers in that row and column.
5. There is one number left unmarked. Circle it.
6. Find the SUM of all circled numbers.
7. Now compare your SUM with what your neighbor got, what happened? (Check with a couple of other neighbors if you like!)

Directions for creating your own Mystery Number are on page 16.

Mary Alice Hatchett • <mahat@earthlink.net>
Independent K-12 Mathematics Consultant • Georgetown, TX

Save the Date: TCTM Reception at CAMT

Meet the TCTM board and other TCTM members at CAMT on Thursday June 25 at 4:30 p.m. Door prizes will be given away at the reception. Come join the fun. We will honor our award winners, have food and drink and conduct a short business meeting.

Martha Godwin and Jerri LaMirand at the 2014 TCTM booth at CAMT

TCTM Communications

Follow TCTM on Twitter!

Did you know that we now have an official Twitter account? Find out the latest about TCTM and other information just for Texas mathematics teachers!

twitter.com/tctmonline

Follow TCTM on Facebook!

Like the Texas Council of Teachers of Mathematics page on Facebook.

Snail Mail!

The journal is sent to the address you indicated on your membership form or the address that was used when you registered for CAMT. Please update your mailing address if it is not correct. If you have an e-mail address, please be sure it is on file and up-to-date with TCTM. If you do not have an e-mail address, please let us know. You may update your information online at *<www.tctmonline.org>* .

How to Create a "Mystery Number Student Activity"

Here's the secret to create a Mystery Number of your own. *Do not share this information with your students!*

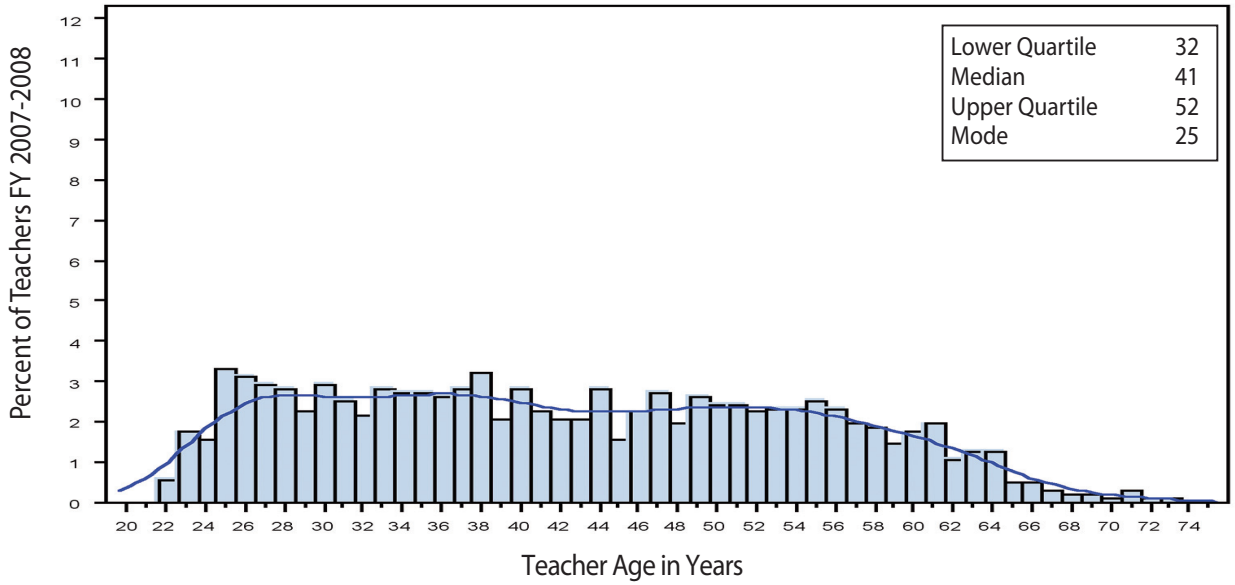
+	d	e	f
a	a+d	a+e	a+f
b	b+d	b+e	b+f
c	c+d	c+e	c+f

1. Select number (sum) you want as a your Mystery Number.
2. Separate Mystery Number into different addends (a,b,c,d,e,f) that will equal your Mystery Number.
3. Fill in the interior of this table with the sums (a+d; a+e; a+f; etc….).
4. Display ONLY the interior (shaded part) of the table.
5. If you follow the directions, no matter what sums from the interior of the table you select it will include ALL the addends.
6. This 3x3 puzzle is just an example of how this type of puzzle is created. The size of your puzzle does not matter. If you want a 4x4 size puzzle, select 8 addends that sum to your Mystery Number; if you want a 5x5 size puzzle, select 10 addends that sum to your Mystery Number; if you want a 100x100 size (not recommended) you'll need 200 addends. The main thing is HAVE FUN!

Texas Teachers: Age and Experience

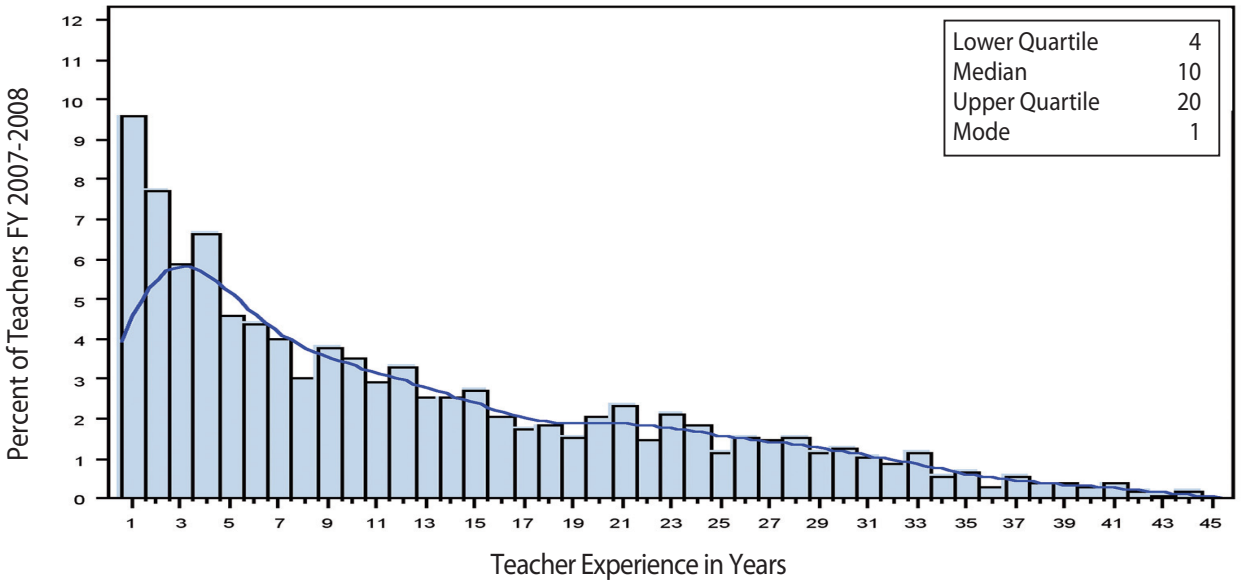
The 2007-08 teaching workforce picture in Texas

Public School Teacher Age Distribution



However, the teaching workforce in Texas is one example of a state in which age does not tell the story of experience. Many of Texas's teachers have fewer than five years of teaching experience, as illustrated below, and many have fewer than three years of teaching experience.

Public School Teacher Experience Distribution



Source: original analyses of the Schools and Staffing Survey by Richard Ingersoll and Lisa Merrill, University of Pennsylvania.

Reference: National Commission on Teaching and America's Future. (2010). *Who Will Teach? Experience Matters*. Washington, DC: Author.

