

KCM

KENTUCKY CENTER
FOR MATHEMATICS



IMPACT REPORT

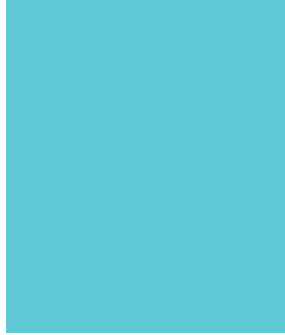
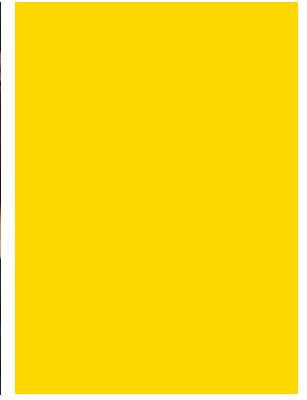
2006-2024



An electronic copy of this KCM impact report can be found using the QR Code above.

visit our website at kentuckymathematics.org

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KEY MESSAGES

LEADING, LEARNING, LAUNCHING

The Kentucky Center for Mathematics has developed expertise in mathematics content and pedagogy for over a decade. We build teacher-leaders in math education across the Commonwealth.

“ I take great pride and enthusiasm in presenting the work that our organization has taken in its pivotal role in mathematics education throughout the Commonwealth. Central to our mission is an unwavering commitment to excellence in mathematics education. The Kentucky Center for Mathematics serves as a hub of research-driven professional development, where we harness the knowledge of mathematics experts to create transformative learning experiences for educators. We firmly believe that we can empower classroom instructors to make a lasting impact on their students' lives.

Our work is grounded in evidence from research and from the field, and we are pleased to report that current findings affirm that our endeavors yield a significant return on investment for the state of Kentucky. We are proud to be a catalyst for positive change, contributing to the educational growth and development of our communities.

Our commitment to nurturing a love for mathematics and fostering the talents of our educators remains unwavering. We are dedicated to remaining at the forefront of educational innovation, ensuring that our work benefits all the students and educators of Kentucky.

As we look ahead to the future, I am filled with enthusiasm for what we can accomplish. I extend an invitation to you to join us on this inspiring journey, to champion the cause of mathematics education, and to collaborate with us in making a lasting impact on the lives of students and educators. Together, we will redefine the possibilities for mathematics education in the Commonwealth. Sincerely,

Kelly DeLong

Executive Director
Kentucky Center for Mathematics



KCM firmly believes that mathematics must never stand in the way of a child fulfilling a dream and that mathematics is an effective vehicle for developing the skills children need for college and career readiness.

Kentucky Center for Mathematics **VISION & MISSION**

The KCM, **Kentucky Center for Mathematics**, was established by the Kentucky General Assembly in 2006 to support diverse teacher and student populations across the commonwealth.

OUR VISION

KCM envisions a world in which everyone is mathematically enlightened and empowered. To actualize this vision, KCM works with educators throughout the state to evolve and sustain a schoolwide culture that engages students and guides them in making sense of mathematics.

OUR MISSION

KCM seeks to advance the knowledge and practice of effective mathematics teaching and learning, encompassing early childhood through adult education. We provide and develop statewide leadership, facilitate professional learning experiences, and cultivate innovation with the aim of improving mathematics education, practice and policy. We promote environments which engage learners to allow them to make sense of mathematics. We are grounded in research, centered on practice and focused on learners.

OUR GOALS

- **Leading** - Inform, collaborate and cultivate leadership to improve education in mathematics
- **Learning** - Prepare and develop educators to improve achievement in student mathematics
- **Launching** - Strengthen and advance mathematics education practice and policy through research and resource development

COHERENCE MODEL

The KCM Coherence Model is focused on transformation of teacher practices and beliefs across multiple grade levels. We believe Kentucky children can receive a coherent mathematics education experience where:

- All education experiences are characterized by a culture of sense-making and engagement
- Early grade teachers use their math content to develop skills for later grade math
- Teachers in later grades reinforce skills from early grades
- Students find out-of-class help both pertinent and impactful to their understanding of content

KCM'S CREATION IN LEGISLATION

164.525 Center for Mathematics -- Creation, duties, and location.

(1) The Center for Mathematics is hereby created to make available professional development for teachers in reliable, research-based diagnostic assessment and intervention strategies, coaching and mentoring models, and other programs in mathematics. The center shall be headed by an executive director and administered by a public postsecondary education institution. The center shall:

- (a) Act as a clearinghouse for information about professional development programs for teachers that address mathematics diagnostic assessment, intervention programs, coaching and mentoring programs, and other instructional strategies to address students' needs;
- (b) Collaborate with Kentucky's other public and private postsecondary institutions to develop teachers' mathematical knowledge needed for teaching and help teachers improve students' mathematical concepts, thinking, problem-solving, and skills, with an emphasis on diagnostic assessment and intervention programs for students in the primary program;
- (c) Provide teacher training to develop teacher leaders and teaching specialists in primary programs who have skills in diagnostic assessment and intervention services to assist struggling students or those who are at risk of failure in mathematics. The center may contract for services in order to carry out this responsibility;
- (d) Maintain a demonstration and training site for mathematics located at each of the public universities;
- (e) Advise the Kentucky Department of Education and Kentucky Board of Education regarding: 1. Early mathematics content, diagnostic assessment practices, and intervention programs; 2. Costs and effectiveness of various mathematics intervention programs; 3. Coaching and mentoring models that help improve student achievements; 4. Trends and issues relating to mathematics programs in schools throughout the state; and 5. The establishment and implementation of the Middle School Mathematics and Science Scholars Program established under KRS 158.848; and
- (f) Disseminate information to teachers, administrators, and policymakers on an ongoing basis.



