HAMTE Crossroads

The Official Newsletter of the Hoosier Association of Mathematics Teacher Educators

Message from the Outgoing President

Dear HAMTE Colleagues,

As I write my final message as President, I find myself reflecting on many meaningful moments from my time on the HAMTE Board—first as Secretary for two terms, then as President-Elect, and finally as President. I have witnessed the introduction of the Elementary Mathematics Specialist license, the hosting of the leadership conference, the growth of IMERS, the significant reduction of our website operating costs, and successful lobbying of the legislature. Serving alongside Past-Presidents Signe, Patrick, and Jodi has reminded me how each leader leaves a distinct and valuable mark on this organization. I want to express my sincere gratitude for your support and for your ongoing commitment to the work we share.

While there are initiatives I wish could have progressed further during my tenure, I am proud of the strides we made in strengthening HAMTE's relationship with the Indiana Department of Education. Although we have not shared many details publicly, the IDOE reached out to the HAMTE Board regarding upcoming program evaluations, inviting us into an important and previously closed conversation. Instead of simply responding to directives, HAMTE is increasingly in a position to help shape them. As more information becomes public, I hope you will see how your support for this organization is yielding real, tangible benefits for mathematics teacher education across the state.

One of HAMTE's greatest strengths is its representation of institutions from every corner of Indiana. Yet that same geographic spread makes in-person collaboration difficult, and I continue to believe that we are at our best when we can work together face-to-face. With three young children at home, I was not able to travel as frequently as I would have liked during my presidency, but I remain committed to supporting our organization in the years ahead.

You are in excellent hands with our new President, Erik. He is knowledgeable, practical, passionate, and well-connected, and I could not be more excited to see the direction HAMTE will take under his leadership. Financially we are strong and the foundation is there for an active organization.

Thank you again for your support and for the privilege of serving as your President.

Best,
Andrew

Inside This Issue:

Newsletter Editor:
José N. Contreras
Ball State University
jncontrerasf@bsu.edu

Message from the Incoming President

As incoming President of HAMTE, I am looking forward to deepening and developing relationships with HAMTE members across the state. Over the last year I am thankful for getting to work with Andrew, Mike, José, and Selim on the HAMTE board, as President-elect. During this time, we were able to use research to help inform and shape state legislation. We met with legislators in January and were able to successfully advocate for two changes to the language in HB 1634. The first change removed the language "explicit and systematic instruction" in the bill, replacing it with language to indicate institutions of higher education should support elementary teachers to learn about a broad set of research based instructional practices. This broad set includes NCTM's 8 *Effective Practices*. The second change was to remove language in the bill about universal acceleration for middle school students. This change was based on research that suggests universal acceleration does not lead to better outcomes for students, especially as they enter more advanced high school courses.

After working on these changes to the law, Andrew Hoffman, Rick Hudson, Mark Creager, and I met with members of the Indiana Department of Education (IDoE) to flesh out a rubric to evaluate Educator Preparation Programs (EPPs) on their mathematical preparation of elementary education licensure candidates. We are hopeful that our recommendations will be taken up. For those involved in the preparation of elementary teachers, I invite you to volunteer to participate with IDoE on the evaluation of EPPs in mathematics. The reviews of EPPs will be piloted in spring 2026. I encourage you to be on the look out for information from IDoE about this process and documents giving guidance to those in higher education about it.

At our last HAMTE board meeting, we discussed the following five items as areas for continued work in the state:

- Using the NCTM spring conference in Indianapolis as an opportunity for HAMTE members to discuss the impact of the recent legislation about number of students in degree programs;
- Attending to how high schools are changing mathematics requirements in response to the new high school diploma requirements;
- Considering how we are preparing teachers for data science;
- Working with IDoE on how they will assess secondary teachers' proficiency with process standards;
- Broadening our membership including a broader swath of institutions of higher education and teacher leaders.

Please do not hesitate to reach out (etillema@iu.edu) if there is an issue you think HAMTE should work on as an organization. Working together can help all of us feel stronger, connected, and rejuvenated.

Best,
Erik

The Quotation Corner

Mathematics is the most beautiful and most powerful creation of the human spirit.

