



# Mathesis

Volume 45, Issue 4

May 2013

## Spring Conference Celebrates Contributions of NHTM Members of the Past and Present

### Upcoming Deadlines:

- May 29: Proposals for Christa McAuliffe Technology Conference Presentations
- September 13: Early Bird registration for Baltimore NCTM Regional.
- September 17: MAA Contributed Paper Abstracts for 2014 Joint Mathematics Meetings
- September 30: Proposals for 2014 NCTM Regional Conferences
- December 15: Prevost and Evans Award nominations due
- January 1: Nominations for Balomenos Award due



*NHTM former presidents (front) Beverly Ferrucci, Karen Graham, Betty Erickson, Laurie Boswell, Suzy Gagnon, Roberta Kiersonski, Nelson Aldrich, (back) Jim Bosman, Dick Evans, Enid Burrows, Dave Kent, Christine Downing, Judy Curran Buck, and Ferd Prevost gathered at the NHTM banquet.*

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The New Hampshire Teachers of Mathematics began their 50th anniversary year with a celebration and conference at the Radisson Hotel in Manchester on April 4 and 5. Thursday night, all of the past-presidents of the organization were recognized, NHTM awards were presented, several long-time members of NHTM shared their memories, the three-words project was shown, and an NHTM version of Hollywood Squares was played. This event kicked off the 50th meeting, exactly 49 years after the NH-ATMNE first met at St. Anselm College.

Honorary lifetime memberships were awarded to Arthur Johnson, David Kent, and William Roberts. This honor recognizes that the three have each been a member of NHTM for 30 years, have served on the NHTM Board, have presented a talk or workshop and participated in a conference commit-

*(Continued on page 2)*

# Nationally Known Presenters at NHTM Conference

(Continued from page 1)

tee for an NHTM or ATMNE conference, and have made enduring contributions to mathematics education in New Hampshire. The Fernand J. Prevost Award was presented to Hollis-Brookline Middle School teacher Patricia Marquette, the Richard C. Evans Award went to Nashua High South teacher Lisa Gingras, and the Balomenos Award winner was Christine Downing. Citations for these awards appear later in this issue.

Friday's conference included 47 speaker presentations, including some by featured guest speakers Carol Findell of Boston University, Hank S. Kepner, Jr., Past-President of NCTM of University of Wisconsin-Madison, and Linda Gojak, NCTM President. Joan Ferrini-Mundy, a former President of NHTM, gave the keynote address "Leading for Improvement: New Hampshire and the National Mathematics Education Agenda." Throughout the day, participants had the opportunity to visit with the 21 exhibitors. At the afternoon business meeting, newly elected board members were announced: Cecile Carlton is the President-Elect, Kellie Gabriel is the new Treasurer, and Rich Andrusiak was re-elected Post-Secondary Representative. In addition, members approved a change to the NHTM Constitution: authorizing a Media and Public Relations Representative in lieu of the Publicity & Government Relations position. There were plenty of door prizes and decorations for members who remained.

A special thanks and congratulations go out to all of the volunteers! The Conference Committee included **Co-Chairs** Greg Superchi & Judy Curran Buck; **Program:** Christine Downing, Suzy Gagnon, Katrina Hall, and Kim Knighton; **Equipment/Technology:** Rob Lukasiak; **Exhibits:** John Donovan; **Events / Promotion:** Amanda Benware, Andrea Drake, Craig Sheil; **Historians:** Ferd Prevost & Dave Kent; **NCTM Materials:** Annie Wallace; **NHTM Treasurer:** Connie Upschulte; **Registration:** Gretchen Scruton & Kathy Fowler; **Signs:** Kristi Upschulte; **Volunteers:** Terri Magnus. Students in elementary education programs at Middlesex Community College and Rivier University assisted on Friday.

## Art's Attic: Riemann

By Art Johnson

The last two articles in Art's Attic described the pioneers of non-Euclidean Geometry, Nicolai Lobachevsky and Janos Bolyai. There is a third pioneer, Bernhard Reimann (1826-1866). Lobachevsky and Bolyai had independently developed a whole new geometry by using proof by contradiction. They contradicted Euclid's Fifth Postulate; "through a point not on a line, there is one parallel to that line." They both began with the statement 'through a point not on a line there are *at least 2* parallel lines'. That is one opposite statement of the Fifth Postulate. What about the other possibility, 'through a point not on a line there are *no* parallel lines'? Could that statement yield an-

other geometry? That is exactly what happened.

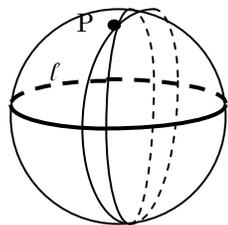
Reimann was born to a Lutheran minister in Hanover, Germany. He was home schooled at first, but then entered third grade for more formal schooling. In 1846 he attended Gottingen University as a theology student, but convinced his father to allow him to switch to philosophy so he could study mathematics. He left Gottingen for a few years to study under Jacobi, Steiner and Dirichlet at Berlin University. Soon Bernhard Riemann was back at Gottingen, where he earned his doctorate, and was appointed a professor in 1854. That same year he delivered an inaugural lecture that was required of all new faculty. The title

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# Art's Attic: Bernhard Reimann

(Continued from page 2)

of his lecture was “*On the Hypotheses which Lie at the Foundations of Geometry*.” His lecture pointed out another geometry, one that held there were *no parallel lines* through a point not on a line. This geometry came to be known as elliptic geometry and can be easily represented on the surface of a sphere. The lecture



was largely unnoticed, but its publication two years later set mathematicians on a discovery of many other new geometries.

In Reimann's geometry all lines on a sphere must be great circles, circles with the same center as the sphere. As this diagram

shows, there are no lines or great circles parallel to the given line  $l$  that also pass through point  $P$ .

Reimann's new geometry was well received, but did not enjoy a wide audience until after he died.