CLEARINGHOUSE OF MATHEMATICS EDUCATION RESOURCES

KENTUCKY NUMERACY PROJECT

Realizing the urgency to help more teachers than those attending KCM professional learning experiences, the KCM developed the KNP (Kentucky Numeracy Project) to benefit all elementary grades educators. The KNP, based on the Math Recovery Learning Framework in Number, is a dynamic online system of exemplary, differentiated, evidence-based learning experiences and formative assessments aligned to the KAS (Kentucky Academic Standards for Mathematics) allowing teachers to find appropriately targeted activities for developing early numeracy according to student need.

NEW

KNP IS INTRODUCED

The KCM began building the Kentucky Numeracy Project in response to a critical need of Math Intervention Teachers funded by Math Achievement Funds who wished to support each other and spread their acquired expertise to more teachers.

2009

2012

KNP LAUNCHES

In February 2011, the KNP resource page launched. The page was accessed approximately 3,000 times by around 700 educators between its launch and June 30, 2012.



2013

KNP GROWS

The number of KNP users grows to 1,025. MITs record and submit classroom videos which are then embedded into the KNP. Work progresses toward vetting the Fluency Assessments as reliable and valid measures of student progress and need.

Rather than planning instruction by turning a page in a teacher's guide, the KNP system supports teachers in gathering and analyzing data to understand why a student is having difficulty and then select tasks from the bank of activities that support in-depth understanding and skill.

KNP GOES NATIONAL

The KNP grows to include 415 tasks that support in-depth understanding and skill. In fall 2013, the KNP becomes freely available to all educators across the nation, resulting in users from 48 of the 50 states accessing the site. The Fluency Assessments become available online and the related printable materials are made tablet-friendly.



2015

2014

KNP EXPANDS

KNP entries are made more accessible through KCM's social media sites, especially Pinterest. Entries are also expanded to include Family Math Fun webpages, which can be accessed by parents or printed and sent home by teachers. Fluency assessments use increases with the implementation of the Fluency Development Leader Institute, where MITs are trained in how to administer tests, and then share this knowledge with other teachers in their schools. During 2014-2015, 284 teachers administered 12,234 Fluency Assessments to 2,849 students.



Find Kentucky Numeracy Project supporting resources HERE.



2016

FAMILY MATH



A Family Math website was added to make searching and accessing the Family Math Fun Webpages easy for families. The site also features online games for students and resources for parents. 2015-2016 saw 6,204 activities accessed, a dramatic increase from 688 in just the previous year. Official users also saw a 98% increase. The guide extended its reach, finding a large number of non-Kentucky users, including users from 4 countries outside of the U.S.

2017

RESOURCES FOR ALL



The KNPIG houses a database of more than 500 research-based activities that can be searched by standard, grade level, fluency benchmark, task group or setting. 2017 also marks the inclusion of KNP resources in KCM professional learning courses, which continues to present day.

2018-2019



SUPPORTING EDUCATORS

In 2017-2019, fluency assessments were administered a total of 6,724 times.



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Kentucky Numeracy Project

VIRTUAL RESOURCES CREATED

2020

Over 200 Jamboards and Google Slide activities and virtual manipulatives are created to support virtual instruction, many of which are direct adaptations of KNP activities.



2021

STANDARDS ALIGNMENT

Improved alignment to the Kentucky Academic Standards for Mathematics by directly hyperlinking to specific standards in the KAS document. 2020 also saw the start of Fluency Assessment virtual trainings.

USE OF KCM RESOURCES

795

Kentucky schools have teachers utilizing KNP resources

50

States, plus Washington D.C., have used resources in classrooms

25

Different countries have teachers utilizing resources

1,604

KCM Fluency Assessments registered users

148,809

Uses of the Math Fact Fluency book companion site!

50

States

use KY Family Math resources

79

Countries



VIRTUAL TRAININGS

The KCM furthered its commitment to improving mathematical proficiency with the introduction of virtual Fluency Assessment trainings. This forward-thinking approach not only embraces the potential of digital learning but also underscores KCM's unwavering dedication to fostering mathematical fluency.

2022

WEBSITE MAKEOVER

The KNP website is updated to include an improved user interface, the activities bank updated and renamed KNP Instructional Resources.

