

# Points & Angles

Newsletter of the Metropolitan Mathematics Club of Chicago  
Volume XLVI No. 2 Oct. 2016

## Doing Math Vs. Understanding Math: The Procedural Fluency and Conceptual Understanding Connection

### October Speaker

### David Ginsburg



**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.

**From Northbound I-294:** Exit at West Touhy Ave.; Take Touhy Ave. to Mannheim Rd.; Turn right on Mannheim Rd.

**Public Transit:** Take the CTA Blue Line to the Rosemont Bus Terminal; Take Pace Bus #223 to Touhy Ave. & Lee Rd.; Walk East on Touhy to Mannheim Rd.

David Ginsburg is a former business executive who has served 23 years in K-12 public schools: as a math teacher and instructional coach in the Chicago Public Schools; school administrator in Philadelphia; and leader of a national consulting group that specializes in instructional coaching, leadership coaching, and Common Core implementation. He has taught education courses, and has been a featured speaker at many conferences including the 2016 NCTM Conference in San Francisco. He holds M.B.A. and M.Ed. degrees, and is the author of the popular Education Week blog, Coach G's Teaching Tips. David was born and raised in the Chicago area, and graduated from Niles West High School in Skokie.

I had the pleasure of seeing David Ginsburg at the 2016 NCTM Conference. Paul Christmas summoned me to a large ballroom and told me not to miss it. Every seat was filled and people were standing around the perimeter of the room. He held the attention of that large crowd and made many of us forget that we didn't have a seat. Join us on October 21st at Fountain Blue to see this engaging speaker with ties to Chicago!

#### Friday, Oct. 21, 2016

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  
(847) 298-3636  
\$43 for Members, \$49 for Nonmembers

#### Reserve by Noon, Monday Oct. 17

Online at [www.mmccchicago.org](http://www.mmccchicago.org)  
or by phone at (847) - 486 - 4291



# Points From The Interior

BY CARRIE FRAHER

It was fantastic to see a large group out last month to welcome Matt Larson to MMC Chicago. In addition to a great discussion on the history of math education, the NCTM president showed great respect for this organization, NCTM Charter #1. He previewed that NCTM will be coming to Chicago to celebrate its 100th anniversary in 2020.

If you are renewing your NCTM membership, don't forget to select MMC as your affiliate. With no additional cost to you, a portion of your membership dues will come back to us to support our local programs.

Please consider bringing a new person to MMC on October 21st to hear David Ginsburg's talk - Doing Math Vs. Understanding Math: The Procedural Fluency and Conceptual Understanding Connection. If you bring a person who's new to MMC, you'll receive a \$5 discount on your entry and your guest will get a \$10 discount. There are some promotional membership discounts at the October meeting as well. Please try to RSVP at [mmcchicago.org](http://mmcchicago.org) by Monday, October 17th. Feel free to leave your reservation as a voicemail at my work number (847-486-4291) if that's more convenient for you.

If you have instructional coaches at your school, consider inviting them. David has experience in teaching, coaching, and administration. This message will be excellent for math teachers and anyone who supports and coaches them.

We appreciate all of you who hang up posters at your schools and promote MMC on your social networks. Search #mmcchicago to see some quotes, photos and reactions from our most recent meeting. Share your thoughts and interact with more of our members. You can also like us on Facebook to get updates and reminders.

If you're interested in becoming more involved in MMC, talk to me at a meeting. I'll introduce you to some members who share your interests. When I first started coming to MMC, I knew no one and worked at small schools where the math department numbered 2-3 people. This is a fantastic organization for education and networking. Our members include excellent teachers, administrators, writers, researchers, and innovators. Do you want to run for a place on the MMC Board of Directors? Contact Pat Trafton at [p.trafton@comcast.net](mailto:p.trafton@comcast.net) if you would like to place your name on the ballot this year.

