

THE KENTUCKY CENTER FOR MATHEMATICS

ANNUAL REPORT



2014

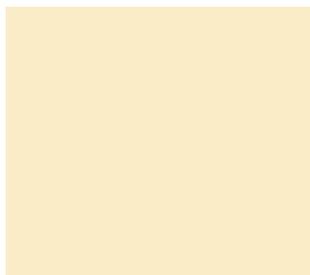


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INTRODUCTION

The KCM (Kentucky Center for Mathematics), established by the Kentucky General Assembly in 2006, supports diverse teacher and student populations across the Commonwealth. The KCM is a leader in the evolution of mathematics teaching and learning. At the heart of the KCM's mission is the foundational belief that mathematical proficiency is a gateway skill necessary for success in school and career.

The KCM utilizes research-based strategies to facilitate improvement in teaching practices, which in turn leads to improved student achievement in mathematics. The KCM maintains a broad and comprehensive focus on mathematics education and educators, ranging from early childhood through adult education.

This annual report contains highlights of the KCM's state-wide work from July 1, 2013, to June 30, 2014. The KCM acts as a clearinghouse for information about professional learning experiences; collaborates, advises and disseminates information; and provides sustained professional learning experiences to develop teacher leaders with a focus on improving student achievement.

The following initiatives represent a fairly comprehensive outline of KCM activities and efforts, all of which support Senate Bill I (2009) and related state-wide initiatives:

Develop teacher leaders - KCM equips teachers to become confident decision-makers who employ research-based tools and strategies to improve student achievement in mathematics.

Foster learning communities - KCM brings educators together to share knowledge, strategies, and resources in a supportive environment, growing their expertise and passion for mathematics education.

Share and create resources - KCM provides professional learning experiences and instructional tools that are research-based and aligned with the Kentucky Core Academic Standards for Mathematics, including content and practice standards.

Advance knowledge - KCM values, conducts, and disseminates mathematics education research to strengthen the foundation of educational practice and policy.

2013-2014 HIGHLIGHTS

1,459

Individuals participated in a KCM event.

32,000

Hours of KCM professional learning were experienced by participants.

863

Kentucky educators are now registered users of the KNPIG site.

93

Kentucky counties worked with KCM during 2013-2014.

During 2013-14, The KCM offered 1,813 hours of PLEs (professional learning experiences) to over 1,450 of Kentucky's educators, resulting in over 32,000 person-hours of training. These educators represented 93 different Kentucky counties and directly impacted more than 3,700 students. Additionally, the teachers that KCM serves, in turn, support other educators by sharing their expertise.

One participant who attended a 2013-14 KCM course offering wrote:



“This training will be very beneficial to me for years to come. I greatly appreciate all of the resource books, manipulatives, and ‘make and takes.’ In my 8 years of teaching, this PLE was by far the best use of my time. Thank you!”

KCM also supports educators by providing research-based tools and strategies, in support of professional learning, that are teacher-centered, student-focused, sustained, and job embedded.

One such tool, the KNPIG (Kentucky Numeracy Project Intervention Guide), an online resource which provides lesson plans, printables, and student instructions, has 863 Kentucky educators registered as site users (with 761 registering in 2013-14). In addition, 314 out-of-state educators representing 48 different states, as well as 3 countries, are now registered KNPIG users.

LETTER FROM THE EXECUTIVE DIRECTOR



Dear Fellow Kentuckians,

Before arriving at the KCM, I was very aware of Kentucky's reputation for excellence and leadership in education. However, only upon arriving did I truly understand the dedication, commitment, talent, drive, coordination and teamwork on the

part of all Kentucky educators that were behind this well-deserved legacy. As I enter my second year as executive director, I can state emphatically that it is an honor and a privilege to be here and to work with such dedicated and unselfish people with a shared vision for a better Kentucky!