2023



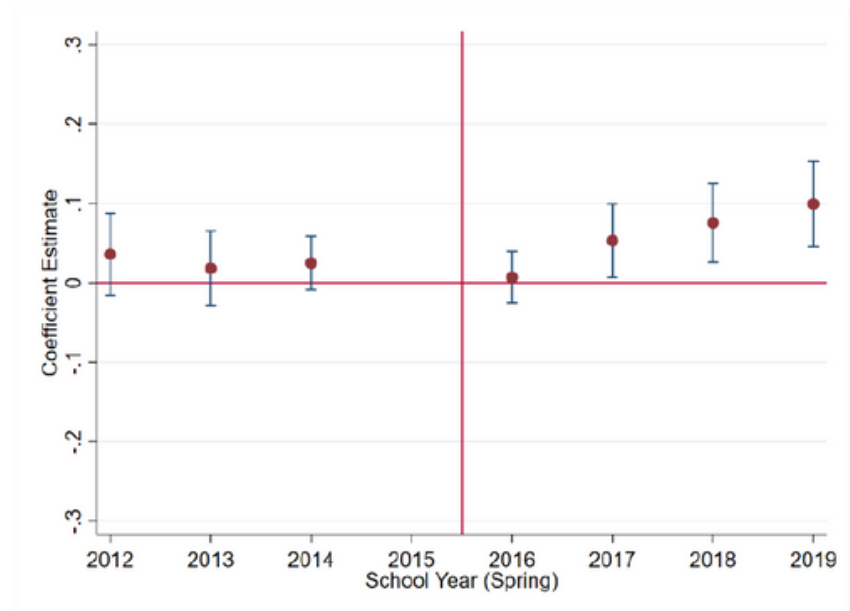
PARTNERS WITH KDE SUCCESSFUL IMPLEMENTATION OF MATHEMATICS ACHIEVEMENT FUND

From 2006 to 2022, KCM supported math intervention in collaboration with the Kentucky Department of Education and the Mathematics Achievement Fund grant program. KCM provided training and ongoing support for Mathematics Intervention Teachers (MITs) in a total of 202 Kentucky schools with research-based techniques to assess foundational skills and teach math effectively. MITs offered intensive intervention to over 3,700 students annually, and provided indirect benefits to more than 30,000 students by sharing knowledge and resources with their colleagues.

In March of 2023, the results of a longitudinal study examining the effects of the MAF grades K-3 math intervention model were published in a working paper. (See Figure 1) The research conducted by the National Center for Analysis of Longitudinal Data in Education Research and the American Institutes for Research found that the benefits of the MAF intervention model were widespread, producing growth in math scores, but also on test scores in reading as well as improved student attendance and lowered disciplinary incidents (Xu, Ozek, Levin & Lee, 2023).

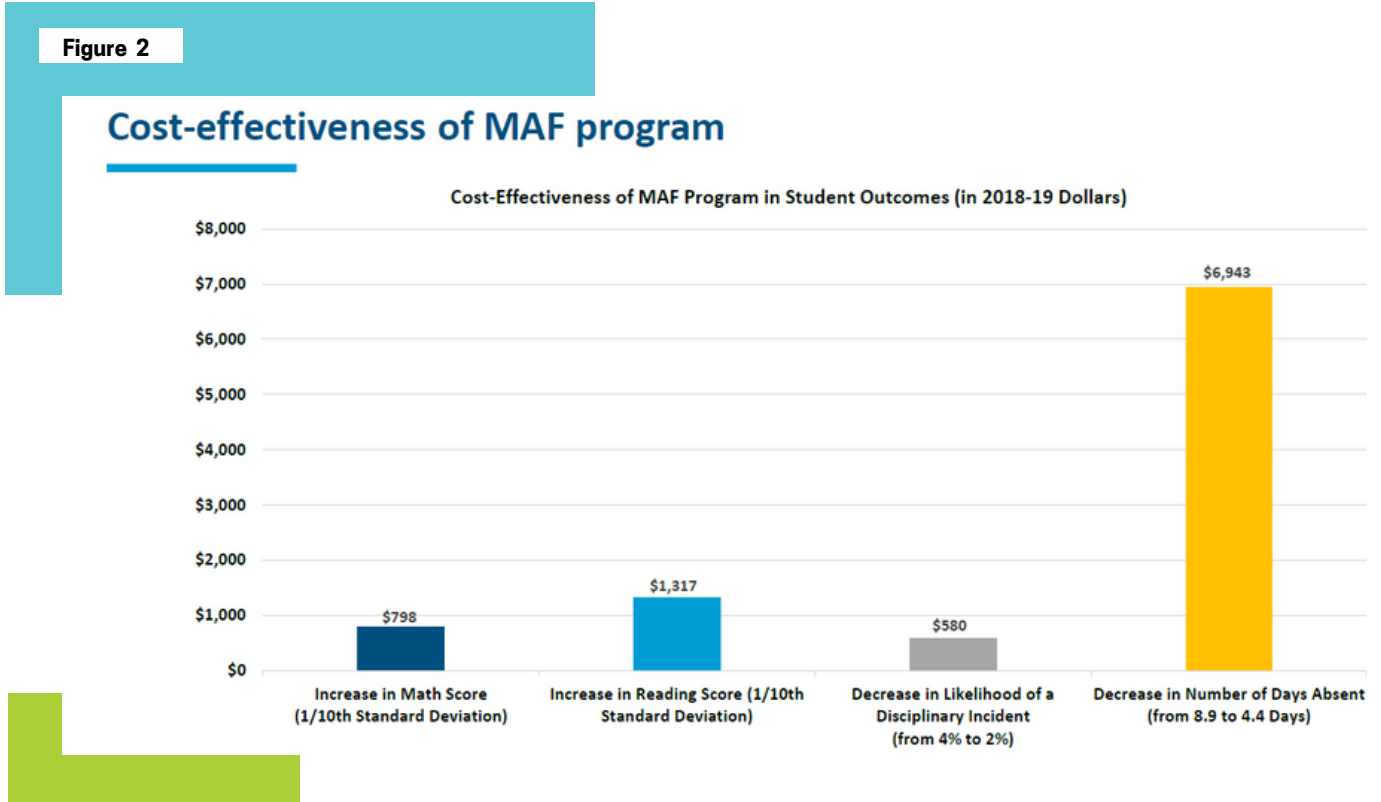
Figure 1

MAF designation improved test scores in math



MAF designation increased math scores in grades 3-5 by 0.1σ after 4 years

Xu and his colleagues found that the design of the MAF intervention was consistent with the characteristics of successful early mathematics interventions. The model involving intensive small-group supplemental instruction by full time MITs, collaboration between interventionists and classroom teachers, combined with personalized support, teacher coaching and support from KCM and KDE staff proved to be a “cost effective blueprint to address the educational needs of students in early grades” (see Figure 2).