## September Meeting Summary

BY LAURA KAPLAN

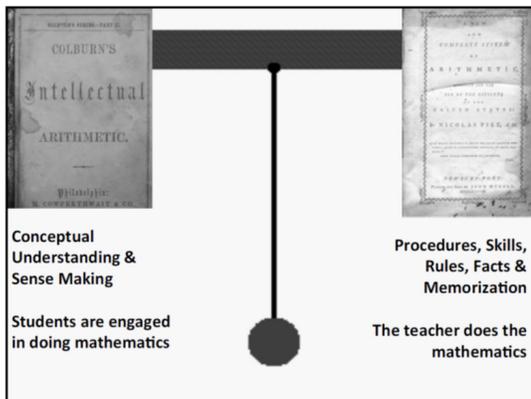
The crowd at Fountain Blue on September 23 was excited for the evening's main attraction. Current NCTM President Matt Larson took the stage after dessert and announcements and immediately engaged us in a conversation at our tables regarding concerns about education that we hear from parents today. Of course we all needed more than the two minutes which Matt allowed, and there were several enthusiastic responses when he asked us to share out. Seemingly the most popular were testing and, "That's not the way I did it," said by a parent who doesn't understand their child's homework.

We were then treated to, "A brief but incomplete history of mathematics education" starting in 1788 with the publication of Nickolas Pike's *Arithmetic*. This textbook provided a rule, an example, and a problem set. This method, along with a perception of mathematics being simply arithmetic, is pervasive in the public's perception of math class even today.

A shift in our thinking came about in 1821 when Warren Colburn introduced the idea of discovery learning, where students use teacher-provided manipulatives and careful questioning to figure out the rules for themselves. This was met with backlash, and in 1832, with the publication of *The Common School Arithmetic*, it was asserted that this new method would appease parents longing for the teaching of mathematics "the good old-fashioned way."

Larson likened the shifts between a focus on concepts and understanding to procedures and skills to those of a swinging pendulum. Another swing came during the 50's in response to the launch of Sputnik. Again, an emphasis was on problem solving and conceptualization known as "new math". However, it was soon the public perception, however, that the new math reduced computation skills. As we look back today, we might wonder if new math might have fared better if the emphasis had been on the understanding of the traditional algorithms rather than on an entirely new conceptualization of arithmetic.

# September Meeting Summary Continued



So, we swing back to procedural instruction. The 1970's and 80's were marked by a return to basic skills and a reliance on local and national standardized tests of mostly low-level skills.

And back we go again with NCTM's Agenda for Action in 1980, where they recommended an emphasis on problem solving. This combined with the release of A Nation at Risk in 1983 led the way for another reform effort. NCTM released their Curriculum and Evaluation Standards in 1989, followed by standards in teaching and assessment in 1991 and 1995.

Soon there emerged the familiar backlash. Not enough procedural skills and computation in the Standards. Parents wanted teachers to be the transmitters of knowledge that they had grown up with. Reformers wanted students to think for themselves and make sense of the rules through discovery.

In the 2000's two major publications attempted to draw the two sides together. The National Research Council's Adding it Up in 2001 and The National Mathematics Advisory Panel in 2008 both pointed out the research results which showed a combination of both skills and understanding being the best option.

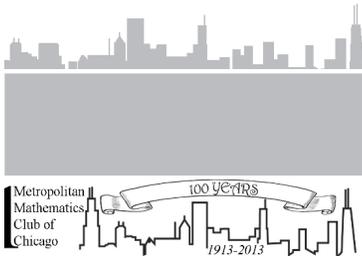
In 2001, the No Child Left Behind Act was passed, which changed everything. Increasingly, over the years from 2001 to 2014, teaching reflected what the children would be tested on during a state test. Test items were at a low-cognitive-demand level. As a result, states developed 50 different sets of standards, assessments, and passing criteria. This paved the way for the Common Core.

While the Common Core started off in an uncontroversial way, soon a set of circumstances led to public outcry. Social media played a role in shaping opinions and spreading confusion. The public has a hard time distinguishing between standards and testing, or standards and instructional strategies. Basically, the Common Core State Standards has become the scapegoat for everything perceived wrong in education today.

So, how do we stop this endless pendulum swing? Matt recommends a few specific strategies when talking with parents or other stakeholders about math education.