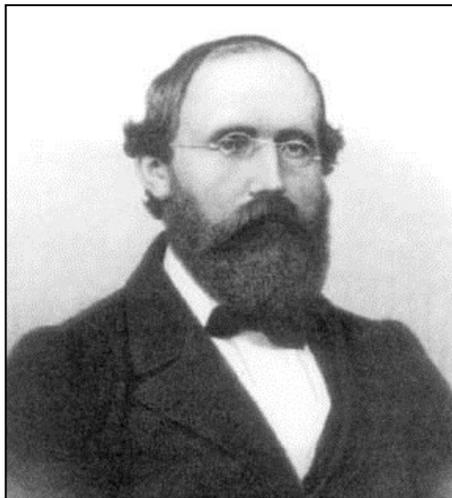
Reimann had never had robust health. Shortly after he married in 1862 he developed a pneumonia that was to plague him until his death four years later.

So, there you have it. Lobachevsky, Bolyai, and Reimann, the discoverers of non-Euclidean Geometry. But that is not the whole story. Carl Fredrich Gauss, one of the greatest mathematicians in the history of mathematics lurks behind the curtain of non-Euclidean geometry, influencing each of these mathematicians. In private letters Gauss claimed to have worked out non-Euclidean geometry on his own, and in fact had reacted to some primitive work on the subject that Farkus Bolyai had sent him through the years. Perhaps Farkus related to his son the gist of these discussions with Gauss and that influenced Janos to pursue the subject. What about Lobachevsky? His tutor at the University of Kazan was Johann Bartels, who knew Gauss from Gottingen and who had some discussions with him about potentially new geometries. Finally, it was Gauss who was the chair of the faculty committee that selected the topic of Reimann's inaugural lecture from three topics Reimann submitted. So sure was Reimann that the

topic dealing with geometry would be selected, that he did not prepare any notes on the other two topics. Perhaps Gauss was looking to see his ideas put on paper, this time by Reimann.

How well Gauss developed his thinking on non-Euclidean geometry is not clear. To be sure, he had advanced his thinking from mere musings and speculations. There is no doubt he could have produced the same proof by contradiction that the others did. He was also supportive of Bolyai and then Lobachevsky, and finally Reimann. He praised Bolyai as a genius of the highest order, learned Russian so he could read Lobachevsky's latest book in the original tongue, and supported Reimann's candidacy for a faculty position. So why didn't Gauss publish some of this early thinking about new geometries?

One reason was Gauss' lifelong habit of publishing only when his ideas were finely formed and well polished. He chose as a family crest a tree with seven fruits and the motto 'Few, but Ripe.'



<http://www-history.mcs.st-andrews.ac.uk/Biographies/Riemann.html>

In other words unless a new idea or discovery were fully polished, it was not ripe for publication. Another reason he did not publish is that Gauss, like Newton before him, was not fond of controversy. He knew that the new hyperbolic geometry (of Lobachevsky and Bolyai) would meet with resistance from mathematicians and the public at large. It was impossible to demonstrate the existence of hyperbolic geometry to a layperson because it had no natural representation. In his words Gauss did not want to suffer the 'clamour of the Boethians' [those who would not accept anything that was not self evident by Faith or perception]. For whatever reason, Gauss never published

his ideas in any form.

So there you have it. We can say that Gauss got the idea of non-Euclidean geometry first, Lobachevsky published non-Euclidean geometry first, and Bolyai was the first to elaborate on the implications of this strange, new non-Euclidean geometry. And Reimann? His discovery of a new non-Euclidean geometry opened a path to many other geometries for future mathematicians.

# President's Message: Inspired

By Greg Superchi

Inspired.

That single word describes a two-week period for me.

It began with the 50<sup>th</sup> Celebration for NHTM on April 4, 2013. A group of almost seventy individuals came together to commemorate the birth of an organization. There were past-presidents, invaluable volunteers, former Board members, and even new faces all having a special love for mathematics education. To see grown men *try* to hold back tears, old friends reminisce, new friends laugh at the stories from the past, and all standing to



*Hollywood Squares celebrities Betty Erickson, Roberta Kieronski, Einstein (Rob Lukasiak), Dave Kent, "young boy" (Cecile Carlton), Kim Knighton, Leibniz (Katrina Hall), and Newton (Tim Kurtz), listen to Lady Gaga's (Christine Downing) response.*

applaud gave me goose bumps again and again. Proclamations and congratulations were received from the Governor, ATMNE, and the NCTM President who was there to give it herself! Awards were bestowed to deserving individuals while many who have received them in the past as well as those who do not even know they will receive them in the future looked on. And yes, we had fun with an entertaining game of *Hollywood Squares (NHTM Style)* including appearances from Newton, Einstein, Gaga, and Kent (Isaac, Albert, Lady, and David that is). If the next day would only go half as well, what a day it would be! Inspired.

That next day began quietly. But as folks trickled in, the excitement would build as the assembly grew to nearly three hundred. From every region of the state they traveled; some hours, some merely minutes. Undergraduates, teachers of all levels, administrators, and professors alike each came with their own expectation and need. With two NCTM Presidents, people considered national experts in our field, and the best of the best in our state and region presenting, they would certainly find what they came for. Judging by the smiles on their faces and excited chatter as they walked from session to session, conversed at lunch, and later left with a buzz about them, they did. Amazing to watch. April 5<sup>th</sup> was over and the 50<sup>th</sup> Conference concluded. Inspired.

Less than two weeks later and a mile high up, a conference on a slightly larger scale began: *NCTM's Annual Meeting and Exposition*. Over seven *thousand* gathered to see more than seven *hundred* sessions and to once again be stimulated, motivated, encouraged, and well informed. All with one goal: make mathematics education better in our great country. And they did not fail. Stories of success, pleas to change direction, and songs of vision sung could be heard throughout the halls and in the rooms. There was something for everyone. Whether you know her as Sheldon's girlfriend, Amy Farrah Fowler, Blossom, or Mayim Bialik, she made it clear, "[One teacher can make a difference](http://www.nctm.org/conferences/content.aspx?id=36436)" (go to <http://www.nctm.org/conferences/content.aspx?id=36436> and scroll ahead to about 18 minutes to hear Mayim's Keynote address). What a privilege to be able to be there. Inspired. Thank you for not only inspiring me in New Hampshire, but also sending me to Denver to be, yet again, inspired.