With the help of the KDE (Kentucky Department of Education), the CPE (Council on Postsecondary Education) and the wonderful educators of Kentucky, this past year has been a year of unparalleled growth for the KCM:

- **1,459 education stakeholders from 93 KY counties spent a total of over 32,000 hours in professional learning experiences offered by the KCM, which represents a 61% increase in the number of participants from 2012-13 when 908 individuals participated in KCM offerings.**

- **Almost 1,200 educators from 48 states and 3 countries are registered users of KCM resources, including 863 Kentucky educators.**

The year also saw significant recognition at the national level of KCM accomplishments including:

- **For three consecutive cycles, KCM Community Members have received the bi-annual elementary grades PAEMST (President's Award for Excellence in Mathematics and Science Teaching) - awarded in 2008, 2010, and 2012.**

- **The American Association of State Colleges and Universities selected the Primary Mathematics Intervention Program and the Early Childhood Mathematics Initiative of the KCM as Research and Regional Stewardship Innovative Programs.**

- **KCM Faculty Associate Jonathan Thomas was awarded the 2013 Early Career Scholar Award by the Awards and Endowments Committee of the School Science and Mathematics Association and the 2014 Linking Research to Practice Outstanding Publication Award by the National Council of Teachers of Mathematics.**

With support from the KDE, we began expanding our primary mathematics intervention strategies into intermediate grades through our MaRTI Middle program. And our state-wide elementary pre-service teacher preparation group received a grant from the NSF (National Science Foundation) to support a state-wide collaboration, TECHNO, for elementary school pre-service teacher preparation at five PSIs (post-secondary institutions) in Kentucky. So I certainly feel excited and privileged to have been a part of all these wonderful activities!

Excitement is building as we continue into 2014-15! Incorporating professional noticing strategies into our preschool program, organizing middle school and high school pre-service teacher preparation at Kentucky public postsecondary institutions, and creating a workgroup of Kentucky education stakeholders to take a hard look at how we can help struggling high school students are just a few of the new initiatives we have in the works. We are also reaching out to education stakeholders in order to align our strategic plan with Kentucky's needs and opportunities.

All of us here at the KCM are extremely grateful for the opportunity to work with such wonderful educators in Kentucky, and we truly believe that the best is yet to come!

A handwritten signature in black ink that reads "Daniel McGee". The signature is written in a cursive, flowing style.

Daniel McGee, PhD
Executive Director

PRESCHOOL ERIKSON EARLY MATH COLLABORATIVE (EEMC)



**“EEMC
was by far
the best
training**

**I have attended
in all my 25 years
of teaching
experience. I
absolutely love
teaching math and I
have expanded with
what I have learned
in so many ways.”**

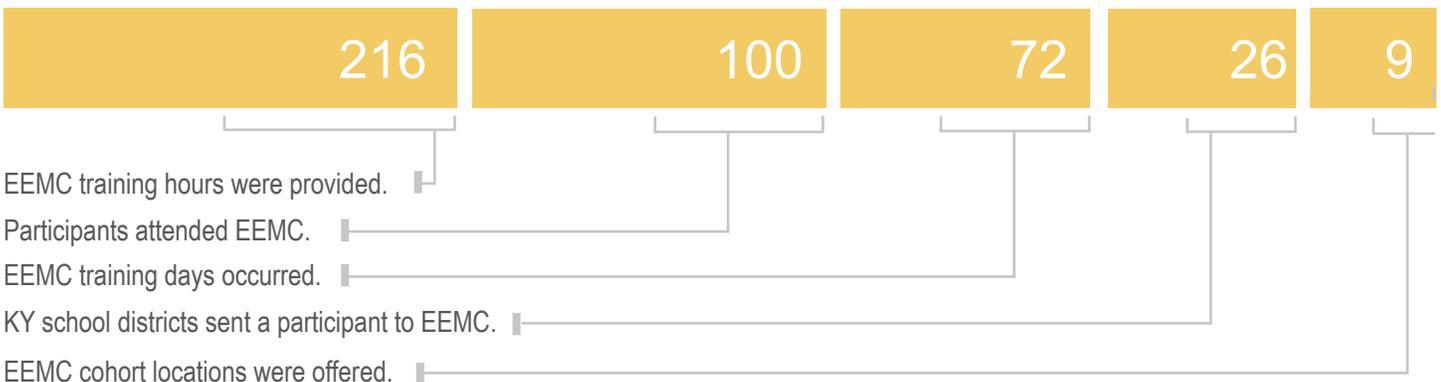
—EEMC Participating Teacher

For the second year, KCM partnered with the Erikson Institute, the nation’s premier graduate school in child development, to provide high quality professional learning experiences for Kentucky preschool teachers.