Stefan Banach

Using Examples and Non-Examples for Equitable Instruction

Kristi Martin

To build deep understanding of content, students need to build schema about the concept. To do this, their attention needs to be drawn from the many distractions in their environment to bring the content they need to learn into their working memory. They then need to be able to encode that knowledge to store it in their long term memory and build schema that will allow them to retrieve that knowledge from their long term memory for future use (Weinstein, et al., 2019).

One strategy I've used to make my instruction more equitable is to build in the use of purposeful examples and non-examples in my lessons with opportunities for all students to think about and discuss them. Using examples that are varied helps the students to have a full picture of the concept, so that they do not undergeneralize when they see the concept in the future. For example, when students learn about adding 3-digit numbers, you could show multiple examples where students regroup in different combinations of place values, like $128 + 287$, $356 + 429$, and $753 + 262$, so that students can see that they can regroup in any combination of place values when adding. Similarly, using non-examples that seem similar on the surface, but have some difference from the examples, allow students to see the boundaries of the concept, so that they don't overgeneralize their new knowledge. For the lesson on adding 3-digit numbers, this might mean showing an incorrectly solved problem that a student regrouped in both the tens and the ones when solving $325 + 682$, so that students can see that they don't need to regroup when a place value doesn't sum to 10 or more. Finally, providing opportunities for all students to consider the similarities and differences between the examples and non-examples gives students chances to think more deeply about the new concept and verbalize their learning. In the place value lesson, this might be asking students to discuss what error the hypothetical student made when solving $325 + 682$ and how they can fix the error.

Using Examples and Non-Examples in Elementary Content Courses

In my elementary content courses, the primary form this takes is error analysis. One of the topics we cover is various alternate algorithms. I begin by introducing the algorithm by showing students a few correctly worked problems and asking them to figure out in small groups how the problem is being solved with that algorithm. After we come to an agreement as a class about how to use the alternate algorithm, they are given a few problems to solve with their small groups.

Once they have an idea of how to do the algorithm correctly, I have them look at a sheet where a few have been solved incorrectly, with common error and misconceptions. This provides all students with the opportunity to see some non-examples of how to use each algorithm and they get the opportunity to start to think like a teacher about how to help students that mis-apply or misunderstand how to use the algorithm. Throughout all of this, students have opportunities to discuss both the correctly worked examples and the incorrectly worked non-examples to strengthen their own understanding of each alternate algorithm.

In past semesters, my students have frequently mixed up which way to convert from base ten to other bases and from other bases to base ten. So, this semester I designed an activity with 10 of these problems already solved. They were mixed with both directions of converting and mixed with correctly solved and incorrectly solved problems. Students had to first determine whether each problem was solved correctly and any that were solved incorrectly, they needed to identify the errors and correct them. Students were also able to discuss the errors within their small groups and help each other to identify whether the problems were solved correctly or incorrectly. By building in errors that I had seen past students make, the students this semester were exposed to them and were able to be aware of them before they were assessed on the content. This helped them to avoid the mistakes and students scored much better on the assessments this semester than they have in previous semesters.

Using Examples and Non-Examples in Elementary Math Methods Courses

In my elementary math methods, I actually teach students about using examples and non-examples as a teaching strategy for their future classrooms. In addition, I infuse it into their own learning and activities.

My students begin by learning about teaching with examples and non-examples by learning about 3 criteria:

1. Lessons should have varied examples that will draw students' attention to the deep structure of the concept.
2. Lessons should have contrasting non-examples that will draw students' attention to the boundaries of the concept.
3. Lessons should have prompts to elaborate that require all students to think about the connections and differences among the examples and non-examples. (Deans for Impact)

The students also learn that lessons that include all these criteria support students to develop their schema and create more equitable learning opportunities.

After feedback from students that learning with varied examples seemed logical, but introducing non-examples would confuse students, I redesigned activities throughout the course to allow them to experience learning from both examples and non-examples themselves. One content-based activity had the students sort a variety of representations of ¾ to determine which are examples and which are non-examples. They then have to describe why each is an example or a non-example and think about why a teacher might use that particular example or non-example to help students understand the fraction concepts. An example of a pedagogy-based activity is when the students read two vignettes of the same lesson about using one of the Effective Teaching and Learning Practices, with one being an example of using the practices and one being a non-example of not using the practice. The students have to individually identify the example and non-example, then discuss with their small group how they identified each and what the impact on the learning in each classroom would be. Incorporating examples and non-examples into their own learning strengthen the students' knowledge of the practice of using examples and non-examples as students and teachers, as well as helping them to see what it might look like in practice.