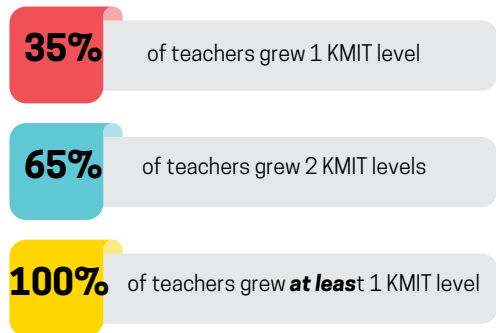


The **2022-2024 Math Achievement Fund Coaching Grants** are a collaboration between KCM, KDE Office of Teaching and Learning, the University of Louisville, M2 Consulting, and REL-Appalachia to provide training and support for mathematics leaders as they provide ongoing support for teachers. The KCM supports the MAF coaches by providing resources, coaching support, and content support for teachers. The coaching model is getting national attention for its comprehensive support and evaluation rubric.

KCM provides regional consultants who partner with math coaches in schools to support mathematics instruction through Cognitive Coaching. KCM collects the data using the Kentucky Mathematics Innovation Tool and Mathematics Coaching Rubric. All customized for Kentucky.

Promising 2023 math coaching data shows positive impact on:

- **13** coaches
- **92** teachers
- **279** classroom observations
- **~5,000** students



PROFESSIONAL LEARNING FOR MATH EDUCATORS AND LEADERS

GROWING TEACHER LEADERS AND MATH SPECIALISTS

Our KCM expert-developed courses have offered informative, interactive opportunities for math educators while creating a supportive environment for them to expand their mathematics content and pedagogical knowledge. We design experiences for teachers as continuing learners. Some of the key professional learning experiences (PLEs) the Kentucky Center for Mathematics has designed and orchestrated for teachers and school leaders are detailed below.

KCM partnered with the Erikson Institute, the nation's premier graduate school in child development, to provide high quality learning experiences for Kentucky preschool teachers. The **Erikson Early Mathematics Collaborative (EEMC)** delivered a series of learning lab experiences with evidence-based strategies for engaging preschool and kindergarten students in deep mathematical content. The course focused on the Big Ideas in early childhood mathematics, which include number sense, spatial reasoning and measurement. Leaders in early childhood education at the Erikson Institute developed innovative material that was used in an additional **Foundations for Early Childhood Mathematics** professional learning experience. Seven cohorts of participants in this experience explored ways to inspire children's passion for mathematics through developmental discussion and high-impact, evidence-based strategies.



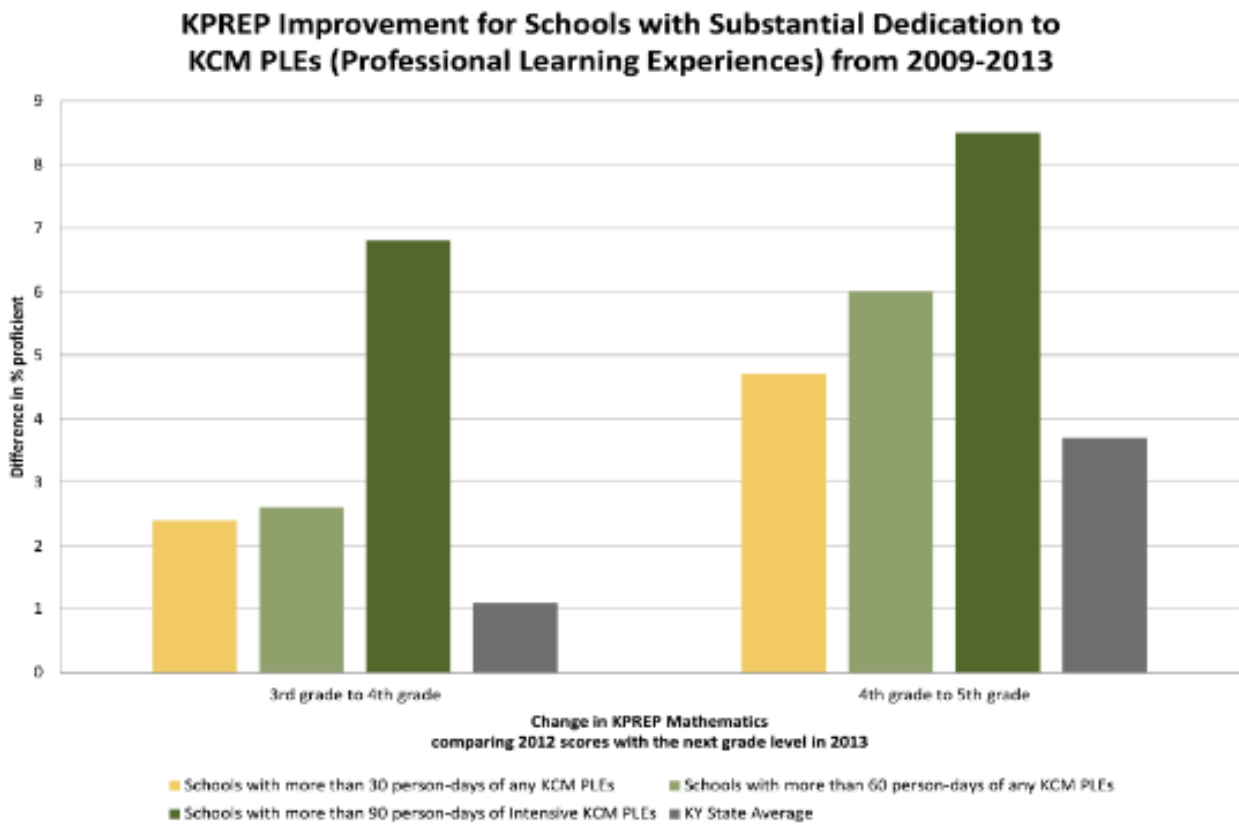
"This has been so powerful to me and has challenged traditional thinking of how a math class should run. I'm excited to see how far my students can go."

