

Points & Angles

Newsletter of the Metropolitan Mathematics Club of Chicago
Volume XLV No. 2 Oct. 2015

The 10 Keys To Support Mathematics Understanding

October Speaker Edna Bazik



From I-90 & Southbound I-294: Exit at I-190 West to O'Hare; Exit onto North Mannheim Rd.; Take Mannheim Rd. North 2.25 miles.

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Friday, October 2, 2015

5:30 PM Doors Open, 6:00 PM Social Hour
7:00 PM Dinner & Talk

Fountain Blue Banquets & Convention Center

2300 Mannheim Rd., Des Plaines
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Reserve by Noon, Monday Sept. 28

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Mathematical understanding is crucial for students to succeed in life. In order to exist in today's world, it is necessary for learners to capture the digital as well as the literary and the human resources available. Each student is capable of viewing mathematics positively and can openly share their mathematical ideas within a learning community. Teachers who use effective research-based instructional strategies, and who distribute leadership roles among their students, are able to unlock the potential which rests inside each student. A variety of math assessments beyond quizzes and tests is a starting point to empower students. Empowered students move from asking their peers, "What did you get?" to "What did you learn?" Edna Bazik will share with us how these and the rest of her Ten Keys to Support Mathematics Understanding fit in with PARCC Assessments and the Common Core State Standards in Mathematics at our next dinner meeting on Friday, October 2, 2015.

Edna Bazik, PhD, currently serves as an adjunct professor of Mathematics Education at National Louis University, a Supervisor of Secondary Mathematics student teachers for Illinois State University, a member of PARCC committees for Common Core State Mathematics Assessments, grades 3-11, and a Mathematics Consultant for school districts. Edna retired in 2005 from Hinsdale Community Consolidated School District 181 as a K-8 mathematics coordinator and middle school mathematics teacher. Edna has taught mathematics for the past 46 years in Illinois at both the middle school and university levels. She has been very active in the Illinois Council of Teachers of Mathematics (ICTM), having served as a Board of Directors member and as Board Chair. She has also served as the Co-Editor of the Illinois Mathematics Teacher journal. Edna has received a number of awards from ICTM including the Excellence in Middle School Mathematics Teaching Award, the Lola May Leadership Award, the Max Beberman Mathematics Educator Award, and the Distinguished Life Achievement in Mathematics Award and the National Louis University Excellence in Teaching and the Excellence in Service Awards. She has presented at the local, state, regional, national, and international levels on a variety of topics for more than four decades. She has also served the Illinois State Board of Education (ISBE) as a member of the ISBE Assessment Review Committee for Mathematics Education and in authoring Grades 3-8 Illinois Standards Achievement Test (ISAT) questions from 1999-2014. Edna also served on the ISBE team of mathematics educators who developed and revised the Illinois Mathematics Assessment Framework for Grades 3-8. In addition, Edna has served as a mathematics consultant for several publishing companies including ETA Cuisenaire Co. and Dale Seymour Publications.

With Edna's vast wealth of knowledge and experience in mathematics education for the past 46 years, her presentation, The Ten Keys to Support Mathematics Understanding, on Oct. 2, is one not to be missed! Invite your elementary, middle school, secondary, and collegiate teaching friends and colleagues to join you for Edna's presentation. Do it today!

Points From The Interior

BY PATRICIA TRAFTON

The school year has begun and that means that Back-to-School Night, also known as Curriculum Night, will soon be upon us. This is the night that parents and guardians, some with their children in tow, visit their child's school to meet their child's teachers and learn about the curriculum that their child will be learning during the school year. It is on this night that we math educators need to help our students' parents and guardians begin painting a positive picture of mathematics for their children.

The first step to success in math is a positive attitude. It is important that parents communicate a belief that mathematics is important and everyone is capable of learning it. Some students, like their parents before them, come to our classrooms with unhappy feelings about doing math. Some parents communicate that it's "ok" not to be good at math because they struggled or didn't like math in school. It's not uncommon to hear adults say "I never could do math" almost as if they are bragging about it. One consequence of such statements and attitudes is that parents and guardians "often accept - and sometimes even expect - their children's poor performance in mathematics."¹ "Parents need to tell their children that math sometimes involves hard work and that a problem isn't always quickly solved."²