If you need a little inspiration, I encourage you to take a moment and watch the [3-Words Project Video](http://linkyy.com/nhtm3words) (<http://linkyy.com/nhtm3words>) made by teachers and students from around our state which was produced by Craig Sheil and the Celebration Team seen on both April 4<sup>th</sup> and 5<sup>th</sup> at the our 50<sup>th</sup> Celebration and Conference.

## Secondary Representative:

# Speaking of Speaking...

By Greta Mills

This will be my last Mathesis article as the NHTM Secondary Representative as I will be moving to Florida with my husband at the end of the school year. In the fall, I will start teaching at Oxbridge Academy of the Palm Beaches, a new school in West Palm Beach, and I fully expect to spend this New Year's swimming in my pool (well, I can dream!).

It has been an incredible honor working with the NHTM Board and I am proud to have been a part of this hard-working professional organization. The new Board members are an enthusiastic, energetic bunch and I know that mathematics education in New Hampshire will continue to flourish with the support offered by NHTM.

My first encounter with a member of the Board occurred when I gave my first conference presentation. Thank you, Greg Superchi, for your patience while I sorted out technological snafus and tried – and failed – to calm my nerves. The support I received from the conference committee members made me want to submit another proposal... and then another... and before I knew it, I found myself looking for more and more conferences at which to present, and I have thoroughly enjoyed every opportunity to develop and grow as a speaker.

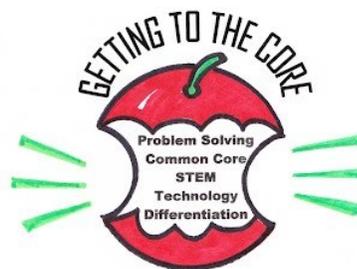
For this reason, I am setting a challenge for **you**, the wonderful and talented mathematics educators from around the state. You spend countless hours refining lessons, collaborating with each other, tirelessly working to improve the quality of your students' experiences, and **we have much to learn from you**. Please consider submitting a speaker proposal for any of the many conferences offered around the state, region, or country. When we learn from each other, we all become better educators, and what a gift it would be to share your great ideas with the rest of us!

One of the biggest benefits of presenting at a conference is the opportunity to network with a wide variety of people. I have learned so much,

and have met so many talented and passionate educators, just by virtue of being a presenter, and I've had a few unique professional opportunities that were a direct result of presenting. As a presenter, you will also have many opportunities for professional and personal growth. If you are naturally introverted (like me), or perhaps shy/nervous about speaking to a large group of adults, then presenting to your peers is a great way to develop skills that will complement your classroom repertoire.

There is a call for presenters right now for the **Lesley University / ATMNE Summer Mathematics Summer Institute** (July 29 – 31, see <http://www.nhmathteachers.org/>). Or, you could submit a proposal for the **Christa MacAuliffe Technology Conference** (<http://nhcmte.org/>). Of course, the **New Hampshire Teachers of Mathematics** has its annual **Spring Conference** and will be sending out a request for proposals. The **NCTM Regional Conferences** are great for networking on a larger scale – check out [nctm.org](http://nctm.org) for speaker proposal opportunities. And even if you miss out on submitting a proposal for an upcoming conference, there's always next year.

**Save the Date!**



**ATMNE 2013**

**ATMNE Fall Conference**

**October 24-25, 2013**

**Killington VT**

## Pat Marquette Selected Prevost Awardee

The following citation was read by Katrina Hall and Sarah Spears at the NHTM 50<sup>th</sup> Anniversary Celebration on April 4:

NHTM presents the annual Fernand J. Prevost Mathematics Teaching Award in recognition of the contributions that Ferd Prevost has made to the mathematics educators of New Hampshire during his thirty years as the state mathematics consultant. The award is being given to a beginning teacher in her or his first, second, third or fourth year who exemplifies the following characteristics that Ferd has brought to his teaching:

- commitment to good mathematics,
- confidence that all children can learn,
- a spirit of self-reflection and professional curiosity,
- caring and concern for colleagues,
- a willingness to explore, to learn, and to grow as a teacher of mathematics, and,
- a willingness to share mathematical and pedagogical activities with others.

The recipient will receive a plaque of achievement, a monetary prize, and a year's membership to NHTM.

At this time, I would like to introduce Sarah Spears, the 2012 recipient of the Fernand J. Prevost Mathematics Award, who will introduce the finalists for this year's award.

This year the award committee selected three finalists:

**Our first finalist** believes every child must have an equal opportunity to meet success in her classes. This finalist has been recognized for commitment to the student, department, and school. **Our first finalist** is adept at the use of technology and incorporates it in most instruction. As a first year teacher, this individual often seeks advice and direction from more experienced colleagues and the district's mathematics consultant – while sharing ideas and thoughts about teaching and student learning.

The candidate is a team player that embraces department policies so students are taught consistently and carefully. Colleagues note this candidate is always concerned about student progress and spends time analyzing classes to identify “what went well today” and “what can be tweaked for tomorrow”.

This individual continues to grow as a mathematician and pedagogue. A commitment to teaching, mathematics, and students leads this candidate to always try new strategies until one that works is found.

We are pleased to honor Holly Bittner of Mascoma Valley Regional High School as a finalist for the Fernand J. Prevost Mathematics Teaching Award for 2013. Holly, will you please stand.

**The supervisors of our second finalist** note the passion towards mathematics, dedication to students, and reflective practices as being exceptionally high for this individual. Now in the second year of teaching, this finalist is established as a leader in the department and the school – involved in all aspects of teaching and busy with coaching as well. The Department Chair notes that this candidate's views and opinions are truly valued, as witnessed by the recent, deep involvement with the department's move to a competency-based grading system.

All of us know how difficult it is to individualize instruction, but this finalist has already been recognized for success in this area. It is noted that this finalist seeks to engage all students and brings tangible energy to classroom instruction. Students respect this teacher for the amicable manner and fairness seen in and out of the classroom.

One mentor notes the deep understanding of mathematics and the many sub-topics demanded of this versatile high school teacher. This individual is a self-reflective individual who seeks feedback and guidance on teaching. More importantly, this teacher quickly incorporates that guidance into classroom practice.