Professional Development for Mathematics Teachers

With existing economic conditions and limited district funding, mathematics teachers are afforded fewer opportunities to travel to conferences. Consequently, a local affiliate of the National Council of Teachers of Mathematics (NCTM) was organized to offer a regional conference in Texas for teachers as a more convenient and affordable opportunity for professional learning. This article will provide mathematics teacher educators the opportunity to gain perspectives from colleagues about how the conference was organized, what was implemented at the conference, and the results of running a local conference at a state university. The professional development approach discussed in this article aligns with Guskey's (2009) conditions for linking professional development in workshops or summer institutes and improvements in student learning.

The conference provides an opportunity for elementary, middle, and high school teachers to be professionals in the company of their peers and to be reenergized for the school year. The benefit to professors of higher education is to meet the requirement of service to community and to connect with local schools by providing inexpensive professional development to local school districts.

Demographics of region

Corpus Christi has a population of 316,381 according to the 2013 Census (see: *http://quickfacts.census.gov/qfd/states/48/4817000.html*). The metropolitan region includes three counties and has a population of 464,000. The largest area school district is Corpus Christi ISD, which has over 40,000 students, with 62% economically disadvantaged. Mathematics and science assessment scores on state exams are lower than the state average. This may indicate a need for professional development for teachers.

Organization of the Conference

Effective professional development must be well organized, carefully structured, purposefully directed, and focused on both content and pedagogy (Guskey, 2009). The evaluation of this professional development has included the teachers' satisfaction within the experience (Mulling, Lepicki, & Glandon, 2010). Data includes attendance patterns, presenter descriptors, and satisfaction questionnaires at the end of each session and conclusion of the conference. The following are the recommended steps for the organizational structure of the conference.

Step 1: Launching of the conference

The conference was first organized in 2005 by a group of university faculty and staff who were working for state funded mathematics grants at three local university and community colleges in South Texas. The Conference for the Advancement of Mathematics (CAMT) is a state mathematics conference that is held every summer and it rotates between three cities. Teachers in our area are in close proximity to two of the locations, but the trip to one of the cities is usually too far and too expensive to attend. It was decided to organize a one-day conference and pattern it after CAMT.

The timing for the conference is important. Summer is a good time to have a teacher conference, but not too soon after classes are over and not too far into the summer. The conference was held the second Friday in June. Our university does not have Friday summer classes so ten classrooms are reserved in the same building that also has two computer labs. All of the classrooms are equipped with Internet, document cameras, and projectors. The building also has two lecture halls that are large enough for a plenary speaker during lunch.

The first conference name in 2005 was $(ME)^2$ by the Sea, an acronym for Making Mathematics Education Engaging. There were 39 sessions and 264 people registered at the first conference. Conference attendees included teachers from six grants: three Teacher Quality Grants and three state grants aimed at school improvement in mathematics. The grants paid for the teachers' registration of $25 and a stipend for attending. After 2005, because one of the grants that the university received included a math and science academy for teachers, the conference name was changed to ME by the SEa to include science sessions with the math sessions. ME stands for Math Education and SE stands for Science Education.

Step 2: Form an affiliate for sustainability

The organizers of the first (ME)[2] by the Sea were worried that the conference would not continue when the grants terminated, so an NCTM affiliate was formed, the Coastal Council of Teachers of Mathematics (CCTM). The first president was Dr. Elaine Young, mathematics education professor of Texas A&M University Corpus Christi. Officers of the council included public school teachers and university professors. An organization like this needs to have public school personnel actively involved as both members and board members to help promote the conference in the community and to help direct the organization to meet the needs of local mathematics teachers.

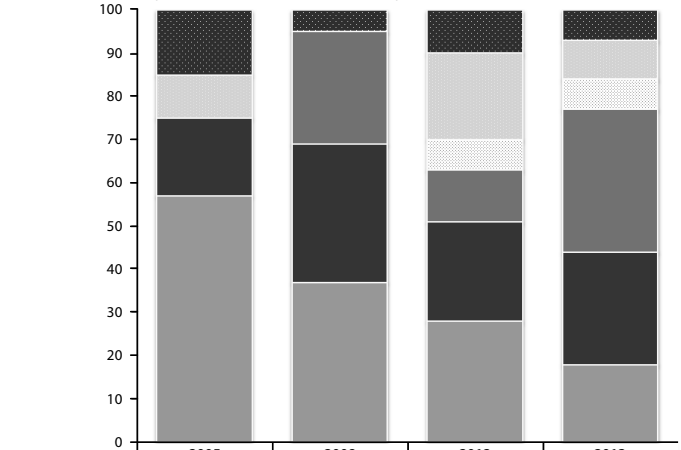
Step 3: Diversify presenters

Organizers of the conference called for proposals to fill the approximately forty sessions to be offered. The presenters fell into categories of faculty, local educational consultants, vendors of math/science education products, local teachers, masters' students who are also local teachers, and doctoral students. The majority of the presenters the first year were faculty because the conference was put on by the grants affiliated with the three universities. Since then there has been increased diversity of presenters, including graduate and doctoral students, and local educational consultants (see Figure 1). The conference provides the graduate students an opportunity to present locally. Also, when graduate students were recipients of grant money, the graduate students were strongly encouraged to present their masters' theses based on action research. Presenters have also included faculty from other state universities.

Step 4: Build attendance

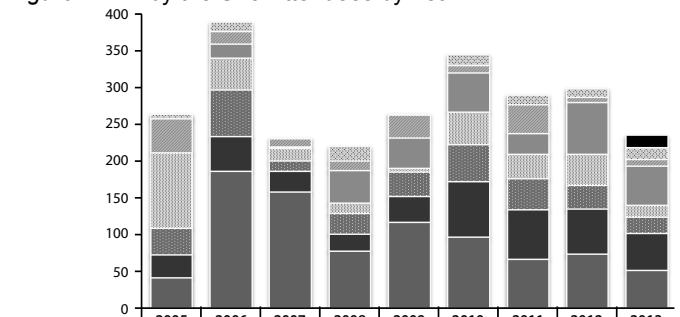
For the first two years of the conference, six grants paid for conference registration and stipends for attending teachers. In 2008, college students who are members of the college affiliate of NCTM (Council of Teachers of Mathematics at Texas A&M University Corpus Christi) were encouraged to attend and the club paid the student fee of $15. In 2009, the conference was expanded to include math and science sessions because of the inclusion of science into one of the local grants. By 2010, ME by the SEa had the highest registration of 345 participants. One reason for the high attendance was that three local math and science grants sent teachers as well as two state-affiliated math and science teacher academies also sent teachers. The College of Education has a summer course for paraprofessionals who are seeking degrees and they sent pre-service teachers from their program (see Figure 2).

Figure 1. ME by the SEa Presenters by Year



	2005	2008	2012	2013
Vendors	15	5	10	7
Consultants	10	0	20	9
Doctoral Students	0	0	7	7
Master's Students	0	26	12	33
Teachers	18	32	23	26
Faculty	57	37	28	18

Figure 2. ME by the SEa Attendees by Year



	2005	2006	2007	2008	2009	2010	2011	2012	2013
Coaches									17
College	6	13	1	20	1	15	13	12	16
Other	47	17	11	13	32	10	40	7	9
University Students	0	19	2	44	41	53	28	71	53
Primary K-2	102	43	17	14	5	45	33	42	16
High School	36	64	14	28	33	50	42	32	22
Middle School	31	47	28	23	35	75	67	61	50
Elementary	42	186	158	78	117	97	67	74	52

Step 5: Invite Keynote Speakers

The conference committee wanted to provide six hours of professional development as well as lunch so that teachers would not have to leave the campus. The University building has two large lecture halls where plenary talks could be provided. The university has a contract with a food service provider who serves box lunches. The cost of the lunch is included in the cost of the conference. Because the plenary talks included all grade levels of teachers, the speaker needed to

be someone who could speak to a wide range of interests. There has been a speaker from the Charles A. Dana Center at The University of Texas at Austin and Dr. Ed Burger, now President of Southwestern University, paid for by his publisher. One year, there was a play about the mathematician Euler played by Dr. Nadina Duran, mathematics professor at Texas A&M University Corpus Christi. In 2008, the lunch was expanded to offer two speakers in order to not overfill the lecture halls that accommodate 200 and to give teachers a choice.