Throughout each semester, I saw a shift in how my students thought about teaching with examples and non-examples. One student reflected on her mentor's use of examples and non-examples in a lesson she observed, "When we understand what something is and what something isn't, we have a more detailed, concrete understanding of the subject and develop stronger schema. By prompting students to think more in depth about a concept, we are able to get them thinking about the connections and difference between the examples and non-examples. I want to incorporate varied examples and non-examples into my lessons across all subjects …" (EC-6 pre-service teacher). This showed that she was able to analyze a lesson in practice for the three criteria and connect to how using examples and non-examples in lessons creates a more equitable learning opportunity for her future students. Another reflected on how they plan to implement the use of examples and non-examples in their future classroom, "I will not require my students to work out the worked example again. Instead, I will give them non-examples to contrast the questions to begin a classroom discussion or a personal reflection … so my students have an opportunity to critically think and to test the boundaries of a new concept" (4-8 math pre-service teacher). This pre-service teacher also wanted to make lessons more equitable and accessible to all students, by giving all students varied ways to experience and think about the new content, thus deepening their learning.

Using Examples and Non-Examples in Graduate Action Research Courses

In my graduate course on action research, the students will design and implement an action research project in their own classrooms over the course of two semesters. For many, this is their first time doing research of any kind and many are intimidated.

To help them understand what they will be doing over the course of the two semesters, we begin the semester by reading the final projects of previous students (with the permission of the previous students). The four projects that the students read have purposely been chosen to cover a variety of different grade levels and project topics. Additionally, two are very strong, well completed examples and two are weaker non-examples that appear strong when first read. The current students then read and analyze each project for strengths and weaknesses and participate in an online discussion board with their classmates.

This gives them an opportunity to build their schema about what a well-written and planned research project looks like and also helps them to understand what makes a project not well planned or executed. This activity provides equitable access to all students to build knowledge about what research should and should not look like before they begin planning and executing their own projects.

Conclusion

Using examples and non-examples in courses helps students to build schema about new concepts, so that they don't overgeneralize or undergeneralize their new knowledge. This makes learning more equitable for all students, since they can connect their knowledge and avoid common mistakes and misconceptions. This can be applied across both content and methods courses for undergraduates to allow students to learn from examples and non-examples as they build their own knowledge of the math content and as they plan for lessons for their future students. It can also be applied in graduate courses to help students build understanding of new concepts, like research, or deepen their understanding of previously learned material. Non-examples can help students at all levels become aware of common misconceptions and misunderstandings, which can help them to avoid them and make learning more equitable for all students.

References

Deans for Impact. (n.d.). *Science of learning: Teacher action anchor charts: Deans for impact: Deans for impact (DFI)*. Science of Learning: Teacher Action Anchor Charts | Deans For Impact | Deans for Impact (DFI). https://www.deansforimpact.org/tools-and-resources/science-of-learning-teacher-action-anchor-charts

Pershan, M. (2021). *Teaching math with examples*. John Catt.

Weinstein, Y., Sumeracki, M., & Caviglioli, O. (2019). *Understanding how we learn: A visual guide.* Routledge.

Kristi earned her PhD in Math Education from North Carolina State University after 15 years of teaching mathematics K-16. Her research is focused on preparing mathematics teachers. Recently, she has been researching the impact of preparing teachers to use cognitive science in their lessons.

The Proof Corner

A short proof that $\sqrt{2}$ is irrational: If $\sqrt{2} = p/q$, then $p^2 = 2q^2$, a contradiction! (Explain the contradiction!)

Technology Tips: Using a Computer Algebra System with Graphing Capabilities to Solve and Generalize Problems

José N. Contreras and Armando M. Martínez-Cruz

In traditional mathematics instruction, problems are often presented with explicit goals: prove a property, verify a solution, or compute a value. When we remove the goal, however, and simply examine a mathematical situation, we open a space for exploration, conjecture, and discovery. Such is the case when we are presented with the open-ended prompt: What can be said about the product of four consecutive integers? Using a computer algebra system with graphing capabilities, we can embark on a sequence of numerical investigations, algebraic proofs, pattern recognition, and generalization.