KCM delivers a series of eight EEMC (Erikson Early Math Collaborative)-designed learning lab experiences with high-impact, evidenced-based strategies and support for engaging preschool students in deep mathematical content. The course focuses on

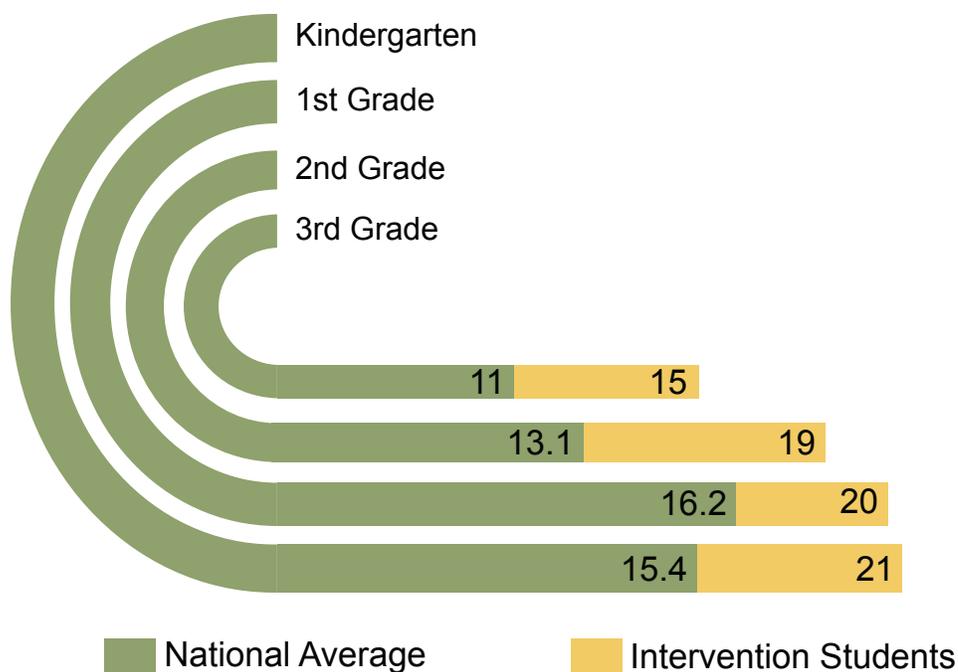
the Big Ideas in early childhood mathematics, which include number sense, spatial reasoning and measurement. Each lab explores the mathematics found in related children’s books connecting math content and literacy.

KCM numeracy specialists facilitate the EEMC sessions under the guidance of the Erikson faculty.



ELEMENTARY PRIMARY MATHEMATICS INTERVENTION PROGRAM

2012-2013 MAP Assessment Average RIT (Rasch Unit) Gains from Pre-Test to Post-Test



The goal of this state mathematics diagnostic intervention program is to expand the capacity of teachers to assess a child's current level of understanding and adjust instruction accordingly. KCM provides highly effective research-based training for MITs (Mathematics Intervention Teachers) at 110 schools in Kentucky in order to develop expertise for best practices in teaching mathematics and specialized knowledge for assessing and advancing foundational fluency. MITs are funded by the Mathematics Achievement Fund appropriated by the Kentucky General Assembly and distributed by the Kentucky Department of Education.

MITs provide intensive intervention to over 3,700 students per year, improving mathematical fluency and achievement. MITs indirectly serve more than 30,000 students annually by sharing their passion and knowledge with colleagues. Collectively, MITs provided approximately 1,334 hours of professional development during 2013-14. MITs from three highly-successful schools

joined their cooperating classroom teacher and principal to share their experience and advice during a panel discussion held during the 2014 KCM Conference. Additionally, seven MITs and KCM staff shared tools and strategies for advancing numeracy as part of the Kentucky Department of Education Webinar Series, "Early Math Success: Strategies and Interventions for Elementary Math Classrooms, Parts 1, 2 and 3," released June 9-11, 2014.

Students receiving intervention from KCM-trained MITs and assessed by the MAP (Measures of Academic Progress) test made impressive growth compared to national norms in mathematics. Primary grades students receiving intervention gained, on average, 11.19 percentile points with 70.66% of all primary grades intervention students exceeding the expected gains based on MAP national norms (from 2012-13 MAP data prepared by HumRRO).