Plenary sessions have included a science education professor from a nearby university and a math consultant. Other plenary sessions have included the President of the Texas Council of Teachers of Mathematics (TCTM), a member of the local Geology Society, a representative from Texas Instruments, a math consultant from Austin ISD, and Dr. Ruby Payne, a national speaker on poverty. The local Education Service Center (ESC) donated stipends for the keynote speakers some years, but because of budget cuts, are no longer able to donate. Since the budget cuts, the ESC has continued its support by sending 40 teachers from a math collaborative to the conference.

Step 6: Organizing Registration

The first two years were difficult because six grants were involved with registering teachers. Schools in our area are still using Purchase Orders and were reluctant to register teachers online. In 2012, registration was finally paperless with all registrations and proposals submitted online. The information for registration had not been uniform and by everyone registering on line, now more accurate information could be collected. The cost of the registration increased from $25 to $35 due to the increase of the university food service and a parking fee for a new parking garage. Six hours of professional development for $35 is still a bargain for the schools or even teachers if they have to pay for it themselves.

Step 7: Inviting vendors

There are local vendors who rent tables at the conference. The cost to the vendor is only $25 for the table and they have typically sold math or educational related products. They are permitted to present one or two sessions, but are labeled as vendors in the program so that teachers know that they may be promoting a product. The vendors also donate door prizes that we give away at a short business meeting at the end of the day, or they give "goodies" for the conference bag that we give to the teachers when they check into the conference. The bags have the affiliate logo on the side and can be used as shopping bags after the conference.

Conclusions

By forming an affiliate that provides professional development, the conference conforms with the stated mission of NCTM to be "a public voice of mathematics education supporting teachers to ensure equitable mathematics learning of the highest quality for all students through vision, leadership, professional development and research." NCTM affiliates are independent organizations whose missions and goals are similar to those of the National Council of Teachers of Mathematics.

The stakeholders of the conference are the teachers gaining professional development. Plans are for ongoing research evaluating the impact of this conference through teacher surveys aimed at their learning, application of methods, behavior, and ultimately impact to students (Mullins et al., 2010). The research will follow Guskey's five levels of evaluation for professional development: (1) participants' reactions, (2) participants' learning, (3) organization support and change, (4) participants' use of new knowledge and skills, and (5) student learning outcomes.

REFERENCES

Guskey, T. R. (2002). Does it make a difference? Evaluating professional development. *Educational Leadership*, 59(6), 45-51.

Guskey, T. R., & Yoon, K. S. (2009). What works in professional development? *Phi Delta Kappan*, 90(7), 495–500.

Mullins, D., Lepicki, T., & Glandon, A. (2010). *A Professional Development Evaluation Framework for the Ohio Able System.* Ohio State University, Center on Education and Training for Employment.

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Legislative Update and Advocacy

Texas Education Agency seeks public comment on two new high school mathematics courses

The State Board of Education has been addressing the creation of two new high school mathematics courses, Statistics and Algebraic Reasoning.

The timeline for the new Statistics course is as follows:

November 2014 First Reading and Filing Authorization

December 2014 Official Public Comment Period

February 2015 Second Reading and Final Adoption

The timeline for the new Algebraic Reasoning course is as follows:

February 2015 First Reading and Filing Authorization

March 2015 Official Public Comment Period

April 2015 Second Reading and Final Adoption

The SBOE is looking for feedback, so please take some time to read and respond with your questions, concerns and suggestions during the public comment period.

The Texas Education Agency's Graduation Toolkit

The agency has posted the new Graduation Toolkit on the website. You can access the PDF document at

<www.tea.state.tx.us/communications/grad_toolkit/booklet.pdf >.

A Spanish version of the toolkit is now available. You may download all or parts of the toolkit at

<www.tea.state.tx.us/communications/brochures/grad_toolkit_spanish.pdf >.

Texas Legislature

The legislative session is due to begin in January 2015. On the first day to file bills, November 10, 208 bills were filed in the House, and 163 bills were filed in the Senate.

Results of SBOE Election

The November election returned all incumbent state board members except for District 13, where Erika Beltran won the seat that was previously held by Mavis Knight. You may contact any of these elected officials at *< sboesupport@tea.state.tx.us >*. Be sure to identify your SBOE member.

District Number	SBOE Member
1	Ms. Dominguez
2	Mr. Cortez, Jr.
3	Ms. Perez
4	Mr. Allen, Jr.
5	Mr. Mercer
6	Ms. Bahorich
7	Mr. Bradley
8	Ms. Cargill
9	Mr. Ratliff
10	Mr. Maynard
11	Ms. Hardy
12	Ms. Miller
13	Ms. Beltran *(New)*
14	Ms. Melton
15	Mr. Rowley

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Independent K-12 Mathematics and Research Consultant Austin, TX

Voices from the Classroom

CTE & Mathematics—When Worlds Collide!

With the rising popularity of Professional Learning Communities (PLCs), an "it takes a village" attitude is growing as educators begin to see students as "ours," rather than simply as "mine." The power of making connections across curricula is undeniable. With this in mind, we developed a plan to include other content areas in the teaching of mathematics.

We gathered a diverse group of educators to tackle this challenge. Every Career and Technical Education (CTE) teacher was present with a hard copy of course standards and a juicy highlighter. There were teachers from the world of agriculture, child development, food science, floral design, sports and entertainment marketing, and audio/video production, to name a few. It was an impressive assembly!

On the opposite side of the ring were teachers representing each course in mathematics, science, English, and social studies. We, too, were armed with a hard copy of our standards!

In round-robin fashion, the core academics teachers rotated from table to table meeting with each CTE cluster. Our task was to find ways to connect our content areas. Discussions were rich as we scavenged through the standards looking for ways to support one another.

All were amazed at the outcome. As evidenced by the plethora of highlighted standards, our CTE friends teach courses infused with mathematics. Discussions quickly moved toward how certain concepts are taught and what terminology and tools are used. We found places that we could integrate common or related vocabulary. Additionally, the mathematics teachers requested that CTE courses use the same types of calculators that we use in our classes. In this way, students' calculator skills are reinforced and a connection is built between the disciplines. We noticed, for instance, that CTE courses used a 4-function calculator with a percent key. Although math teachers were thrilled that CTE students were working percent problems, we were concerned that students might become dependent on the percent key without truly understanding the concept.

Other powerful discussions centered on the timing of a certain lesson. When related lessons were taught in near proximity, teachers could more readily connect the two.

Finally, the CTE teachers were tasked with creating and teaching a lesson that would incorporate standards from the core curricula. They selected the core standards then partnered with a mathematics teacher for collaboration. One example involved the collaboration of teachers from Geometry and the Principles of Architecture and Construction. The geometry standard used was 11.C: The student applies the concepts of similarity to justify properties of figures and solve problems. The student is expected to develop, apply, and justify triangle similarity relationships, such as right triangle ratios, trigonometric ratios, and Pythagorean triples using a variety of methods. The Architecture and Construction standard being taught was 1.C: The student performs mathematical operations to complete tasks such as estimating materials and supplies. The student is expected to use appropriate formulas and calculations to determine ratios, fractions, and proportion measures and use ratios, fractions, and proportion measures to perform measurement tasks.

The CTE students were preparing to construct trusses for a storage shed they were building. They needed to determine the measurement of the obtuse angle at the top of the truss in order to build the trusses exactly alike. The geometry teacher demonstrated how the students could use trig ratios to determine the angle measurement.