We can begin by examining the expression $x(x+1)(x+2)(x+3)$ numerically. Using a calculator to quickly compute products for many values—even large or negative ones—we can notice immediate divisibility properties. Among any four consecutive integers, one must be a multiple of 2, one a multiple of 3, and one a multiple of 4. A calculator can rapidly verify these observations across many examples. Building on these observations and applying the Divisibility by Product Theorem (DPT), we can establish that the entire product is divisible by 6, 12, and 24, since appropriate pairs of divisors are relatively prime.

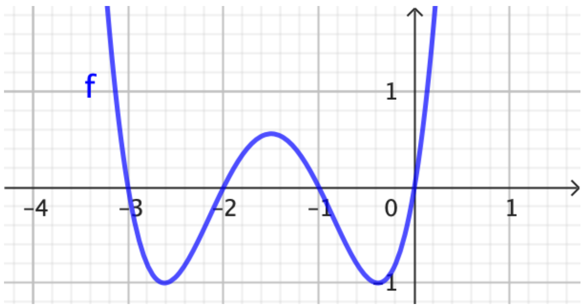
The technology can also help us explore patterns in the base-10 representation of the product. When one of the integers is a multiple of 5 and another even, the product always ends in 0. When none are multiples of 5, repeated calculations suggest that the product consistently ends in "24," and often in "024." A CAS enables fast computation of dozens of examples, encouraging us to propose and test a stronger conjecture: the product minus 24 is divisible by 1000. By expressing the smallest integer as $5n + 1$ and expanding symbolically, we can confirm that each case indeed leads to an expression divisible by 1000. For example, evaluating the function $f(x) = x(x+1)(x+2)(x+3) - 24$ at $x = 5n + 1$ yields $g(n) = f(5n + 1) = 625n^4 + 1250n^3 + 875n^2 + 250n$. Since n can take the form $4q$, $4q + 1$, $4q + 2$, or $4q + 3$, we can substitute each of these expressions for n and then factor it. The case when $n = 4q$ yields $g(n) = 1000q(4q+1)(40q^2 + 10q + 1)$. The other cases produce similar results (i.e., $g(n)$ is divisible by 1000). This completes the proof that whenever four consecutive integers contain no multiple of 5, their product ends in 24.

By using the CAS's computational and factoring capabilities we can notice a major turning point: the product of four consecutive integers is one less than a perfect square. In other words, the product of four consecutive integers plus 1 is a perfect square. The power of the CAS facilitates the discovery of the general identity:

$$n(n+1)(n+2)(n+3) + 1 = (n^2 + 3n + 1)^2.$$

Numerical examples reveal other patterns. First, the product of four consecutive integers plus 1 can be expressed as the square of 1 more than the product of the least and greatest integers. That is, $n(n+1)(n+2)(n+3) + 1 = [n(n+3) + 1]^2$. Second, the product of four consecutive integers plus 1 can also be expressed as the square of 1 less than the product of the two middle integers. In other words, $(n+1)(n+2)(n+3) + 1 = [(n+1)(n+2) - 1]^2$. Third, the product of four consecutive integers plus 1 is equivalent to the square of the addition of the first integer, the second integer, and the product of the first and second integers. That is, $n(n+1)(n+2)(n+3) + 1 = [n + (n+1) + n(n+1)]^2$. The CAS's symbolic manipulation features allow us to verify effortlessly those identities

We can now turn to graphing the function $f(x) = x(x+1)(x+2)(x+3)$. A graphing tool shows that the minimum value of the quartic is -1.



This graphical evidence provides an intuitive explanation for why adding 1 always yields a perfect square: we are shifting the entire graph upward to land exactly at its minimum. The new function g(x) = f(x) + 1 has two double zeros and has the form $(x^2 + bx + c)^2$ with b and c integers ($x(x + 1)(x + 2)(x + 3) + 1 = x^4 + 6x^3 + 11x^2 + 6x + 1$, which is of the form $(x + p)^2(x + q)^2$). To confirm this analytically, we can use the calculator to compute the derivative, solve $f'(x) = 0$, and substitute the critical points back into $f(x)$. The symbolic and graphical approaches match perfectly.