1. Point out that much is the same – we have been having the same debate for centuries. We are still teaching the same mathematics, while broadening our definition of mathematical literacy to meet today's needs.
2. Emphasize that mathematical literacy is multifaceted – teach the HOW (procedure), WHY (conceptual understanding) and WHEN (application).
3. Emphasize problem solving, strategic competence, and disposition – parents will feel most comfortable knowing that their student is being prepared for today's world.
4. Help people separate the issues – standards, assessment, and instruction.
5. Show parents the strategies – if they understand, it will no longer seem so mysterious.
6. Advocate for research-informed instructional practices – everyone expects physicians to use research-informed practices, why not teachers?
7. Appropriate and valid assessment is not the enemy - assessment diagnoses student learning needs and facilitates effective instruction.
8. We have to change the discourse - Our conversations must move away from misinformation, misguided rhetoric, and extremes – the stuff that grabs headlines and often characterizes tweets and Facebook posts – that do nothing to improve mathematics teaching and learning.

We were left with some good news – math achievement is up over the long-term. From 1990 to 2015, 4th grade NAEP mathematics scores went from 213 to 240. Matt implored us to change the conversations around math education in this country, and to take our roles as advocates for high quality math education for every student seriously.



# Affiliate Report

By JEFF HARDING

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Have you joined NCTM? For only \$52, you can have a full year membership full of lots of great benefits. For an additional fee, you can subscribe to some excellent Mathematics Journals. Membership in NCTM means access to the resources you need to turn your passion into measurable student learning outcomes. In addition to exclusive resources and the latest research, membership in NCTM connects you to a network of over 70,000 fellow math educators who share your commitment to student success. Enhance your teaching expertise when you exchange solutions and first-hand insights with this extensive network. If you join or renew, make sure to include MMC as your affiliate!

## Upcoming NCTM Events:

### NCTM Regional Conferences:

- October 26-28, 2016 in Phoenix, Arizona
- October 31 - November 2 2016 in Philadelphia, Pennsylvania
- November 29 - December 1 2017 in Chicago, Illinois

Innov8 Conference: November 16-18, 2016 in St. Louis, Missouri: School districts are encouraged to send teams of teachers who will develop methods for school and district implementation of Response to Intervention (RtI), efforts to support productive struggle, and ways of motivating the struggling learner. Teams will focus on developing techniques, programs, and policies that can be implemented in their home districts. <http://www.nctm.org/innov8/>

NCTM Annual Meeting: April 5-8, 2017 in San Antonio, Texas

## Call For Speakers: Chicago Regional

Proposals for the November 29th - December 1st 2017 Chicago regional meeting are being accepted now until December 1. See <http://www.nctm.org/Conferences-and-Professional-Development/Be-a-Speaker/> for more details.

# MMC Board Report

BY LYNN BOND

The MMC Board of Directors met on September 7th at the ECRA Group offices in Schaumburg. President Carrie Fraher reported the dinner meeting speakers and dates for the 2016-17 year. Past-President Pat Trafton is assembling the slate of candidates for Directors and President for the next election. Anyone interested in serving on the Board should contact her.

The next Board meeting will be Tuesday, November 1st at Oak Park River Forest High School. MMC members are welcome to attend any board meeting. Please contact Pat Trafton at p.trafton@comcast.net if you plan to attend.

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HOME ADDRESS				<input type="checkbox"/> Home <input type="checkbox"/> Work	
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HOME PHONE	HOME E-MAIL				
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CITY	STATE	ZIP			
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**Make check payable to MMC**

MMC Membership and Change of Address Form

Mail completed form and check to:

MMC  
 7339 W. Ibsen St.  
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# Upcoming Events



Fri., Oct. 21	David Ginsburg	Doing Math Vs. Understanding Math: The Procedural Fluency and Conceptual Understanding Connection
Fri., Dec. 2	Jeffrey Bergen	A Finite Look at the Infinite
Fri., Jan. 20	Maryjoy Heineman & Matthew Kaiser	Geometry in Construction: A Contextualized Approach to Teaching Mathematics
Sat., Jan 28	Evanston Twp H.S.	MMC Conference of Workshops
Fri., Mar 3	Nicole Enzinger	Integers: A Space for Mathematical Play
Fri., May 19	Hyman Bass	Mathematical Variations on Some Familiar School Themes

Send upcoming event items to [jomalley@glenbrook225.org](mailto: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.

*Your membership renewal date appears in the upper right corner of the label.*



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