Both the CTE and mathematics teachers enjoyed the unified approach to teaching. Even more, the students were excited to see what appeared to be teachers from two separate worlds working together, connecting disciplines, and making great sense of it all!

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Coordinator for Elementary Mathematics & Secondary GT
• Midway ISD

Recommended Readings and Resources

All In A Day

by Anno Mitsumasa

ISBN: 0-399-21311-2

Publisher: Philomel Books; New York

All In A Day by Anno Mitsumasa and 9 other authors/artist is a picture book about the similarities and differences in children and their activities in eight different parts of the world throughout one 24-hour day – New Year's Day. The places children may live are as different as their skin colors, the shapes of their houses, the clothes they wear, and the languages they speak – but their facial expressions and the sounds of their voices when they laugh or cry are very much the same!

Students could discuss the activities and imagery in the book. What's similar to your own life? What's different? They could examine a Meridian map and predict the current time in different zones. Questions in young student's minds are aroused – Why is it snowing in New York City and beach/outdoor picnic weather in Sydney, Australia?

This is a wonderful story to share with students as the current calendar year ends and a new year begins. A story that can connect math (time), science (earth movement around the sun), world geography (map locations) and celebrations of different cultures at this special time of year – New Year's Day.

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Independent K-12 Mathematics Consultant • Georgetown, TX

Answers to "On the Cover: Find the Mathematics in a Drink"

The following are suggested resources. We encourage you and your students to find others.

1. How many choices of drink are shown?

   10 in top photo and 8 in bottom photo

2. How many two-choice drinks are available – one from the top photo and one from the bottom photo?

   10 x 8 = 80 choices

   Does it matter which drink is selected first?

   No

3. Which soda is the most popular in the U.S.? Does it have the same popularity with your class?
   < www.beverage-digest.com/pdf >

4. About how many cups of coffee a year are consumed by Americans?

   Coffee Statistics Report 2014 says Americans consume 400,000,000 cups of coffee per day, so it's 400 million times 365.

5. About how many gallons of soda are consumed by Americans in a year?

   The National Soft Drink Association says consumption of sodas is now over 56.25 gallons per person per year.

6. About how many 16 oz cups of soda does an American consume a day?

   56.25 ÷ 365 = about 0.15 gallons per day
   128 oz = 1 gal
   0.15 x 128 = 19.2 oz
   So Americans on average consume a little more than one 16 oz cup of soda per day, in fact it is close to a 20 oz cup or a 20 oz bottle of soda.

7. For each soda drink head there is a five gallon syrup bag in a box (BIB)– how much finished product does this make?

   Most syrup is mixed 5 to 1 (this means 5 parts soda water to 1 part syrup) so a gallon of syrup makes 6 gallons of finished product. You can buy 5 gallons of syrup from $50 to $85. This will make 30 gallons of finished product.

8. For a 20 oz cup of soda, how much does it cost including one free refill?
   < www.pdco.com/node/88289 >

9. Which drink: soda, diet soda, black coffee or coffee with sugar and cream, has the most caffeine? least caffeine?

   (National Nutrient Database) According to an article in the Journal of the American Dietetic Association, coffee has the following caffeine content, depending on how it is prepared:

	Serving size	Caffeine content
Brewed	7 oz, 207 ml	80–135 mg
Drip	7 oz, 207 ml	115–175 mg
Espresso	1.5–2 oz, 45–60 ml	100 mg

   Caffeine amounts for soda and diet soda may be found in the nutritional information printed on cans and bottles.

10. What's the calorie difference between black coffee and diet soda?
    < www.sparkpeople.com/food_vs_food.asp?food=94_294_coffee_versus_diet-soda-(coke,-pepsi,-sprite,-etc) >

Math to Text & Text to Math Approach Blending Sixth-Grade Math and World Cultures Content: A Four-Year Study into Meaningful Connections and Student Perceptions

Today's elementary teachers are required to be interdisciplinary curricular experts and facilitators. Elementary teachers are taught to not only effectively teach various disciplines but integrate them in meaningful units of instruction (Chapin, 2013) to provide equity for all learners (Texas Teacher Proficiencies, 1997). Elementary teachers' combinations of reading strategies with the instruction of mathematics content have been touted as a need (Franz & Hopper, 2007). Even though classroom examples exploring the use of mathematics content and skills to aid instruction of world cultures content have been limited, some educators have seen the connection of mathematics in world cultures content. For example, Alicia R. Crowe (2010) argued the importance of students understanding numeracy in historical context. Historical content in context is defined by political and social influences of the time. Crowe (2010) called for the use of mathematics in real world contexts. In teacher preparation programs, pre-service teachers are told that all content is important and must be taught with zeal. There is a history of marginalization of world cultures content in elementary schools, however, teachers discover an instructional emphasis for mathematics and reading curriculum (Alleman & Brophy, 1993; Fitchett & Heafner, 2010; Hoge, Nickell, & Zhao, 2002; McEachron, 2010; VanFossen, 2005).

For teachers with the mandate and need to integrate all content areas, what is the instructional plan to accomplish such integration? Is there a means to teach math skills while teaching world cultures content? Also, because elementary schools have a predisposition to marginalize world cultures education due to high-stakes state-testing mandates (Fitchett & Heafner, 2010), mixing world cultures with math and math with world cultures content seems to be a logical action. In the high-stakes testing environment students' innate perceptions concerning learning are increasingly negative in nature and based on rewards (Madaus, Michael, & Higgins, 2009). Teachers are becoming concerned with these changes and now must contend with improving students' perceptions concerning the learning of all content like math and world cultures.

Mixing Mathematics Skills and World Cultures/Social Studies Content

First, American culture has a problem with mathematics. Mathematics is seen as an engineering language, which is inflexible and is not pertinent to the daily lives of people (Bishop, Clarke, Corrigan, & Gunstone, 2006; Garii & Okumu, 2008; Mudaly, 2007; National Council of Teachers of Mathematics, 2000; 2006). The National Council for the Social Studies values an "interpretive" cross-disciplinary "active" approach supported by "challenging thought-stimulating inquiry assignments" (Chapin, 2013, p. 5). Using mathematics to actively explore, inquire, and analyze world cultures content is an advantageous, intertwining path to effectively facilitate world cultures content as well as math skills, improving comprehension. One of mathematics instruction's purposes and goals, like any other discipline, is to provide students the needed skills and content for real world application. In the real world, people utilize math to argue points, evaluate information, and debate perceptions. Elementary teachers who do not see the connection of math to everyday, real-world critical thinking are inhibited in their ability to effectively teach mathematics (Garii & Okumu, 2008). World cultures content creates an urgent need of analysis, like comparing and contrasting. The urgent need of analysis arises naturally in world cultures because a student's perspectives about an event or place should have the right to be heard. Students expressing opinions about content analyzed using mathematics language for support have the opportunity to learn both world cultures content and mathematic skills simultaneously. Students allowed to engage in "meaningful" experiences where their values have a voice will have an easier time connecting to learning versus a teacher directed or non-inquiry based approach (Chapin, 2013, p. 5).

Purpose of the Action Research Study

Five sixth-grade teachers with experience teaching math, world cultures, reading, science, and art/music in a middle school in East Texas investigated negative perceptions several students expressed with mathematics and world cultures curricula. The same

five teacher researchers collaborated throughout the duration of the four-year study. This group's curiosity originated from discussions in team meetings concerning declining math scores on state testing. In particular, several teachers discussed anecdotal evidence from previous years' teaching logs. Several statements (n=15) were found relating to students loving social studies but disliking mathematics and vice versa. Specifically, teachers were concerned with students who expressed love for world cultures but expressed extreme negative perceptions about mathematics. Two of the five teachers noted examples of students (n=5) who failed state testing in math yet seemed fond of world cultures content. Teachers wanted to know if mixing world cultures content with mathematics skills and vice versa could change this negativity in students. The teacher researchers wished to ascertain whether the sixth-grade students' perceptions toward mathematics and/or world cultures changed after various interventions. The world cultures teacher's intervention involved systematically mixing math skills with world cultures content while the math teacher instituted three encompassing projects mixing world cultures content with math skills. For the five sixth-grade teachers, one question guided the four-year research project: Will the mixing of content in both the math and world cultures classes change students' perceptions about math and/or world cultures?