We are pleased to honor Patrick Galvin of Merrimack Valley High School as a finalist for the Fernand J. Prevost Mathematics Teaching Award for 2013. Patrick, will you please stand.

**Our third finalist** is noted as being a natural, high energy, passionate, bright, diligent, creative, and effective teacher who does not stop at these innate abilities but is dedicated to continuous improvement. It is noted that this finalist's energy and commitment are contagious; characteristics which some administrators have dreamed of cloning.

This finalist is known for representing the teaching profession well, seeking and presenting professional development opportunities as deemed necessary for individual, student and school growth, and setting goals as student and building needs dictate. As a professional this candidate is well respected by fellow team members, the math department and district. Within the first year of working with veteran teachers, this individual earned the respect of staff and quickly took on the leadership role of focusing on the best interest of students. This candidate has worked with both elementary and high school teachers to create a five year plan for high achieving students and has been a key in implementing the Common Core standards into the school.

This candidate is constantly striving to improve personally, but more importantly is constantly striving to

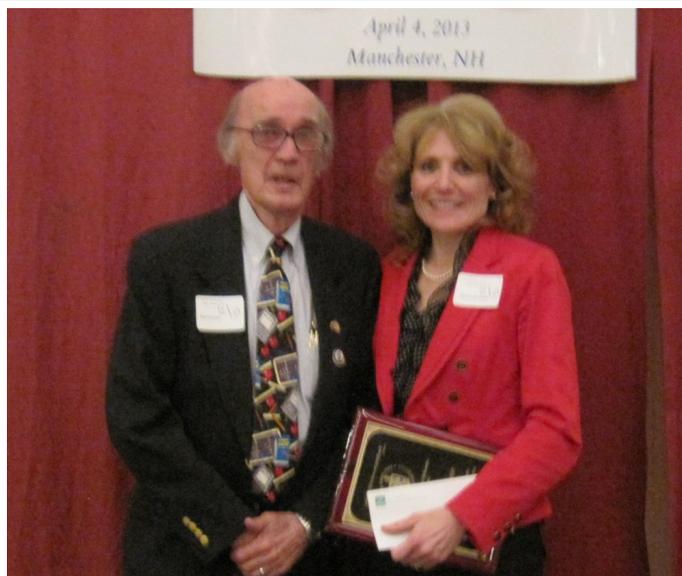
*(Continued on page 7)*

## Prevost Award Presented

*(Continued from page 6)*

improve the knowledge of the students. This finalist is masterful in teaching all levels of learners and believes exposure to different venues allows a student to grow. Individuals note this finalist's ability to motivate and to connect with the most challenging of students by looking at each child as an individual. It can be said that every child is provided with what they need to be a successful learner in this individual's classroom.

We are pleased to honor Pat Marquette as our third finalist for the Fernand J. Prevost Mathematics Teaching Award for 2013. Pat, will you please stand. And...this year's recipient of the Fernand J. Prevost Mathematics Teaching Award is Pat Marquette. Pat, will you please come forward?



*Ferd Prevost poses with Pat Marquette.*

## Evans Award Recognizes Distinguished Math Educator

**The following citation was read by Greta Mills and Christine Downing at the NHTM 50<sup>th</sup> Anniversary Celebration on April 4:**

Good evening. My name is Greta Mills and I am here to help present the Richard C. Evans Distinguished Mathematics Educator Award. The intent of this award is to highlight passion, creativity and innovation in the teaching of mathematics to all students. The recipient of this award will represent Dr. Evans philosophy, passion and knowledge of mathematics education. Those with 5 or more years experience teaching mathematics at any level from Pre-K to 16 may be nominated.

Today's award recipient will receive \$500, a plaque, a one year membership to NHTM, become an honorary board member for one year, be invited to present at the spring conference, invited to contribute articles for the quarterly newsletter, and will be encouraged to offer professional development opportunities for mathematics educators with the support of NHTM.

Today's nominees were required to submit a nomination form, resume, and several letters of reference including those from administrators, students, colleagues and community members. Additionally, they each submitted a work sample and had a classroom visitation. Here to present the Evans Award is last year's recipient, Christine Downing.

### **Read by Christine Downing, 2012 Evans Award Recipient:**

Our first nominee is a teacher at Hampstead Middle School. She has taught both middle school and high school mathematics, as well as middle school language arts. A former student writes, "Mrs. Whitehouse was amazing at explaining math concepts. She always broke everything down to the simplest things, and if even then you didn't get it, all you had to do was go to her and ask for help. She made you think that you could do any problem that was put in front of you. She believes everyone can succeed. She wants to see every one of her students be the best math students they can be and she will push them."

One of Kim's colleagues writes, "She has a wonderful rapport with students and consistently creates a classroom environment where students feel nurtured and comfortable to take risks as they learn. Kim takes her professional responsibilities seriously. She is a person of integrity and principle complemented by excellent professional preparation, demonstrated teaching success, a spirit of collaboration, and a deep caring for young people." Her principal writes, "Kim is a great asset to our school. She cares about kids and works well with her students. Kim has been a catalyst in starting the conversations about the teaching of math; what works and what does

*(Continued on page 8)*



Christine Downing and Dick Evans honor Lisa Gingris, 2013 Evans Award winner. Downing won the Evans Award in 2012 and the Balomenos Award in 2013.

## Lisa Gingras Named Evans Award Winner

(Continued from page 7)

not. She is always eager to open up her classroom to others. I believe you could not find a teacher more passionate about mathematics."

**Our second nominee is a teacher at Nashua High School South.** She is the 2010 recipient of the prestigious "No Bell" teacher award in which National Honor Society members nominate and vote to recognize one highly regarded, innovative teacher at one of the two high schools in Nashua.

A former student who is currently enrolled in medical school writes, "Many of my friends who have never taken a statistics course have been struggling to grasp some of the major concepts. What you've taught me even 5 years ago is still quite clear in my head. I think you did a GREAT job teaching us what we needed to know and reinforcing the important concepts throughout the course."