Many parents and guardians of today's students learned math by doing worksheets and drills. Parents and guardians who were successful in math through repeated memorization skills, rather than strong conceptual development, don't understand, and may even resent, current math instruction that uses inquiry, manipulatives, technology, and rich mathematical tasks for their children. A possible result is that some parents or guardians may feel frustrated when they can't help their children with their homework. To guide parents who want to assist their children, we can encourage them to have their child explain and show math problems that they solved, or suggest they quiz their child on the meaning of math vocabulary words that their child wrote in their notes or on flash cards or in their online math dictionaries. (Apps such as Notability and Book Creator allow students to create and store documents such as a mathematics dictionary.) If students are to practice a skill for homework, encourage parents and guardians to talk through the steps with their child to see where an error may be occurring. Suggest to parents that their child use objects and draw pictures to help clarify a concept or skill for their child.

Parents and guardians can also paint a positive picture of mathematics by involving their child in ways they use mathematics in their lives such as doubling a recipe, planning a trip, playing games that involve strategy and computation, estimating the amount of a tip in a restaurant, or comparing and modeling two or more cell phone plans. Activities such as these help students see that math isn't just used in school, but has a purpose outside of school.

¹ National Research Council. (1989). *Everybody Counts*. Washington DC: National Academy Press.

² Trafton, Paul, and Goodspeed, Eileen (2004). *Math Chat 3: You, Your Child, and Mathematics*. Winnetka, IL: Winnetka School District 36.

Points From The Interior Continued

Help Parents Paint a Positive Picture of Mathematics by:

1. Having a positive attitude about math by believing that everyone is capable of learning and understanding math
2. Having their child show and explain how to solve a math problem
3. Talking through the steps their child used to solve a problem to see where an error occurred.
4. Involving their child in math activities at home
5. Modeling problem-solving strategies

Another way parents and guardians can present mathematics in a positive light is to model problem-solving strategies. Sometimes breaking down a problem into smaller parts can help one see a solution that makes the bigger problem more manageable and easier to solve. Some problems, such as planning a trip or a family event require prerequisite tasks to be done in order for the main event to happen. Creating an organized list and flowchart of the tasks and time needed to complete each one is a strategy that parents sometimes use without realizing that they're using math in the process. Sharing examples such as this with parents will help them see that they do use mathematics to solve a variety of problems and see why it's important that their child understand and be able to do mathematics.

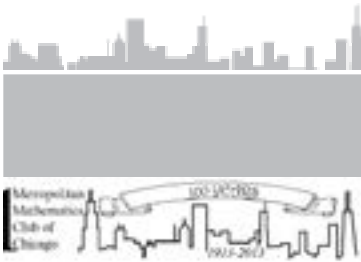
On Back-to-School Night, and throughout the school year, help the parents and guardians of your students paint a positive picture of mathematics to their children. As Mindy, a ninth grade student of mine at Northern University High School in Cedar Falls, Iowa once said "I feel you have to build a friendship between math and yourself. If you want to understand it, it will come more easily. If you don't care or don't try to understand it, it will be harder. It makes a lot of difference." So, help your students' parents and guardians see the many ways they use and understand math, and in turn, you'll be helping them and your students both build a positive relationship with mathematics.

Service Project Questionnaire

April is Mathematics Awareness Month and is also Service Month. Since the MMC of Chicago doesn't hold a speaker dinner meeting in April, we would like to offer our members an opportunity to participate in a service project in April 2016. Thus, we're asking you to complete a survey in order to help us in our planning. Please go on our website to mmcchicago.org to complete the survey. If you completed the survey at the September dinner meeting, thank you very much; you do not need to fill it out again. If, however, you have additional ideas for service projects or a conclusion meal, please email Pat at p.trafton@comcast.net with those ideas.



Thank You!



September Talk Summary

BY MICHELLE EGGERDING

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Many of us have had experiences working with English Language Learners (ELL) in our classrooms, either in sheltered classrooms or as integrated students in the regular setting. Yet, our understanding of their needs and opinions can often go unnoticed for a variety of reasons and they can be misplaced academically due to language barriers. Nora Ramirez, Executive Secretary of TODOS: Mathematics for All, spoke to us about the needs of this population of students and some strategies teachers can use in their classrooms.