Study Participants and Setting

The study was conducted over four years at an East Texas suburban middle school. Nine percent of the school's population was economically disadvantaged. The middle school population comprised of fifth-grade through eighth-grade students. The core curricula were reading, language arts/writing, mathematics, science, and social studies/world cultures. Over the four-year time span, 540 students were served. Of the 540 students, 103 (19%) students' data were omitted due to absences (during the data collection period) or parent refusals for participation. Many of these students transferred in and out of the school due to various life issues. Overall, of the 540 students, data were collected from 437 sixth graders served in regular education classrooms. Of the 437 sixth graders, 306 (70%) were designated as general education students while four (<1%) students with special needs were served in an inclusion environment. The remaining students were classified as gifted-talented 22 (5%) and 105 (24%) were at-risk students.

Design of the Study & Interventions

Teachers were concerned with students who expressed extreme negativity toward mathematics. Teachers suspected many students to have strong negative perceptions toward mathematics based on anecdotal observations and discussions with parents and students over the years. Since math was a lower scoring area for students as revealed on the mandated state test, teachers enrolled in several workshops and began discussing ideas to positively influence students' perceptions. Students responded to a questionnaire regarding their perceptions about the various core courses they experienced. Figure 1 displays a sample item from the extreme perception questionnaire entitled "How Do You Feel About Your Learning?" This questionnaire was designed by teachers for sixth graders to rank perceived perceptions per core curricula area. There was one item for each of the following: reading, LA/writing, mathematics, science and social studies. The students circled one of three numbered choices (i.e., 1=Hate it!, 2=It's ok, 3=Love it!). Two lines below each subject and ranking choice were provided to obtain student remarks concerning each ranking choice. Questionnaires were distributed before classes began at the first of the year and distributed at the end of the year as well for comparison.

Figure 1. Questionnaire Sample Item

How Do You Feel About Learning?

How do you feel about the subjects below? Tell us what you think. For the subjects listed below, circle 1, 2, or 3. 1= Hate It!, 2=It's OK, and 3=Love It! Be honest... We want to know.

You may write a sentence, phrase or a word on the line below each subject to explain why you feel that way about the subject.

Mathematics (CIRCLE ONE)

1= HATE IT! ———— 2=IT'S OK ———— 3=LOVE IT!

_____

_____

World Cultures Mixed with Math Skills: Daily systematic interventions

The world cultures teacher decided to find systematic ways to mix world cultures with math skills daily. The following is one representation of the methods used in the class. The world cultures teacher consulted with the math teacher daily to be able to implement the math skills students were seeking to master in math class. Several ideas emerged from these teaming meetings (e.g., ratios for comparing). The world cultures teacher began a daily ritual of consulting with the math teacher to discuss current math goals and objectives. These meetings were informal and at times incidental conversations held in between classes.

When the math teacher instructed students concerning ratios, the world cultures teacher implemented ratios with class content. For example, the world cultures class met in small groups and discussed the advantages and disadvantages of maps over globes. Students were asked to count the total number of comments the group recorded. Then, students grouped comments as advantage or disadvantage for both maps and globes (e.g., advantage: Maps-mobile/Globes-shows physical features correctly vs. disadvantages: Maps-physical features distorted/Globes-Cannot carry it around for navigation). Therefore, a small group counted 20 comments and discovered five were advantages for maps while five were advantages for globes. Disadvantage comments followed the same pattern with five advantages and five disadvantages for maps and globes, respectively. The ratios were written in several ways for discussion in the class and with small groups (e.g., the number of advantage comments to total comments made was 5/20). When the math teacher taught students that ratios could be used to investigate percentages, the world cultures teacher had students in small groups reexamine their previous ratio calculations from the comments about maps and globes. For example, using the example above, the ratio for the advantages of using maps out of all advantage comments equaled 5/10 or five out of ten. The world cultures teacher asked this group what was the percentage of advantage comments for using maps out of all advantage type comments. With scaffolding students reported five divided by ten equals 50%; fifty percent of the advantage comments concerned the advantages of using maps over globes. Examples like this one continued daily and were implemented by the world cultures teacher. This technique of systematic instruction combined math skills with world cultures content and was christened: the *MATH to TEXT/TEXT to MATH Approach*. The name for this approach was used because students take text related items like comments and translated them into math language for calculations and vice versa.

The world cultures teacher reported systematic, daily ways to address math skills while meeting world cultures learning objectives. The world cultures teachers reported fractions, ratios, order of operations, measurement, estimation, power, proportions, and all math operations were mixed with world cultures curriculum over the course of the year. The math teacher expressed satisfaction having support. The math teacher mentioned at times she felt alone while it seemed reading and world cultures teachers collaborated and met objectives together. The world cultures teacher reported several students reminded him that this was world cultures and not math class. The teacher replied to comments like that with the same answer, "It is all world cultures…math, reading, writing, and the sciences are all part of the human experience." Several students, who became weary of this comment from the world cultures teacher said, "We are not humans!" Several of them would laugh and mentioned their parents said that about them at times. This was reported as friendly bantering between pupils and the teacher. This behavior was noted and became a friendly routine.

Mathematics Mixed with World Cultures/Social Studies Content: Project interventions

With encouragement to mix world cultures and mathematics, the math teacher began to plan how to create this amalgam. In the beginning, the math teacher reported great difficulty mixing world cultures content. The number one complaint from the math teacher concerned the amount of time invested for world cultures content discussion time. The math

teacher did not see a way to systematically address world cultures content with her math lessons. Since the teachers were far more concerned about the students that loved social studies but hated math, the math teacher decided to implement isolated projects to fit math curricular goals, which culminated with the implementation of three projects. One of the projects was a cross-curricular project with the world cultures teacher. The math teacher followed many aspects of the *MATH to TEXT/TEXT to MATH Approach*.

One of the projects had students review several numbering systems that were created in human history. For example, students reviewed the Babylonian numbering system in cuneiform. Students created artifacts and discussed the history of the number system and compared it to the Arabic numbering system the world uses today. The math teacher used these numbering systems for students to engage in math operations (e.g., addition, division, ratios, and fractions). This was accomplished using several numbering systems such as the computer-aged binary system, Ancient Egyptian hieroglyphics, and the Mayan numbering system. This activity fits several objectives in world cultures regarding human cultures being defined by technological tools and advancements.

The second project involved the Pythagorean Theorem. Sixth graders were learning how to solve for the hypotenuse. Students were told to role-play as if they were Pythagoras, and students were asked to deliver the idea of his theorem to ordinary people. In other words, the students were asked to practically demonstrate the Pythagorean Theorem with real world examples. Some of the students wore bed sheets with olive leaf crowns as they imitated Pythagoras. As students presented projects, the math teacher would call for commercials and discussed the life and times of Pythagoras. She also discussed the state of humankind's technology and development across the continents at the time Pythagoras developed his theorem. This event took four days to complete with two days of preparation time. The math teacher liked the project but expressed concern about the amount of time needed for peer interaction and reporting.