Enacting Effective Response to Intervention (EERTI) capitalized on the community of highly trained mathematics intervention teachers (MITs) to facilitate Math Circles. These Math Circles were professional learning communities headed by MITs who were provided with training and resources from KCM. The PLCs were organized around developing a greater understanding of fluency within the standards for mathematics.

MaRTI Plus (Mathematics Response to Intervention Plus) was funded by a Mathematics Science Partnership grant distributed by the Kentucky Department of Education in 2013. This initiative expanded the work of the primary mathematics intervention program in order to help teachers in grades 3-5. The primary goals were to serve schools' needs to effectively implement the Kentucky Core Academic Standards for Mathematics and Response to Intervention while improving teacher practice, leading to gains in student achievement. Four phases of professional learning, each lasting five days focused on: 1) addition and subtraction; 2) multiplication and division; 3) fractions; and 4) algebraic reasoning. **MaRTI Middle** expanded this professional learning into grades 6-8.

The **Kentucky Numeracy Project Intensive** ten-day course was built around Add+Vantage Math Recovery® and was designed for elementary grade teachers and interventionists to learn and practice assessments and teaching strategies for advancing students' foundational number knowledge, including addition, subtraction, multiplication and division. This course adds additional training days and materials to the standard AVMR course to focus on the Kentucky Academic Standards important to early numeracy.

Figure 1



In KCM's most rigorous learning experience, Math Recovery Intervention Specialists (MRIS), elementary teachers who deliver intensive mathematics intervention to students at different ability levels, developed expertise in mathematics, through study, practice, collegial reflection, and application of tools and strategies for assessing and advancing student numeracy, based on the Learning Framework in Number.

The **Stages of Early Arithmetical Learning (SEAL)** identified the progression through which young children make sense of quantity, as well as addition and subtraction. In PART A of this KCM course, participants are introduced to the SEAL through the use of video exemplars and discussion. In PART B, participants connect the SEAL to the Kentucky Academic Standards for Kindergarten and First Grade and explore instructional experiences that support students in meeting those standards.

“My participation in the KCM as a Mathematics Intervention Teacher has literally been life changing. I have learned most importantly, HOW children learn math and WHAT I need to do as an educator to make certain they learn it.”



The **Comprehensive Course for Primary Grades** was designed for classroom, special education and mathematics intervention educators, specifically those working with grades K-2. Cohorts of educators engaged with diverse pedagogical strategies which enabled them to assess, support and advance students’ mathematical knowledge and skills. Topics of this course encompassed counting and cardinality, number and operations, early algebraic reasoning, conceptual place value, measurement and data, and math/literature connections- all parallel with the research-based strategies of the Kentucky Academic Standards.

Specifically designed for grades 3-5 teachers, the **Comprehensive Course for Intermediate Grades** utilized strategies and math resources in order to expand their students’ mathematical mindsets. Also aligned with Kentucky Academic Standards, this ten-day course targets teachers’ understanding of instruction in the areas of number and operations, place value, fractions and fraction operations, algebraic reasoning, and the utilization of KCM Fluency Assessments, which enable the identification of student learning needs.

In the one-day **Exploration in 3rd Grade Fractions** course, teachers explored hands-on activities designed to support students in developing conceptual understandings of fractions as numbers. Teachers deepened their understanding of fraction standards, seeing them as part of a coherent progression.

Building Numeracy in the Middle Grades, a year-long, in-depth course, provided teachers with information and materials to enable them to strengthen mathematics instruction by building from students’ current knowledge. Teachers explored the power of representations, problem strings, and use of reasoning strategies to develop proportional reasoning and algebraic thinking in their middle school students.

The KCM partnered with Kentucky Adult Education to provide **Math for Adult Education (M4AE)**, a professional learning series for adult education teachers that revolved around a mathematical topic or idea with an emphasis on building conceptual learning by addressing gaps in student understandings.



KCM GRANTS

During the 2019-2020 academic year, several KCM staff members designed and delivered virtual professional learning experiences in order to highlight the coherence and connections in the Kentucky Academic Standards across grade levels. The KCM Support for Kentucky Academic Standards Coherence and Vertical Alignment Modules provided three sets of modules for teachers from pre-K through high school:

- Explorations in Number Sense and Operations for Grades P-1
- Connections Between 5th Grade Measurement/Data & 6th Grade Proportions/Statistics
- Transition from Middle Grades Ratios & Proportions to High School Algebra & Geometry



Kentucky Center for Mathematics professional staff members developed high impact online professional development courses focusing on the Eight Mathematics Teaching Practices. The 2021-2022 KDE Mathematics Teaching Practices Grant, also in partnership with the KDE Office of IDEA and Preschool, Kentucky Valley Education Cooperative (KVEC) and the University of Kentucky enabled teachers to bring research-based mathematics instruction to their classrooms as they integrated new instructional approaches and technology into their teaching practices.