One of Lisa's former students who now works alongside Lisa as a colleague writes, "I decided that I owed it to future students to provide them with the same education Lisa Gingras had provided me. I am now teaching Probability and Statistics at Nashua High School. I know I have very big shoes to fill and while it does feel daunting at times, I know that my experience with Lisa Gingras has provided me with the blueprint for success."

In a journal entry to "Ms. G" a student wrote, "You are such an amazing teacher and you bring such energy to class everyday. Your passion for math can't help but brush off on us and I think that makes a big difference in our learning and interest in the class. I love that you will do your absolute best to make sure everyone understands, including working until the bell and being so flexible in your "stay after" days. Thanks for being an inspiring teacher."

These testimonials highlight two educators who are committed to their students and passionate about math education in New Hampshire. It is my pleasure to announce this year's winner of the Richard C. Evans Distinguished Mathematics Educator Award is **Lisa Gingras**.

### Do you know an outstanding teacher?

Plan now to nominate them for an NHTM Award or the Presidential Award for Excellence in Mathematics and Science Teaching!

Nominations accepted in fall.

Information about these awards can be found at

<http://www.nhmathteachers.org/resources/awards-a-scholarships>

## Balomenos Award Recognizes Service to Mathematics Education in New Hampshire

It gives me great pleasure to present the 2013 Richard H. Balomenos Award. The award was established by the Executive Board of NH-ATMNE (now NHTM of course!) in 1987, to remember and honor a former colleague, educator, and friend. Richard Balomenos and his wife, Georgia, who died tragically in an automobile accident in December 1986. As both teacher and administrator at the University of New Hampshire for almost 25 years, Richard had a profound influence on mathematics education in the state of New Hampshire. The award is presented annually to a New Hampshire mathematics educator who has shown outstanding or meritorious service or leadership to the mathematics education community on a state-wide basis.

This year's recipient has surely done that. Here is a sample of some of the comments from the awardee's nomination letter. The recipient is "determined and passionate and has been a driving force for change throughout his or her entire career." The awardee is a "thoughtful and enthusiastic mentor (both formal and informal) to many math teachers locally and across the state." He or she is "on a mission to transform mathematics education in New Hampshire." This year's recipient "works tirelessly with teachers, modeling lessons, giving suggestions for materials, and patiently explaining complex math challenges. This extends to any students having a math problem and a quizzical look on their faces as she or he dives right in with thorough explanations and freely shares personal wisdom. The knowledge is so deep that the awardee is able to intuitively shift from one approach to another, differentiating that approach for optimal results."

Anecdotal evidence is great. But what has the awardee actually accomplished? Here is a short list...

- Taught previously for over 15 years in the NH public school system
- Earned a master's degree in education
- Is an adjunct faculty member at a local university
- Is a former NHTM Board Member and ATMNE Board Member
- Leads countless trainings and workshops throughout the state
- Is a committee member and writer for many groups including *Making the Transition from High School to College*, various *NH Competencies Committees*, various *NH DOE Certifi-*

- cation Revision Committees*, and various *NH Mathematics Curriculum Framework Committees*
- Co-chaired and chaired NHTM and ATMNE conferences as well as served as the Program Committee Chair
- Is a former Mathematics School Improvement Coach for the NH Dept. of Education
- Was a Mathematics Content Specialist for New England Common Assessment Program
- Worked as the NH state mathematics consultant
- And is now, Coordinator of Educational Improvement in a local school district

If you haven't already figured out who it is, it has been said that her passion for mathematics is only rivaled by her dedication to her husband and their large extended family. Without any question or hesitation in recognition of her leadership, passion, and enthusiasm for mathematics education in New Hampshire, it gives me great honor to announce to you the 2013 Richard H. Balomenos Memorial Award winner, Christine Downing.



Keene State graduates and former Prevost winners Craig Shiel, Amanda Benware, Andrea Drake, and Toni Taylor gather around Bev Ferrucci and Ferd Prevost.

## *Elementary Representative*

# Lost Generation is Found

By Stephanie Wheeler

How many times have you been asked why you went into teaching? Whether it was a calling, or you stumbled into it via an alternative route, most of us are in education because we love kids! Every day they challenge us, frustrate us, encourage us and inspire us. As you think about your summer plans, take some time to reflect on why you teach. Many of us come to school everyday hoping to inspire and educate the next generation. And who better to inspire and educate us than the students we teach everyday?

Following is a “story” that has gone viral – so you may have already seen or read it. It’s the video of a student who won 2<sup>nd</sup> place in a contest sponsored by AARP entitled, “U at 50.” The video has been called a PALINDROME, which reads the same forward as it does backward. In this video, the extraordinary part is that the meaning of the phrases is the exact opposite backwards as the meaning of the phrases read forward. It’s printed below, but it’s worth watching the 2 minute video and hearing the student voice. Go to <http://www.youtube.com/watch?v=42E2fAWM6rA> or try [www.youtube.com](http://www.youtube.com) and search “Lost Generation” by Jon Reed and enjoy. Be inspired that our students are creative and full of hope for what the future holds. (I have added some commas and periods to help in the “flow” of the reading).

“I am part of a lost generation and I refuse to believe that I can change the world.

I realize that this may be a shock but  
“Happiness comes from within”

is a lie, and

“Money will make me happy.”

So in 30 years I will tell my children  
they are not the most important thing in my  
life.

My employer will know that

I have my priorities straight because  
work is more important than family.

I tell you this -

once upon a time

families stayed together.

But this will not be true in my era.

This is a quick fix society.

Experts tell me

30 years from now I will be celebrating the  
10<sup>th</sup> anniversary of my divorce.

I do not concede that

I will live in a country of my own making.

In the future

environmental destruction will be the norm.  
No longer can it be said that  
my peers and I care about this earth.  
It will be evident that  
my generation is apathetic and lethargic.  
It is foolish to presume that  
there is hope.

And all of this will come true unless we  
choose to reverse it.

There is hope.

It is foolish to presume that  
my generation is apathetic and lethargic.

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I have my priorities straight because

my employer will know that

they are not the most important thing in my  
life.

So in 30 years I will tell my children

“Money will make me happy”

is a lie, and

“Happiness comes from within.”