The last project included a joint project between the math teacher and the world cultures teacher. The world cultures teacher wanted students to understand that artifacts from today and in the past tell the story of human development and technological advancement or decline in time. The math teacher's goals included students learning how to plot coordinates on lined graph paper. Also, the math teacher needed students to have practical experience using the metric measuring system. With these two goals in mind, the inclusion of "archaeological techniques and findings provide[d] an excellent way for students to develop … the ability to think and solve problems" (Hawkins, 1991, p. 1). Using the giant sandbox on the playground and utilizing "the excitement of original inquiry and skills of scientific method" (Sentelle, 1986), teachers mapped out a graph using string and placed flags in each square with a number (i.e., 1-7) while the columns were identified with flags by letters (i.e., A-F). After preparations, students were invited to go on an archeological dig. This project served as an independent practice for world cultures and math classes. The items or artifacts in the sandpit were representations of modern and ancient human technology that had been discussed and experienced in world cultures class. Both world cultures and math curricula contained learning objectives that included creating, reading, and interpreting graphs. Graphing and plotting were discussed in both classes. As the students dug and found artifacts, they were told to place a flag in the area of discovery. The artifact was to be drawn on paper, and measurements recorded using the metric system for each artifact's characteristics. Students described the origin of each artifact discovered by continent and culture if possible. The time in history the technology was created was estimated as well and recorded. Finally, the discovery was plotted on the graph paper. The teachers made sure the graph paper mirrored the string lines and quadrants of the sandbox. After the dig event, both teachers held discussions, whole class and in small groups, mixing in each other's content. The students participated in at least two discussions since all students shared the same teachers for math and world cultures.

Data Source and Data Analysis

Questionnaire of Extreme Perceptions

Data were collected for four years and were discussed and analyzed by the same five investigators. Teachers prepared a ranking questionnaire that had the entire core curricula listed for the sixth-grade (See Figure 1). The five core subjects represented were reading, LA/writing, mathematics, science, and world cultures/social studies. The questionnaire had three perception ranking choices by each subject (i.e., 1=Hate it!, 2=It's ok, 3=Love it!). The perception words (e.g., Hate it!) were used to match the language used by students in the classroom. The perception words chosen by teachers were selected to bring out true extremes from the sixth-grade students. Students were asked to circle one choice that represented their perception for each subject. Also, students scribed a few words or a sentence explaining their perception choice if they wished. Particular attention was focused on students' perceptions toward mathematics.

Data Collection and Reviews

The same extreme perception questionnaire was administered to all participating sixth-grade students before and after experiencing sixth-grade core curricula each school year for four years. Teachers administered and gathered the extreme questionnaires during students' homeroom class (i.e., first period). During sixth-grade team meetings in September at the beginning of the school year, teachers reviewed and discussed the students' perceptions. The same review and discussion process occurred in May at the end of the school year. Anecdotal conversations and observations were discussed comparing pre- and post-extreme perception questionnaires. Ultimately, the five sixth-grade teachers' goal was to review perceptional changes year to year and over the four-year period designated for data collection.

Four-Year Analysis of the Extreme Questionnaire

Descriptive statistics collected over the four-year period were generated for all comparisons with the extreme questionnaires. Frequency counts, medians, percentages, and difference scores between the pre-intervention phase and the post-intervention phase were calculated. Student comments from pre-intervention and post-intervention were reviewed for additional clarification. Two Related-Samples Wilcoxon Signed Rank tests were calculated comparing the ordinal rankings of students' perceptions (i.e., 1=Hate it, 2=It's ok, 3=Love it) toward world cultures and math classes before and after interventions (Green & Salkind, 2008). The Related-Samples Wilcoxon Signed-Rank tests were used to determine if there were differences in perceptions after students experienced interventions of mixing math skills with world cultures content in the world cultures class and vice versa with the math class.

Results of the Data Analysis

Quantitative Results

Two groups emerged from the pre-intervention data. One was labeled Love World Cultures/Social Studies-Hate Math (LSS-HM). The other group was labeled Love Math-Hate World Cultures/Social Studies (LM-HSS). Of the 437 students, 230 (52.6%) LSS-HM expressed an extreme dislike for mathematics and an extreme love for world cultures while 53 (12.1%) LM-HSS students expressed an extreme love for mathematics and an extreme dislike of world cultures curriculum. The remaining 207 (47.4%) students expressed neither love nor hate perceptions for either math or world cultures/social studies. Teachers noted the LSS-HM group had much lower GPAs with a mean GPA of 2.8 compared to the mean 3.6 GPA of the LM-HSS group (See Table 1). Of the 230 LSS-HM sixth graders, 8 (3.4%) needed to retake the math state testing, and none needed to retake the reading state test. Ultimately, all passed and were promoted to the next grade level. However, none of the members of the LM-HSS group needed to retake reading or math state testing. Students (n=123 or 28.1%) who expressed extreme negativity toward reading varied year to year. None of the LM-HSS (n=53) or LSS-HM (n=230) groups expressed extreme dislike for reading. Students (n=82 or 18.7%) who expressed extreme negativity toward science content included LSS-HM students (n=34 or 7.7%).

Table 1
Pre-Extreme Questionnaires: Love World Cultures/Social Studies-Hate Math (LSS-HM) and Love Math-Hate World Cultures/Social Studies (LM-HSS) Participant Characteristics and Perceptions of Other Content

Measure	LSS-HM (n=230 or 53%)	LM-HSS (n=53 or 12%)
GPA	2.8	3.6
Retake State Testing	8 (3.4%)	0 (0%)
Dislike of Science	34 (7.7%)	0 (0%)
Dislike of Reading	0 (0%)	0 (0%)

Note: n=frequency count, (%)=percentage of frequency count, GPA=grade point average

Of the 437 students before interventions, 290 or 66.3% expressed extreme negative perceptions related to mathematics and 115 or 26.3% expressed extreme negative perceptions related to world cultures/social studies, but did not necessarily express a love of another subject as was described above. Next, 87 or 19.9% students thought math was okay and 37 or 8.4% thought world cultures was okay. Finally, 60 or 13.7% of students loved mathematics and 285 or 65.4% loved world cultures/social studies.

After the interventions, rankings for math and world culture/social studies classes were varied. The 66.3% that expressed extreme negative perceptions related to mathematics moved down to only 22.8%, while the world cultures/social studies moved from 26.3% to 1.8%. Mathematics perception of okay remained relatively stable with a slight increase from 19.9% to 22.8%. However, world cultures/social studies show a larger increase in the okay perception, moving from 8.4% to 18.3%. Finally, the percent of students that loved mathematics moved substantially to 71.1%. See Table 2.

Table 2
Pre and Post Intervention Rankings from Questionnaire of Sixth-grader's Extreme Perceptions During the Four-Year Study

Core Curricula	Love It! n (%)		It's OK! n (%)		Hate It! n (%)	
	Pre	Post	Pre	Post	Pre	Post
Mathematics	60 (13.7%)	311 (71.1%)	87 (19.9%)	100 (22.8%)	290 (66.3%)	26 (5.9%)
World Cultures/ Social Studies	285 (65.4%)	349 (79.8%)	37 (8.4%)	80 (18.3%)	115 (26.3%)	8 (1.8%)

Note: n=frequency count, (%)=percentage of frequency count, Pre=before intervention, Post=after intervention

Comparison of Students' Perception Rankings for Mathematics and World Cultures Classes: Pre and post interventions

Before and after intervention comparison for perception rankings concerning the math class established medians of one and three, respectively, with a median difference score of one. The mode difference score for math perceptions was two. Before and after intervention medians for world cultures/social studies perception rankings were the same, three, with a median difference of zero. LM-HSS students' (n=53) perception for world cultures ranking difference median and mode scores were the same, one. Intriguingly, LSS-HM students (n=230) perception for math ranking difference median and mode scores were the same, two. Both LSS-HM and LM-HSS groups increased median difference scores at least by one. The treatments utilized elicited a statistically significant increase in positive math perceptions compared to pre-treatment perception rankings of math content, $z = 16.303$, $p < .0005$. This was also true for the comparison of pre- and post-intervention perception rankings for world cultures content, $z = 9.329$, $p < .0005$. Perceptions for both math and world cultures content became more positive after experiencing the interventions.