The KCM is currently partnering with the KDE Office of Innovation, Student Achievement Partners, and XQ on a project to create more opportunities for success in Algebra 1. The **XQ High School Badging Initiative Grant** is being designed by educators to give students greater flexibility, agency and relevance in Algebra with the goal of better connections for students.



KCM COLLABORATIONS

Post-secondary

The Kentucky Center for Mathematics has partnered with many of the Commonwealth’s post-secondary institutions since its founding in 2006.

In 2009, the KCM founded Noticing Numeracy Now (N3), a collaborative research effort between six public post-secondary institutions to refine elementary pre-service preparation in mathematics. Research for the initiative was funded by a collaborative grant from the National Science Foundation. Project activities were designed to enhance the professional noticing capabilities of pre-service elementary teachers. Professional noticing is defined as a set of practices that help teachers observe, interpret, and respond with effective mathematics instruction over three components: Attending, Interpreting, and Deciding (Shack, Fisher, Thomas, Tassel, & Yoder, 2013). The grant project ran from 2011-2013 with follow-up research and analysis continuing until 2020. Eight professional journal publications and six national conference sessions were generated from the educators’ experiences and research follow up.

N3 Institutions		
		
		

In 2015, the KCM created the Kentucky Mathematics Educator Development group, an association of university math department chairs that met several times a year. This association worked toward creating coherence across the continuum of mathematics courses, as well as fostering productive connections across institutions. In 2017, the group became an affiliate of the Association of Mathematics Teacher Educators and was renamed the Kentucky Association of Mathematics Teacher Educators (KAMTE). During the 2018-2019 academic year, KAMTE a Statistics Education workshop and a summer institute to dive into the AMTE Standards for Preparing Teachers of Mathematics. The organization began publishing a scholarly, peer-reviewed journal for practitioners, The Kentucky Journal of Mathematics Teacher Education in fall of 2022.

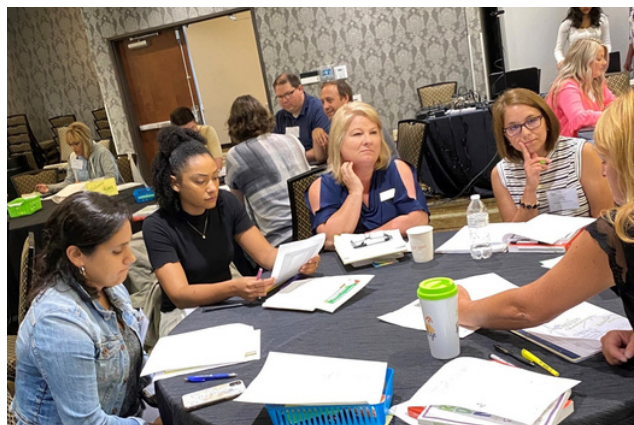
Currently, the KCM has direct partnerships with four Kentucky universities: Northern Kentucky University, the University of Kentucky, the University of Louisville, and Western Kentucky University. The Faculty Associates from these institutions enrich and inspire Kentucky educators through their expertise and passion for mathematics and mathematics education.





KENTUCKY MATH TEACHER LEADERS

Kentucky Mathematics Teacher Leaders (KyMTL) officially launched in July 2020, in response to the scaling initiatives brought forth in KCM's new strategic plan. This collection of enthusiastic classroom educators is united in their unwavering dedication to mathematics education. They are selected through an application process and guided by the KCM to collaborate with like-minded teachers from across the Commonwealth, refining and broadening their skills in leadership, mathematics content, and pedagogy.



The annual KyMTL summer workshop provides a time for these statewide leaders to collaborate and envision mathematical excellence in their classroom, school, district and state. The leaders immerse themselves in learning, using comprehensive strategies as education faculty experts share insights on nurturing a growth-oriented learning mindset. Outside of the summer workshop, the KyMTLs meet monthly and attend a winter workshop, staying committed to strengthening the skills needed to lead change in their classrooms, schools, and beyond.

Under the direction of the KCM, KyMTL's will become true leaders and agents of change in their schools and districts, across Kentucky and in numerous nationwide initiatives. These leaders will realize their full potential and learn more about best practices in teaching mathematics from national experts.

KCM CONFERENCE

The Kentucky Center for Mathematics stands as a beacon of excellence in the realm of mathematical education. Each year, it orchestrates a multi-day conference that caters to a wide spectrum of educators, from Pre-K teachers to scholars in graduate school. The first conference was held in 2009, and since then a small get together has transformed into a much-anticipated annual event. This gathering serves as a fertile ground for the exchange of ideas, methodologies, and best practices in the field of mathematics education. Attendees are treated to a diverse array of workshops, seminars, and presentations, all meticulously curated to provide both inspiration and practical tools for educators and learners at every stage of their mathematics education journey. The conference is a testament to the center's unwavering commitment to fostering a culture of mathematical excellence, ensuring that the torch of knowledge burns brightly for generations to come.

“The annual KCM conference has always been the best professional development of the year due to the wide range of topics, experiences and grade levels.”



REFERENCES AND RESEARCH

Research

Cutting edge mathematics education research

Share

Disseminated to KY teachers through KCM courses and resources

Scale

Research scaled across the state of Kentucky

Eisenhardt, S., Fisher, M., Schack, E., Tassell, J., & Thomas, J. (2011). Noticing Numeracy Now (N³): A collaborative research project to develop preservice teachers' abilities to professionally notice children's mathematical thinking. *Research Council on Mathematics Learning Annual Conference*. Cincinnati, OH.