We can now modify the conditions of the original prompt. Replacing the four consecutive integers with three consecutive integers lead us to another elegant identity, which can be discovered based on numerical examples:

$$n(n + 1)(n + 2) + (n + 1) = (n + 1)^3.$$

From there, we can now examine a broader generalization: four integers separated by an arbitrary constant difference k. Considering the product $n(n + k)(n + 2k)(n + 3k)$, we can graph the expression and again use the derivative tools to locate its minimum value, which appears consistently to be $-k^4$. Symbolic expansion and algebraic manipulation confirm the pattern. Thus,

$$n(n + k)(n + 2k)(n + 3k) + k^4$$

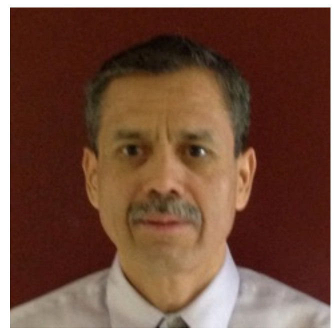
is always a perfect square—a powerful generalization of our initial observations.

This problem, once stripped of its original goal, unfolds into a rich mathematical landscape. Technology does not replace reasoning; rather, it amplifies our ability to test ideas, visualize structures, perform symbolic computations, and push patterns toward generalization. In doing so, it helps transform a simple mathematics situation into a sustained mathematical investigation.

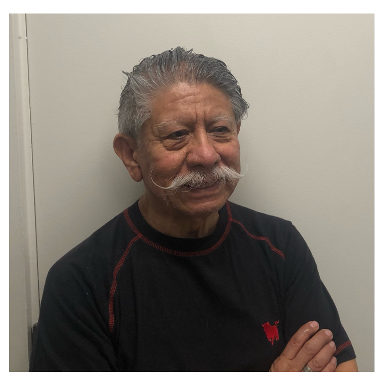
For more details about how this problem-posing task was implemented in the classroom see Martínez-Cruz & Contreras (2002).

Reference

Martínez-Cruz, A. M., & Contreras, J. N. (2002). Changing the goal: An adventure in problem solving, problem posing, and symbolic meaning with a TI- 92. *Mathematics Teacher*, 95(8), 592–597.



José N. Contreras, jncontrerasf@bsu.edu, teaches mathematics and mathematics education courses with passion at the undergraduate and graduate levels at Ball State University. He is interested in integrating problem posing and solving, technology, realistic contexts, modeling, history, proof, and aesthetic aspects of mathematics in teaching.



Armando M. Martínez Cruz, amartinez cruz@fullerton.edu, is a professor of mathematics at California State University Fullerton in Fullerton, CA. He is interested in problem solving, problem posing, and learning in technological environments.

Connect with HAMTE!

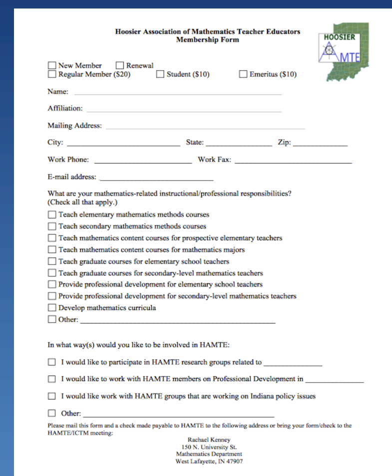
- ***Visit our website:*** Please checkout out our website http://hamte.org/ and purchase or renew your membership through the website (PayPal). There is a form to submit only if you are a new member or need to change your information. Memberships (new or renewals) are purchased in $10-increments (which buys 6 months or 1 year each, depending on your status). You can change the quantity to buy by clicking in the box and then the arrows. Do this before clicking on the icon for the payment method you wish to use. The money will go to a HAMTE PayPal account, which the treasurer can then transfer to the HAMTE bank account. If you have questions, please contact Lori Burch, ljburch@iu.edu.