Qualitative Results

Comparison of Students' Perception Comments for Mathematics and World Cultures Classes: Pre and post interventions

Many students made comments for the various subjects on the questionnaire in the space below each ranking. Of the 437 students who responded to the before interventions questionnaire, 108 (24.7%) wrote phrases or sentences explaining their perception rankings for math while 30 (6.8%) did so for the world cultures before intervention questionnaire. One common theme emerged from student comments for both math and world cultures. The students expressed that the instruction and content were boring or "not fun." Out of 138 pre-intervention comments, 92 (66%) were negative expressions that fit the above-mentioned theme. Positive comments were found; however, these comments did not have commonalities to group into themes. The student comments below represented the pre-intervention

survey themes.

Math-Pre-Intervention-Theme Boring:

Student 1: Math is no fun … and not good to do all the sheets.

Student 2: boadring!!!! [sic] [Boring!] Math has mean teachers.

World Cultures-Pre-Intervention-Theme Boring:

Student 3: These classes only had too [sic] watch videos.

Student 4: I hate the textbook we [sic] all the time every day.

Written responses to the post-intervention questionnaire had fewer responses when compared to the pre-intervention written responses. Of the 437 post-intervention questionnaires by students, 21 (4.8%) and 4 (.9%) commented on math and world cultures content, respectively. One negative perception theme emerged from three comments; two for math and one for world cultures. From the 21 comments ranking math, one theme emerged with 11 (52.3%) comments revealing the enjoyment of mixing math and world cultures content. Samples representing the post-intervention themes are as follows.

Math-Post-Intervention-Negative Perception:

Student 5: Math makes my mind not work…

Student 6: Why do we need this all of this [math] for in [sic][as a] grown-up.

World Cultures-Post-Intervention-Negative Perception:

Student 7: I used to [sic] like this class [world cultures]. Now I got to [sic] be with math in here to [sic] [too].

Math-Post-Intervention-Positive-Theme Mixing Math & World cultures:

Student 8: Doing the math in Mr. (NAME OMITTED) [world cultures] class was good. I learned the math like needed [sic].

Student 9: The best was the dig. We did the history [world cultures] class with the math…

Student 10: The stuffed [sic] [things] we done for Mr. (NAME OMITTED)[world cultures teacher] and Mrs. (NAME OMITTED) [math teacher] rocked out [sic] [were great]…

Discussion and Conclusions

This study found growth in students' positive perception expressions for learning math and world cultures. This growth was accomplished when teachers blended curriculum together. Allowing the use of math skills in world cultures/social studies and vice versa positively influenced students' positive perceptions for math and world cultures. As teachers design math and world cultures instruction, a prime goal to integrate curriculum remains a salient pedagogical best practice. In an environment of high-stake testing, the "joy of learning" may be a casualty for many students (Madaus, Michael, & Higgins, 2009). However, teachers who notice students' perceptions for learning math or world cultures are becoming negative have the answer for improvement—integration of content. Although this study did not review or collect data concerning course achievement in mathematics and world cultures/social studies, researchers believe student perception is a foundational step to any successful academic intervention. Future research investigating students' perceptions for learning content as a possible predictor of achievement with high-stake testing will be an interesting next step.

Limitations

The study was based in an affluent, high socio-economic status community with high-parental involvement. Many students with special needs received special services outside of the school day. Also, three choices provided on the questionnaire (i.e., Love it!, It's OK!, and Hate it!) may have influenced the results. A five-point Likert scale could have been used; however, the simple three-point scale for sixth graders was more appropriate. Teacher personalities and teaching styles could have influenced the results since only two teachers, math and world cultures/social studies, were responsible for the implementation of interventions during the four-year study.

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TCTM Leader Spotlight

Each year since 1995, TCTM has accepted nominations for two awards for leaders in our professional community. The TCTM Leadership Award is presented to a TCTM member who is nominated by a TCTM affiliate. The second award, the E. Glenadine Gibb Achievement Award, is presented to someone nominated by a TCTM member. The following individuals have been honored and we wish to acknowledge their former and ongoing contributions this year in the leader spotlight. **If you wish to nominate someone for 2015, please download the forms from our website. Please submit your nomination by Dec. 31, 2014.**

Our prior awardees are:

Year	Leadership(local/state)	Gibb (state/national)
1995	Mary Alice Hatchett	Iris Carl
1996	Betty Forte	Cathy Seeley
1997	Diane McGowan	Pam Chandler
1998	----	----
1999	Linda Shaub	Eva Gates
2000	Lloy Lizcano	Bill Hopkins
2001	Susan Hull	Pam Alexander
2002	Janie Schielack	Judy Kelley
2003	Bonnie McNemar	Dinah Chancellor
2004	Dixie Ross	Jacqueline Weilmuenster
2005	Barbara "Basia" Hall	Barrie Madison
2006	Nancy Trapp	Lois Gordon Moseley
2007	Kathy Hale	Cynthia L. Schneider
2008	Jim Wohlgeheagen	Juanita Copley
2009	Jane Silvey	Jo Ann Wheeler
2010	Elaine Young	Paula Steffen Moeller
2011	Beverly Burg Anderson	Jennie M. Bennett
2012	Paul Gray, Jr.	Linda Gann
2013	Vodene Schultz	Anne Papakonstantinou
2014	Caren Sorrells	Noemi Rodriguez-Lopez

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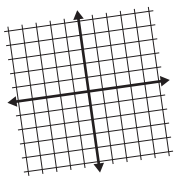
NCTM's Mathematics Education Trust (MET) channels the generosity of contributors through the creation and funding of grants, awards, honors, and other projects that support the improvement of mathematics teaching and learning.

MET provides funds to support classroom teachers in the areas of improving classroom practices and increasing mathematical knowledge. MET also sponsors activities for prospective teachers and NCTM Affiliates, as well as recognizing the lifetime achievement of leaders of mathematics education. Grant, scholarship, and award funding ranges from $3,000 to $24,000 and can be used for conferences, workshops, seminars; research and in-service training in mathematics coursework; or professional development activities. MET is currently accepting applications for its summer cycle of grants and scholarships for current and future math teachers. The deadline is May 4, 2015.

If you are a teacher, prospective teacher, or school administrator and would like more information about MET grants, scholarships, and awards, please visit their website,

<http://www.nctm.org/resources/content.aspx?id=198>

or e-mail them at *<exec@nctm.org>*.



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Texas Council of Teachers of Mathematics (TCTM) Board Members:

Martha Godwin, Mary Alice Hatchett, Diane Briars (NCTM President), Ramona Davis, Kristina Gill

PAEMST

Presidential Awards for Excellence in Mathematics and Science Teaching

Eight Texas teachers have been named finalists for the 2014 Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST). The 2014 awards recognize kindergarten through sixth grade mathematics and science teachers whose innovative methods bring teaching to life in the classroom. PAEMST is the highest recognition that a mathematics or science teacher may receive for exemplary teaching in the United States. The National Science Foundation administers PAEMST on the behalf of The White House Office of Science and Technology Policy. The Texas finalists in elementary math are listed below:

Anne Born

Erika Hassay

Jennifer Cundieff

Suzanne Nguyen

Anne Born – Kindergarten teacher at Highlands Elementary School in Richardson Independent School District (ISD)

Erika Hassay – First grade teacher at Live Oak Elementary School in Round Rock ISD

Jennifer Cundieff – Fifth grade teacher at McCoy Elementary School in Georgetown ISD

Suzanne Nguyen – Third grade teacher at Roosevelt Alexander Elementary School in Katy ISD

To achieve recognition through this program, a teacher first must be nominated for the award. A state panel of master teachers, specialists, and administrators review the applications and choose the most outstanding mathematics and science teachers for the National Science Foundation to consider for state finalist status.

After the initial selection process at the state or territorial level, a panel of distinguished scientists, mathematicians, and educators may select one mathematics and one science teacher from each state and U.S. jurisdiction for the national award.