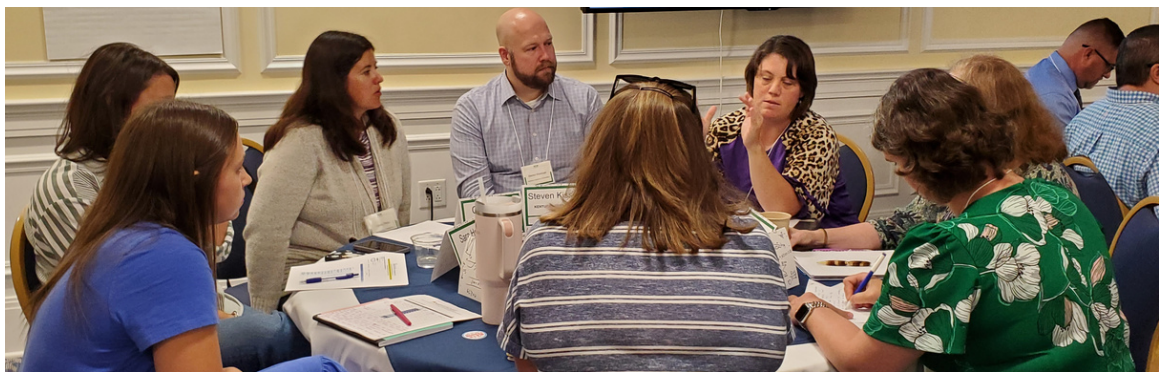
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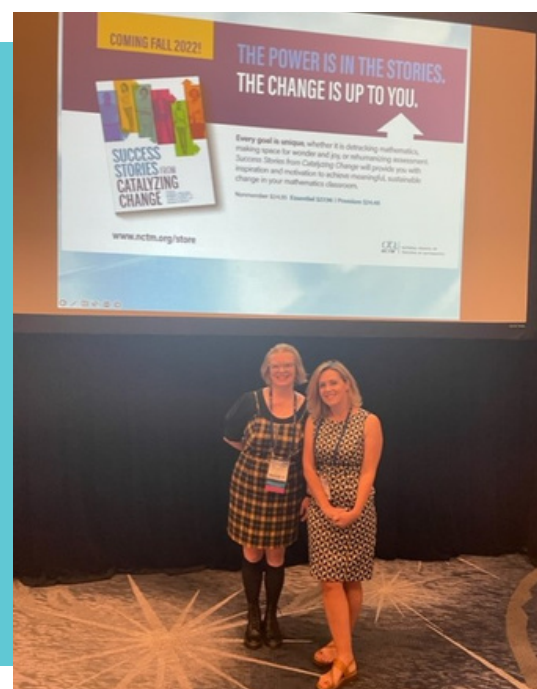
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Sharing Research

KCM maintains a Research and Publications page for teachers to access the latest information in math education. Find that page [**HERE**](#).



TEACHER STORIES



Sumer Smith
Regional Consultant

“Concept before convention; Reason before rules; Make sense before symbols; Learn before labels; Knowledge before notation.” These powerful words forever changed my teaching of mathematics. In the summer of 2018, I spent 8 days across the span of several months and alongside many other eager Kentucky elementary educators, learning just what those

words mean for our youngest learners. I was afforded this opportunity through the Mathematics Achievement Fund and was incredibly humbled to be a “plus-2” teacher for my Jefferson County School. Through this position, I participated in the Kentucky Center for Mathematics’ (KCM) Comprehensive Course for Primary. This course, led by Regional Consultant Lisa Riggs, changed my instruction day by day. What initially was a deep dive into my own understanding of early math concepts and pedagogy, became me scheduling meetings with other primary teacher-teams to share my new knowledge so they could also integrate bead racks and introduce new concepts with literature.

Within that year, the KCM had helped form my pedagogy, gotten manipulatives and games in my students’ hands, and developed a passion in my heart to pursue higher learning in math education. By 2020, I had completed my Elementary Math Specialist endorsement and became a leader in my school for mathematics professional development. Of course, with the COVID-19 pandemic introducing many of us to remote work, I was aching for a community that I could continue to learn from and engage in meaningful math education discourse. I found this sense of community in the incredibly timely formation of the KCM’s Kentucky Math Teacher Leaders (KyMTL).

KyMTL gave the unique experience of professional development, comradery, and connection with other dedicated math teachers from across the entire Commonwealth. Through KyMTL, I put my life-long learner mindset to work by engaging in math tasks, I learned from national leaders in Math Education, I reflected and refined my own practice, I designed professional development plans with my Jefferson County cohort, and I made lasting connections with the very people that jump started my math leadership journey—the KCM. These connections made way for several outstanding KyMTLs, including me, to lead the Kentucky Department of Education (KDE) and KCM’s Mathematics Teaching Practices Training Academy. From 2021-2022, we led multiple cohorts of Kentucky teachers through a 10-week course dissecting the Eight Effective Mathematics Teaching Practices and applying them into their pedagogy.

This beautiful journey of growth, learning, and leadership granted to me by the KCM has led me to where I stand now: a Regional Consultant for the KCM. Those powerful words that forever changed my teaching—“Concept before convention; Reason before rules; Make sense before symbols; Learn before labels; Knowledge before notation”—are now the pillars that my work stands upon and the concepts that I share through my courses for Kentucky teachers. What was once a lasting impression from the KCM’s Comprehensive Course for Primary is now a gift I can pass forward to teachers seeking to grow their understanding and pedagogy.