I realize that this may be a shock but

I can change the world and I refuse to believe  
that I am part of a lost generation.”

**www.youtube.com**

**“Lost Generation” by Jon Reed**

## *Post-Secondary Representative* School Approval Standards for K-12 Mathematics

By Rich Andrusiak

Last issue, I wrote about how the School Approval Standards (ED 306) are expiring July 1, 2013 and that the revision process of the new set of standards is underway. You can find minutes from the steering committee meetings and a timeline for the completion of the work at <http://www.education.nh.gov/legislation/ed306review.htm>. As leaders in mathematics education in NH, it is important that we reach out to the Department of Education and take an active role in shaping these standards. Furthermore, you have the opportunity for your voice to be heard.

Recall that the State Board of Education adopted the following position and included it in the amended NH State Task Force Report of Mathematics Instruction:

Encourage all students to complete mathematics each of their four years in high school demonstrating proficiency and substantial depth of understanding that is directly aligned to any of the four model course pathways articulated in *Common Core State Standards for Mathematics Appendix A : Designing High School Mathematics Courses Based on the Common Core State Standards*. In addition, ensure that the high school mathematics curriculum focuses on mathematical practices, quantitative literacy, and statistical reasoning so all students meet rigorous competencies in these areas that are aligned to Common Core State Standards. Develop flexible paths that allow students to meet these

standards through a focus on communication, reasoning and sense making, and mathematical modeling.

The NHTM board recently learned that the steering committee is ready to review the content requirements of the standards. They have invited our president, Greg Superchi, to attend a meeting to discuss these revisions and represent the NHTM. If you have comments, questions, or concerns that you would like to be addressed at the meeting, please e-mail me and I'll make certain to compile them and pass them along to Greg. Greg will represent the board's position that the school approval standards need to have fidelity with the Common Core, and that the data and research in the NH State Task Force Report on Mathematics Instruction make it clear that we need to have expectations consistent with the above statement.

Potential changes to the amount and level of mathematics that students need for graduation will impact all of us. How will the Department of Education support school districts in making any required changes? I urge you to contact the administrator for school approval, Dr. Judith Fillion, and ask her that question. Her e-mail address is [Judith.Fillion@doe.nh.gov](mailto:Judith.Fillion@doe.nh.gov).

It is the goal of NHTM to advance mathematics education for all students in New Hampshire and setting school approval standards is the first step in reaching this goal.

If you have comments, questions, or concerns, please feel free to write to me at [randrusiak@ccsnh.edu](mailto:randrusiak@ccsnh.edu).



*Students and educators listen intently to Joan Ferrini-Mundi's keynote address, Leading for Improvement: New Hampshire and the National Mathematics Education Agenda*

## ***Classroom Activity: A Significance Test for the Difference of Two Proportions***

By Rich Andrusiak, Post-Secondary Representative

The linked activity is adapted from the GAISE college report (Guidelines for Assessment and Instruction in Statistical Education). The activity outlines how to verify experimental results published in research articles using physical and computer-based simulations, along with computing significance tests. The activity can easily be adapted for other research articles and various software packages. As written, the activity outlines how to conduct a simulation using the Fathom software package. The activity is written for an introductory statistics class and would be appropriate at both the secondary and post-secondary level. The particular significance test used in the project is for the difference of two proportions. But, the activity can easily be adapted for other tests as well. For questions regarding the activity, please contact me at [randrusiak@ccsnh.edu](mailto:randrusiak@ccsnh.edu).



*Osama Ta'ani engages participants in an activity during his session "Using History of Mathematics and Primary Sources to Help Teachers to Meet the Common Core State Standards."*

To access this month's activity, please click on the following link or paste it into your browser:  
<http://www.nhmathteachers.org/images/stories/Mathesis/may2013activityasignificancetest.pdf>.



**The celebration continues throughout NHTM's 50th Year!**



## **Across the Regions**

Although none of the regions report activities planned for this summer, they are eager to hear your ideas for activities and sites. Please contact the coordinators to share your ideas.

Do you live in the Central (Concord) or West Central (Hanover) region? We are looking for coordinators for those two regions. The NHTM Board will help you develop programming in your area and you will reap the benefits of networking with mathematics teachers in your area and gaining the professional development that fits yours and your colleagues' needs. Contact Katrina Hall at [katrinaleighhall@gmail.com](mailto:katrinaleighhall@gmail.com) if you are interested or have questions.

### Regional Coordinators:

**North:** Kim Knighton [kknig@profile.k12.nh.us](mailto:kknig@profile.k12.nh.us)

**Southwest:** Bernadette Kuhn [bkuhn@mrsd.org](mailto:bkuhn@mrsd.org)

**West Central:** open

**South Central:** Pat Marquette & Katrina Hall  
[patricia.marquette@sau41.org](mailto:patricia.marquette@sau41.org)  
[katrinaleighhall@gmail.com](mailto:katrinaleighhall@gmail.com)

**Central:** open

**South East:** Lauren Provost

[laureneliz2@yahoo.com](mailto:laureneliz2@yahoo.com)

## *Middle Levels Representative*

### Mathematics and NCTM Conference Have Power to Inspire

*“There are many ways to organize curricula. The challenge, now rarely met, is to avoid those that distort mathematics and turn off students.” - Steen, 2007*

Those individuals who attended NCTM Denver in April 2013 could not have felt anything less than inspired. Inspired by the energy, enthusiasm, research and knowledge shared by the professionals who swarmed the city. In the hotels, restaurants, walkways, buses and throughout the convention center, there was a constant hum of those who were energized by the mathematics present at this annual meeting and exposition.

In one session, *Picture Yourself Having Fun at Math*, the presenter shared how photography can be used to incorporate real-world situations into the math classroom. The use of pictures can be used to reinforce concepts involving geometric shapes, areas, volumes, similar figures, transformations and so much more. I found myself reflecting on how the simple task of incorporating photography into the math classroom can be used inspire a student to look at mathematics through a different lens (which happened to be one of the hashtags used throughout the week).