National award winners will be announced during the summer of 2014. PAEMST winners receive $10,000, a citation signed by the President of the United States, and a paid trip for two to Washington, D.C. to attend recognition events and professional development opportunities.

All of the 2014 finalists for Texas will be recognized by the State Board of Education.

This year, outstanding mathematics and science educators teaching in grades 7 - 12 with five years or more of teaching experience are eligible. For more information, please visit *<www.paemst.org>*.

Texas Education Agency Contacts: Irene Pickhardt, James Slack, and Jo Ann Bilderback (512) 463-9581

About This Publication

Since 1971, the Texas Council of Teachers of Mathematics (TCTM) has produced the journal *Texas Mathematics Teacher* for our members. Our mission is to promote mathematics education in Texas. In the journal we accomplish this by publishing peer-reviewed articles by leading authors and local news from around the state. TCTM is committed to improving mathematics instruction at all levels. We place an emphasis on classroom activities that are aligned to the Texas Essential Knowledge and Skills and the NCTM *Principles and Standards for School Mathematics*.

The *Texas Mathematics Teacher* seeks articles on issues of interest to mathematics educators, especially K-12 classroom teachers in Texas. All readers are encouraged to contribute articles and opinions for any section of the journal. Teachers are encouraged to submit articles for Voices From the Classroom, including inspirational stories, exemplary lessons, or management tools. More specific guidelines for submissions may be found below.

Original artwork on the cover is another way teachers may contribute. We publish the journal twice each school year, in the fall and spring semesters. Our website archives the journals in PDF format. If you wish to view past issues, please see

<*www.tctmonline.org*>

Our current Editorial Board consists of Cynthia Schneider, Mary Alice Hatchett, Geoffrey Potter, Larry Lesser, James Epperson and Katey Arrington. Larry, James and Katey serve as expert advisors; Cynthia is the editor. Mary Alice does many jobs, including requesting articles, serving as an elementary expert, and communicating with authors. Geoff is the layout and graphic designer; he manages to fit all the text into the limited number of pages we have to work with. The TCTM Board wishes to thank them for their leadership in producing the *Texas Mathematics Teacher*.

The Editorial Board wishes to acknowledge the contributions - time, effort, and expertise - that our volunteer reviewers make to our final journal. Those that reviewed for the journal and deserve our thanks for their support last year, in 2013-14, were:

Lesa Beverly, Faye Bruun, Ramona Davis, Veronica Galvan, Paul Gray, Beth Grayson, Sandra Hawking, Pam Johnson, Lawrence Lesser, William Luke, Kelly Meshell, Richard Parr, Nancy Trapp, Jacqueline Weilmuenster, Winter Wilks, Zane Wubbena

Advertising Guidelines for Texas Mathematics Teacher

All advertising is subject to the approval of the publisher. The journal staff shall be responsible for ascertaining the acceptability of advertisements. All advertisements should be sent "copy-ready" by the closing dates of September 1 for the fall issue and January 15 for the spring issue. Position preference, such as right-hand pages or first half of issue will be honored on a first-come basis. All advertisements must be pre-paid by the closing date with a check made payable to TCTM, and mailed to our current treasurer, Kathy Hale. Rates for *Texas Mathematics Teacher* per issue are: full page $500.00, half page $300.00, quarter page $200.00.

All advertisers must adhere to the guidelines posted on our website at <*www.tctmonline.org*>.

Editorial Board

Texas Mathematics Teacher (ISSN# 0277-030X), the official journal of the Texas Council of Teachers of Mathematics (TCTM), is published in the fall and spring. Editorial correspondence should be mailed or e-mailed to the editor.

This journal is funded by the Texas Council of Teachers of Mathematics and printed at The University of Texas at Austin, which does not imply endorsement by the University or by the Charles A. Dana Center.

Call For Articles

Texas Mathematics Teacher seeks articles on issues of interest to mathematics educators, especially K-12 classroom teachers in Texas. All readers are encouraged to contribute articles and opinions for any section of the journal.

Manuscripts, including tables and figures, should be typed in Microsoft Word and submitted electronically as an e-mail attachment to the editor with a copy to the director. No author identification should appear on or in the manuscript. A cover letter containing author's name, address, affiliations, phone, e-mail address, and the article's intended audience should be included. After refereeing, authors will be notified of a publication decision.

Teachers are encouraged to submit articles for ***Voices From the Classroom,*** including inspirational stories, exemplary lessons, or management tools. If submitting a lesson, it should include identification of the appropriate grade level and any prerequisites.

Items for ***Lone Star News*** include, but are not limited to, NCTM affiliated group announcements, advertisements of upcoming professional meetings, and member updates.

Businesses interested in placing an **advertisement** for mathematics materials should contact Mary Alice Hatchett. Advertisements do not imply endorsement by TCTM's board, editorial staff or members.

Deadline for submissions: Fall/Winter, July 1
Spring/Summer, January 1

TCTM 2015 Mission, Focus and Goal Statements

Mission of the Texas Council of Teachers of Mathematics:

To promote mathematics education in Texas

To support this mission, TCTM has five **focus areas:**

Recruit and Retain Mathematics Teachers	Curriculum and Instruction Support	Advocacy	Promote Communication among Teachers	Serve as Partner Affiliate for NCTM

TCTM activities will align to the five strategic goals. **Goals** of the organization include six strands:

Administration

- Streamline online membership registration through CAMT

Publications

- Survey membership to identify what they want in the *Texas Mathematics Teacher* (*TMT*)
- Review and refine the *TMT* journal and the TCTM website
- Improve the review protocol, establish criteria for reviewers
- Provide tips for new teachers in the *TMT* and on the website

Service

- Increase the donations toward Mathematics Specialist College Scholarships
- Staff CAMT with volunteers as necessary
- Advertise affiliated group conferences on the TCTM website, in the *TMT* and at CAMT

Communication

- Maintain an e-mail list of members for timely announcements
- Communicate with affiliated groups in a timely manner

Membership

- Encourage affiliated groups to include TCTM registration on their membership forms

Public Relations

- Sponsor and staff the TCTM booth at CAMT
- Follow NCTM Advocacy Toolkit (2004) for increased voice of TCTM membership on issues relevant to our mission

TCTM Past-Presidents

1970-1972	James E. Carson	1984-1986	Ralph Cain	1998-2000	Pam Alexander
1972-1974	Shirley Ray	1986-1988	Maggie Dement	2000-2002	Kathy Mittag
1974-1976	W. A. Ashworth, Jr.	1988-1990	Otto Bielss	2002-2006	Cynthia L. Schneider
1976-1978	Shirley Cousins	1990-1992	Karen Hall	2006-2008	Jo Ann Wheeler
1978-1980	Anita Priest	1992-1994	Susan Thomas	2008-2010	Paul Gray
1980-1982	Patsy Johnson	1994-1996	Diane McGowan	2010-2012	Nancy Trapp
1982-1984	Betty Travis	1996-1998	Basia Hall	2012-2014	Mary Alice Hatchett

2016 Henry B. Gonzalez Convention Center
San Antonio, Texas
June 29-July 1

2017 Fort Worth Convention Center & Omni Hotel
Fort Worth, Texas
July 10-12

CAMT
Conference for the Advancement of Mathematics Teaching

2018 George R. Brown Convention Center
Houston, Texas
July 16-18

2019 Henry B. Gonzalez Convention Center
San Antonio, Texas
July 8-10

The University of Texas at Austin
Texas Mathematics Teacher
Charles A. Dana Center
1616 Guadalupe, Suite 3.206
Austin, TX 78701

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Martha Godwin — President

Use the membership form online at <*www.tctmonline.net*> to renew or join TCTM for the first time.

If this journal is addressed to you, you are a current member of TCTM. Here is your membership card.