Jennifer Donnelly Continuous Improvement Coach

“During the middle of my teaching career as a middle school math teacher, the professional learning opportunities offered from KCM were truly a game changer! I learned so much from KCM staff and people like Anne Burgunder. Not only did I learn math teaching strategies but KCM truly shifted my beliefs about teaching and learning in a powerful way. KCM provided me the opportunity to learn through experience. Their professional learnings, enabled me to create a network of colleagues from across the state and experience teaching strategies and philosophies in real classrooms. They also challenged me and invested in my growth as a professional by providing leadership opportunities. KCM was one of the catalysts that not only improved my teaching, but gave me the confidence to become an instructional coach. KCM continued to provide coaching support as I navigated how to effectively support teachers. I now serve the state as a Continuous Improvement Coach. As I interact with schools and teachers across the state, I continue to see the positive impact of KCM on teachers and their students! I have learned with KCM for almost 10 years and will always know that I can reach out to their organization for support and quality learning.”

RESPONSE TO COVID-19



Challenge:

Determining how best to support teachers and students when school went from in-person to virtual and hybrid.

Opportunity:

KCM has been holding statewide meetings with teachers from its beginning to bring people together from across the state for course follow-up and collegial meetings using various mediums (Centra, WebEx, Zoom).

Mathematics teachers needed a community of professional learning to help navigate this unprecedented time. Our Executive Director, Kelly DeLong, saw an opportunity to ask teachers what they need and pull educators together to process the transition and participate in 30-minute virtual sessions to get resources and strategies to support student learning.

Services:

KCM educators worked to support teachers facing virtual and hybrid instruction through creating:

- a web page of virtual resources
- a YouTube channel with video instruction tutorials
- Google Slides and JamBoards for virtual instruction
- virtual book studies
- updated course curriculum
- virtual conference with recorded sessions and free registration for all teachers

Caroline Broering, KCM Administrative Assistant, single-handedly boxed and shipped thousands of math materials to teachers all over the Commonwealth.

Team KCM created a companion website for the national bestselling book, *Math Fact Fluency*, by KY's own Dr. Jennifer Bay-Williams.



KENTUCKY MATH SUMMITS

The Kentucky Center for Mathematics (KCM), Kentucky Council of Teachers of Mathematics (KCTM), and Kentucky Association of Mathematics Teacher Educators (KAMTE) collaborated on... two productive summits, one in Berea, KY on September 28, 2023 and one in Hopkinsville, KY on December 4, 2023. Over one hundred dedicated Kentucky mathematics experts gathered to brainstorm possible trends and solutions to advance mathematics education across the Commonwealth.

The Summit had three goals:

- to harness the collective experience of the attendees to analyze NAEP/Kentucky Summative Assessment data to pull out meaningful findings and questions;
- to examine the benefits and constraints of the current university approach to teacher preparation and identify areas for improvement; and
- to examine what Kentucky teachers are doing currently to influence student achievement and then explore what teachers, administrators, legislators, and others might do to scale successful practices and support future initiatives for improving student experiences and outcomes in math classes.

The group identified questions for further research from the in-person data analysis including:

- How much time each day do students get in core mathematics instruction at each grade level? Is this time spent on grade level instruction?
- What different types of professional development are needed at the elementary, middle, and high school level?
- Is the format of the online assessment a factor in student scores?

The pre-service teacher preparation discussion identified good connections between research and practice, while acknowledging the need for more course hours of specific math content and pedagogy, and more focus on preparing classroom teachers to serve as mentors to pre-service and new teachers.

In the “Kentucky Solutions for Kentucky Teachers” segment, participants identified the use of data, both individually and in PLCs, as a way teachers are currently making informed instructional decisions. Teachers are also beginning to have more intentional incorporation of high-yield instructional strategies, including vertical coherence across grades. More support for professional learning and coaching and funding for both teacher and student resources were identified as needs. Educators saw the summit as the beginning point for greater collaboration and continuity in math instruction across the state.

A separate brief is being published to share the full range of information gathered and next steps in implementing the resulting recommendations. As Kentucky continues to strive for excellence in mathematics education, the knowledge and insights gained from this summit will undoubtedly play a pivotal role in shaping the future of the state's educational landscape.



SUMMING IT UP



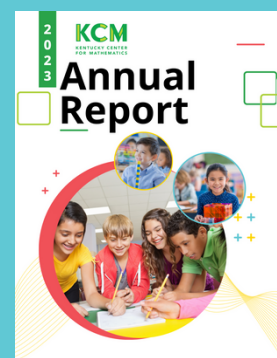
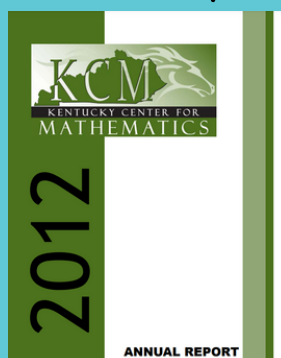
The Kentucky Center for Mathematics is prepared to play a pivotal role in continuing the Commonwealth's efforts to enhance student success in mathematics. We have a proven track record of success as evidenced by the research findings.



- Creating and sharing quality teaching resources
- Providing on-going learning opportunities for teachers with amazing materials for classroom use
- Collaborating with higher education partners and state agencies
- Advising interested parties regarding mathematics content, standards, teaching practices, and research and trends in math education

Annual Reports

Each year the KCM publishes an annual report to detail the substantial impact of the center's outreach on the mathematics educators and students throughout Kentucky. A backlog of these reports from 2012 - current can be found [HERE](#).





KENTUCKY CENTER
FOR MATHEMATICS

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A circular graphic composed of green text arranged in a circle. The text reads 'LEADING LEARNING LAUNCHING' in a clockwise direction. The circle is partially obscured by a red rectangular block on the left side.

LEADING
LEARNING
LAUNCHING