- **Join a Working Group/ Advocacy Group** or suggest a new topic to connect and collaborate with others across the state to address crucial issues in the field of mathematics education!
  - IMERS
  - Teacher Recruitment & Retention (Jean Lee, jslee@uindy.edu)
  - Legislative Agenda (Erik Tillema, etillema@iu.edu)

- **Writing Circles** – HAMTE is pleased to announce the facilitation of writing circles for its members. If you would like accountability and feedback from your mathematics educator peers from across the state, please consider joining a writing circle. The circles will meet virtually approximately once a month. If you are interested, please write to ajhoffman@huntington.edu, indicating any preferences in terms of research areas, peer experiences, or duration of circle.

- ***Submit an article and/or teaching methods or ideas to the newsletter***, *HAMTE Crossroads.* Email your submission or questions to José Contreras, Newsletter Editor, at jncontrerasf@bsu.edu. We publish Fall and Spring editions.

BECOME A HAMTE MEMBER!



Hoosier Association of Mathematics Teacher Educators
Membership Form

☐ New Member ☐ Renewal
☐ Regular Member ($20) ☐ Student ($10) ☐ Emeritus ($10)

Name: ____________

Affiliation: ____________

Mailing Address: ____________

City: ____________ State: ____________ Zip: ____________

Work Phone: ____________ Work Fax: ____________

E-mail address: ____________

What are your mathematics-related instructional/professional responsibilities?
(Check all that apply.)

☐ Teach elementary mathematics methods courses
☐ Teach secondary mathematics methods courses
☐ Teach mathematics content courses for prospective elementary teachers
☐ Teach mathematics content courses for mathematics majors
☐ Teach graduate courses for elementary school teachers
☐ Teach graduate courses for secondary-level mathematics teachers
☐ Provide professional development for elementary school teachers
☐ Provide professional development for secondary-level mathematics teachers
☐ Develop mathematics curricula
☐ Other: ____________

In what way(s) would you like to be involved in HAMTE:

☐ I would like to participate in HAMTE research groups related to ____________
☐ I would like to work with HAMTE members on Professional Development in ____________
☐ I would like work with HAMTE groups that are working on Indiana policy issues
☐ Other: ____________

Please mail this form and a check made payable to HAMTE to the following address or bring your form/check to the HAMTE/ICTM meeting:

Rachael Kenney
150 N. University St.
Mathematics Department
West Lafayette, IN 47907

Become a new member or renew your existing HAMTE membership at hamte.org

Membership Cost:
Regular Member: $20
Student, Emeritus Faculty: $10

You can also pay by cash or check at the annual HAMTE business meeting.

Upcoming Events

- **AMTE 2026**: February 5-7, 2026, Portland, Oregon.
  - For more information visit: https://amte.net/content/2026-annual-amte-conference
- **NCTM 2026 Spring Conference**: February 11-13, 2026, Indianapolis, Indiana.
  - For more information visit: https://www.nctm.org/indianapolis2026/#
- **RCML:** March 5-7, 2026, Las Vegas, Nevada.
  - For more information visit: https://www.rcml-math.org/upcoming-conference-registration
- **IMERS 2026:** March 27, 2026, IUPUI School of Education, Indianapolis, Indiana
  - For more information visit: https://hamte.org/imers-2/

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- **AERA 2026:** April 8–12, 2026, Los Angeles, California.
  - For more information visit: https://www.aera.net/Events-Meetings/Annual-Meeting/2026-Annual-Meeting
- **PME 49– 2026 Conference:** July 27-August 1, 2026, Helsinki, Finland.
  - For more information visit: https://www.helsinki.fi/en/conferences/pme49
- **PME-NA 48 – 2026 Conference:** October 11-14, Provo, UT, USA.
  - For more information visit: https://pmena2026.byu.edu/call-for-proposals

The Problem Corner

Solve the classic Chickens and Pigs problem using as many strategies as you can. Then pose and solve related problems.

Bertha and Ernesto visited their grandfather's farm, where there are chickens and pigs. Looking under the fence, Bertha counted 20 heads and Ernesto counted 54 legs. If both counts are correct, how many chickens and how many pigs are on the farm?

IMERS 2026 Call for Proposals

The Indiana Mathematics Education Research Symposium (IMERS) 2026 will be held on Friday, March 27, 2026. This year's theme, "Leading Change, Connecting Communities: Mathematics Education for a Shared Future," highlights the many ways mathematics educators and researchers collaborate to improve learning opportunities for all students.