Who has heard of mARTh? The basic idea of mARTh is to connect mathematical concepts in a visual, kinesthetic way to make math fun, hands-on and beautiful. The presenter noted the goal of mARTh is to use creative expression to connect students to mathematical concepts. This is a teacher whose goal is to help students make a personal, physical and visual connection with mathematics.

In another session, *Making Cents of CCSS*, the presenters addressed ways to make inferences and justify conclusions from sample surveys, experiments and observational studies through spinning pennies and simulations. The presenters shared ways to lead students in a statistical significance test in a way that non-stats teachers can implement...even at the middle school level. Did you know there are pennies from the 1960's that will land nearly 100% of the time on heads when spun on its side?

David Masunaga's *Geometry on a Shoestring Budget* was described as “the most profound, interactive and dynamic activities that don't require expensive technologies” and that is exactly what it was. Masunaga kept the audience captivated and yearning for more with cheap and nontraditional geometric manipulatives that could be used to reason and prove various geometric concepts. Every person in the room was engaged and inspired by Masunaga; the power of one.

Jo Boaler made a valid and strong point in *Using Research to Make a Difference* where she clearly noted that producing research knowledge is not enough to make changes in the math classroom. *How do K-8 Teachers Change Their Practices after Learning More Mathematics?* shed light on the aspects of teaching practices connecting a teacher's knowledge and beliefs which led directly to *Ritual: A Category for Understanding Persistent Practices in Math Education*; a theoretical study on the persistence of practices in math classrooms which contributed to a theory of rituals in math education.

With so much happening in Denver it is impossible to share every ounce of awe and amazement one experienced throughout the week. During the opening session, *The Power of Just One Teacher*, Mayim Bialik shared a mission which all teachers should consider encompassing into their rituals, beliefs, practices and everyday practices: to inspire students to pursue STEM education. This is not to say that we should expect every student make the maths and sciences the end all of education but as educators we should make it our mission to ignite a spark in every student. As educators we have the immense and immeasurable power to inspire our students to develop a love for mathematics in some way, shape or form. Every lesson, activity, assessment and mathematical discussion keep the common core and the mathematical practices in mind. However, do not forget to inspire, engage and help students to develop an appreciation for mathematics that permeates beyond the classroom; you have the power to make an inspirational difference.



## From the Desk of the Membership Chair

**As of 24 April 2013** membership is at 435. Thank you for your membership renewals!

	Current until Dec 2012	12-13	13-14	14-15	15-16-17	Up-to-date Total	NHJEM Current Year
<b>Individual</b>	96	265	153*	12	2	<b>432</b>	14
<b>Institutional</b>		3				<b>3</b>	
<b>Totals</b>	96	268	153	12	2	<b>435</b>	14

6 Honorary Lifetime Members

14 NHJEM

Congratulations to Dr. Arthur V. Johnson II, David G. Kent and, Dr. William J Roberts, who were the recipients of this year's Honorary Lifetime Memberships. Criteria for this recognition are posted on the web site.

Membership increased with the NHTM Mathematics 50<sup>th</sup> Year celebration conference held in April at the Radisson Hotel in Manchester NH. We had a great blend of renewals and new members.

We are looking to determine which NHTM members are also NCTM members. Do let us know when you renew. We will still be renewing via the US Postal Service. You can download the renewal form at our web site or reminders will be sent out via e-mail in September or you can renew or encourage others to become members through our website <http://www.nhmathteachers.org/membership> using PayPal.

### **Have a great summer, replenish and refresh your teaching tools.**

...AND... if you are moving, changing your address and or e-mail – please send it along to Cecile.Carlton@comcast.net.

NHTM Board members also want to thank all of the individuals who made contributions to our scholarship fund, those who made contributions via the 50th Celebration campaign are listed on the next page. We also thank those members who have donated anonymously or at other times during the year.

*Cecile Carlton*

*NHTM Membership Chair*

### Scholarship Fund Drive:

As part of NHTM's 50<sup>th</sup> year celebration, we are seeking to increase funds for our Scholarships. Every year, the Scholarship Fund supports one graduating high school senior and one college student in their pursuit of a mathematics education degree. As part of our drive, we asked registrants for NHTM's 50<sup>th</sup> Conference to donate. We thank the following members for their generous donations:

#### Isaac Newton Donors - \$100+:

- Laurie Boswell
- Betty Erickson
- Dick Evans
- Ferd Prevost
- Greg Superchi
- Stephanie Wheeler

#### Carl Gauss Donor - \$51 - \$75:

- Terri Magnus

#### Leonhard Euler Donor - \$26 - \$50:

- Karen Graham

#### Bernhard Reimann Donor - \$11 - \$25:

- Lesley Fallu
- Donna Kelley
- Michelle Miller

#### Euclid Donor - \$1 - \$10:

- Danielle Vienneau



*Flowers made by students in the Lisbon Regional School Origami Club decorated the tables at the conference.*

**If you are interested in helping NHTM reach its goal of raising \$5,000 for our Scholarship Fund, get creative and have some fun. How much money could you help raise if:**

- You solicited a \$1 or \$2 donation from every staff member in your building?
- You sponsored a \$5 "Jeans Day" to support the Scholarship Fund?

**If you or your school would like to donate, please make your check out to NHTM Scholarship Fund Drive and send it to:**

Stephanie Wheeler  
75 Alice Drive  
Penacook, NH 03303

## Professional Development Resources

Are you looking for good professional development resources?

Consider the *New England Mathematics Journal*!