When ELL students in Kentucky were asked about their school experiences, they came up with many things they observe that contradict what they want from their classrooms. Among the items ELL students desire is time to process thoughts, feeling like a contributing member of the classroom, and feeling safe among their peers. The time to process thoughts, or wait time, is crucial for many students but is even more important for ELL students who often need to translate ideas, find a context for their thoughts, and respond appropriately. Even with prompting and practice, this process can take more than 5 seconds in a classroom, a longer wait time than what teachers usually practice. Recommended strategies for increasing wait time include writing down questions after they are asked (in print, not cursive), scanning the room, telling students to just think, or using a think, pair, share process.

English Language Learners wish to be a part of the classroom environment and one way to promote that integration is to support mathematical conversations amongst students. Researchers have determined that conversation is the #1 method for acquiring language yet many students need to be taught the proper give and take skills necessary for meaningful conversation. Conversations should include everyone, require listening, and build off the ideas of others. In order to help classrooms develop these habits, Ramirez shared ideas such as listing the vocabulary to use, pairing an ELL student with a non-ELL student (as appropriate), summarize for the students, and provide sentence stems that can model conversations such as “I agree/disagree with _____ because _____” or “Would that be true if...”. While the time spent having conversations with others benefits ELL students’ speaking and listening skills, it is a tiring task. Ramirez suggested that building in time for individual thinking and processing takes some of the pressure off students and provides opportunities to work on writing and representation skills.

Other suggestions include using diagrams to make sense of problem solving, introducing vocabulary at different times in the lesson (possibly after a concept has been explored informally), allowing students to use translators or other tools to help them access the mathematics, rehearse speaking and presenting ahead of time, and using gestures to make communication clearer. All these ideas help the ELL build on the five language skills used in the classroom: reading, listening, speaking, writing, and representing. Reading and listening are means to receive information (one orally, the other visually) while speaking and writing are methods to produce and share information (again orally and visually). Representing the mathematics overlays all of the other skills. The development of all these skills is necessary for students to be successful in the classroom.

In planning lessons that involve ELL students, keep in mind that all ELL are not the same. Students should be encouraged to explore, engage, explain and extend the mathematical ideas being taught. ELL students should have language goals in addition to content goals. Advanced planning may include preparing students for new vocabulary, making connections to culture, and creating purposeful student groupings. Planning to use different strategies, tools, and representations with necessary processing time will allow students to develop all the skills necessary for learning.

At the end of the evening, we could all agree with the mission of TODOS; “to advocate for equity and high quality mathematics education for all students”. Many of the strategies offered benefit all students, not just ELL. We learned about the skills learners need to process information and how certain classroom routines can benefit language development as a way to receive information and a way to share information with others. Those interested in learning more about TODOS and the June 2016 Conference in Arizona can visit www.todos-math.org for more information.

ln(blogs)

BY JOHN O'MALLEY

Once again, I am hoping to share a new blog with you every issue. Most of the time, blogs contain different ways to teach topics and have resources for you to use. The one I am sharing with you this month is not one you will find worksheets for you to use but I promise you is just as worthwhile. Ben Orlin has been on my radar for about two years now and he never disappoints. His insights into student thinking continually impress me and I feel that he has great thoughts about teaching. Ben has a punchy style that is always entertaining and always supplies his posts with bad drawings (that are impressive in my opinion). I hope you subscribe to his blog and enjoy his posts as much as I do.

<http://mathwithbaddrawings.com/>

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Upcoming Events

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Fri., Oct 2	Edna Bazik	The 10 Keys To Support Mathematics Understanding
Oct. 23-24	ICTM Conference	Tinley Park, IL
Fri., Nov 6	Rochelle Gutierrez	Mathematics Teaching, Social Justice, & Creative Insubordination
Fri., Dec 11	Dale Seymour	Thanks For The Memories: What I've Learned From 60+ Years Of Teaching, Writing, & Publishing About Mathematics
Fri., Jan 8	Steve Viktora	Two Chariots Leave Different Cities At The Same Time... A Lively Look At Word Problems Through The Ages
Sat., Feb 6	MMC Conference Of Workshops	Lincon-Way Central High School
Fri., Mar 11	Francis "Skip" Fennell	Critical Foundations For Establishing Number Sense
Fri., May 13	Zal Usiskin	The Real Big Ten: The Toughest Mathematical Ideas For High School Students To Learn, And How To Approach Them

Send upcoming event items to jomalley@glenbrook225.org no later than the date of the MMC dinner meeting preceding the issue in which the item should appear. All items are subject to editing.

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