IMERS is a graduate student organized symposium, providing a supportive and engaging space for graduate students and early-career faculty to share their research, explore new ideas, and connect with colleagues across Indiana.

We are honored to welcome Robert Q. Berry III, Ph.D., Dean of the School of Education and Professor of Mathematics Education at Indiana University, as our keynote speaker. Dr. Berry previously served as Dean of the College of Education at the University of Arizona and was the Samuel Braley Gray Professor of Mathematics Education at the University of Virginia.

The Call for Proposals is now open, and we encourage graduate students, researchers, and faculty to submit their work for presentation at IMERS 2026.

The Book Corner

Check the following books published recently.

Clements, M. A., Kaur, B., Lowrie, T., Mesa, V., & Prytz, J. (Eds.). (2024). *Fourth international handbook of mathematics education*. Springer Cham.

Dacey, L., Gartland, K., & Lynch, J. B. (2025). *Well played, grades 3–5: Building mathematical thinking through number games and puzzles*. Routledge.

Ernest, P. (Ed.). (2025). *Ethics and mathematics education: The good, the bad and the ugly*. Springer Cham.

Harris, P. W. (2025). *Developing mathematical reasoning: The strategies, models, and lessons to teach the big ideas in grades K–2*. Corwin.

Harris, P. W. (2025). *Developing mathematical reasoning: Avoiding the trap of algorithms*. Corwin.

Karp, K. S., Fennell, F. M., Kobett, B. M., Andrews, D. R., Suh, J., & Knighten, L. D. (2025). *Proactive mathematics interventions, grades 2–5: Priming for success through engaging tasks and purposeful design*. Corwin.

Lewis, C. C., Takahashi, A., Friedkin, S., Houseman, N., & Liebert, S. (2025). *Teaching powerful problem-solving in math: A collaborative approach through lesson study*. Teachers College Press.

Martinovic, D., Danesi, M. (Eds.). (2025). *Mathematics and education in an AI era: Cognitive science, technological, and semiotic perspectives*. Springer Cham.

McKenna, T. J. (2025). *Making sense of sensemaking: Designing authentic K-12 STEM learning experiences*. Teachers College Press.

National Council of Teachers of Mathematics. (2025). *Teaching mathematics through problem solving K–8* (Expanded edition). National Council of Teachers of Mathematics.

Sokolowski, A. (2024). *Developing students' reasoning in precalculus: Covariational explorations enriched by rates of change and limits*. Springer.

Poetry and Mathematics

Tyger Tyger, burning bright,
In the forests of the night;
What immortal hand or eye,
Could frame thy fearful symmetry?

(Excerpt from poem "The Tyger" by William Blake)

ICTM CALL FOR MANUSCRIPTS!

The Indiana Mathematics Teacher is the official journal of the Indiana Council of Teachers of Mathematics (ICTM) and **received the 2021 Publication Award for outstanding journal**. It is published twice a year and is distributed by mail to all current members. The journal provides ideas and information for mathematics teachers at all levels of the curriculum (PreK-16). The editors invite submissions from new and experienced authors and accept articles on a range of topics including innovative classroom activities and lessons, practical applications of pedagogical research and theory, thoughtful reflections on challenges faced in the mathematics classroom, strategies and stories of mathematics coaching and teacher leadership, and any other topics that support the professional learning of ICTM members. **We especially encourage collaborations between PreK-12 teachers and higher education faculty**. Indiana residents whose feature articles appear in the Indiana Mathematics Teacher will be granted free membership to ICTM for one year.

Deadlines for Winter/Spring issue:
- Feature articles should be submitted by January 1
- Departmental manuscripts should be submitted by February 1

Deadlines for Summer/Fall issue:
- Feature articles should be submitted by July 1
- Departmental manuscripts should be submitted by August 1

Visit the ICTM (http://ictm.onefireplace.org/page-819122) and/or contact editors **Mark Creager**(macreager@usi.edu) and **Andrew Gatza** (amgatza@bsu.edu) for more information.

A NOTE ABOUT PERSPECTIVES SHARED:
*The perspectives presented in articles within issues of **HAMTE Crossroads** represent the views of individual authors and do not necessarily represent the views and positions of the HAMTE organization.*