**Envisioning Effective Implementation of the  
*Common Core Standards for Mathematics***

**May 2012**

**Mathematics Coaching – Implications for Change**

**May 2013**

**For more information or to purchase issues contact:**

**[atmne@keene.edu](mailto:atmne@keene.edu)**

## NHTM Executive Board

### Officers

<b><u>President</u></b>	Greg Superchi, Lisbon Regional School	<a href="mailto:gsuperchi@yahoo.com">gsuperchi@yahoo.com</a>
<b><u>Secretary</u></b>	Andrea Drake, Oyster River High School	<a href="mailto:adrake@orcsd.org">adrake@orcsd.org</a>
<b><u>Treasurer</u></b>	Connie Upschulte, Pennichuck Middle School, Nashua	<a href="mailto:upschultec@yahoo.com">upschultec@yahoo.com</a>

### Council

<b><u>Elementary School Rep</u></b>	Stephanie Wheeler, Jewett Street School and Wilson Elementary School	<a href="mailto:swheeler@mansd.org">swheeler@mansd.org</a>
<b><u>Middle Grades Rep</u></b>	Katrina Hall, Hollis Brookline Middle School	<a href="mailto:katrinaleighhall@gmail.com">katrinaleighhall@gmail.com</a>
<b><u>Secondary Representative</u></b>	Greta Mills, Hanover High School	<a href="mailto:greta.mills@hanovernorwichschools.org">greta.mills@hanovernorwichschools.org</a>
<b><u>Post-Secondary Rep</u></b>	Richard Andrusiak, Dept of Mathematics, River Valley CC	<a href="mailto:randrusiak@ccsnh.edu">randrusiak@ccsnh.edu</a>
<b><u>Past President</u></b>	Judy Curran Buck, Mathematics Education Support Specialist	<a href="mailto:jcurranbuck@aim.com">jcurranbuck@aim.com</a>
<b><u>School Administrative Rep</u></b>	Donald R. West, Kearsarge Regional School District	<a href="mailto:dwest@kearsarge.org">dwest@kearsarge.org</a>
<b><u>ATMNE Representative</u></b>	Rob Lukasiak, Mathematics Consulting Services	<a href="mailto:rlukasiak@comcast.net">rlukasiak@comcast.net</a>
<b><u>NCTM Representative</u></b>	Annie Wallace, Hampstead Middle School	<a href="mailto:anniekwallace@hotmail.com">anniekwallace@hotmail.com</a>
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<b><u>Media &amp; Public Relations</u></b>	Amanda Benware, Bedford High School	<a href="mailto:benwarea@sau25.net">benwarea@sau25.net</a>
<b><u>Historian</u></b>	David G. Kent, Hopkinton High School (Retired)	<a href="mailto:dg_kent@mcttelecom.com">dg_kent@mcttelecom.com</a>
<b><u>Webmaster</u></b>	Matt Treamer, NCED Services	<a href="mailto:matt@ncedservices.org">matt@ncedservices.org</a>

## News Bytes

- The winner of this year's New Hampshire State Mathematics Contest is .... Mother Nature! Unfortunately a combination of snow and sleet on March 19 closed many schools and restricted travel. A "Make-Up" Meet is being held Tuesday, May 23. Good luck students!
- NCTM is offering Interactive Institutes again this summer. Elementary School (PreK-5) teachers should consider "Connecting Number and Operations in the Classroom," July 11-13, in New Orleans LA. "Algebra Readiness for Every Student" is offered for Middle Levels (6-8) teachers, July 8-10, also in New Orleans. High School teachers may participate in "Engaging Students in Learning: Mathematical Practices and Process Strands," August 1-3, in Washington DC. Early bird registration is open until March 24 for the New Orleans workshops and March 31 for the Washington DC workshop. Visit <http://www.nctm.org/profdev/default.aspx?id=398> for more information and to register.

# Summer Courses

July 29-July 31, **Lesley University** and **ATMNE** will be co-hosting their first annual Summer Mathematics Institute, *Weaving the Mathematical Practices throughout the K-12 Curriculum*, on the campus of Lesley University in Cambridge MA. Grade band sessions consist of a focus on fractions as number (K-5), a focus on ratio, measurement, and geometry (6-8), and a focus on problem solving using algebra, geometry, and trigonometry (9-12). In addition to these sessions, Dr. Anne Collins, Director of Mathematics Operations at Lesley University will deliver the Opening Keynote address, and we will also offer 3 General Sessions, of length 60 minutes, for all attendees, plus a Closing Keynote address on Wednesday afternoon.

Join us for a 3 day engaging institute focusing on the eight Mathematical Practices and what they look like in the classroom. We are excited to have some of the region's most influential mathematics educators together to actively engage us in classroom activities that embody the mathematical practices from CCSSM. More information is available at [atmne.net](http://atmne.net).



*The Role of History in Teaching Mathematics* a graduate course at **Plymouth State University** this Summer. This course investigates how and why the history of mathematics can be used to improve teaching and learning. The study of the history of mathematics will strengthen your understanding of the core concepts of mathematics and give you different ways to teach these concepts. Come, enjoy solving problems, and live the experience of discovering the treasures of the past. The materials presented in this course are appropriate for elementary, middle, and secondary mathematics teachers. [More information here!](#)



**Rivier University** is offering two week-long graduate courses for current and prospective mathematics teachers this summer. *Assessment and Evaluation in Mathematics Education* will run June 24-28 while *Algebra and Codes* will run July 8-12. The first course examines assessment as an open and coherent process as well as a means of enhancing mathematics learning, promoting equity, and providing valid inferences about mathematics learning and teaching. The second explores how mathematics is used in encrypting and decrypting messages and detecting and correcting transmission errors. For more information, contact [tmagnus@rivier.edu](mailto:tmagnus@rivier.edu) or visit [www.rivier.edu](http://www.rivier.edu).

## Professional Conferences

### National

MAA Mathfest	Hartford CT	31 July-3 Aug 2013
AMATYC 39th Annual Conference	Anaheim CA	31 October –3 November 2013
Joint Mathematics Meetings	Baltimore MD	15-18 January 2014
ICTCM 26th Annual Conference	San Antonio TX	20-23 March 2014
NCTM 92st Annual Meeting & Exposition	New Orleans LA	9-12 April 2013

### Regional

NCTM Regional	Baltimore MD	16-18 October, 2013
ATMNE Getting to the Core	Killington VT	24-25 October 2013

### State

Christa McAuliffe Technology Conference	Manchester NH	3-5 December 2013
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*Mathesis* is the newsletter of the New Hampshire Teachers of Mathematics. It is published four times a year: August, November, February, and May. The mission of the New Hampshire Teachers of Mathematics is to provide vision and leadership in improving the teaching of mathematics so that each student is ensured quality mathematics education and each teacher of mathematics is ensured the opportunity to grow professionally.