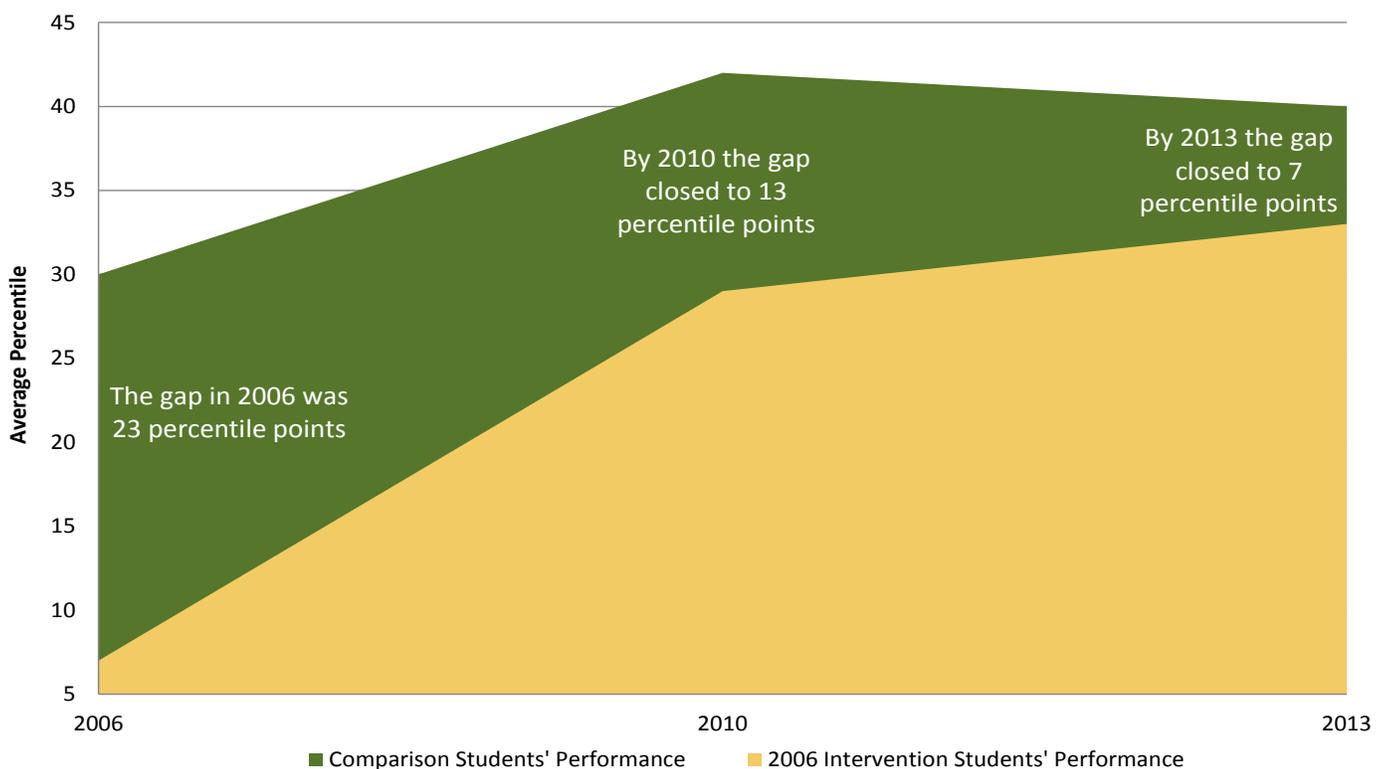
ELEMENTARY MATHEMATICS ACHIEVEMENT FUND



The MAF (Mathematics Achievement Fund) appropriated by the Kentucky General Assembly since 2006, provides funding for schools to pay salary and other expenses to employ a primary grades MIT. These MITs are highly trained to deliver mathematics diagnostic assessment and intervention services. During the 2013-14 school year, 110 schools received \$41,000 from the Kentucky Department of Education. Each MAF school had a full or half-time MIT who was trained and supported by the KCM Primary Mathematics Intervention Program.

Although the MAF supports MITs to provide direct intervention services for students in primary grades, the impact extends beyond those teachers and students. MITs build capacity in their schools and districts, allowing for school-wide growth in teacher development and student achievement. Furthermore, MITs have been instrumental in the KCM's scale-up of the Primary Mathematics Intervention Program through two projects: the Kentucky Numeracy Project and Enacting Effective Response to Intervention.

Intervention Students Closing the Gap and Sustaining Gains



ELEMENTARY ENACTING EFFECTIVE RESPONSE TO INTERVENTION

In an effort to support schools across Kentucky in enacting effective RtI (Response to Intervention) in mathematics, as required by HB 69 (2012), the KCM created the EERTI (Enacting Effective Response to Intervention) network in 2013.

EERTI develops and supports the teacher leadership of Kentucky's existing community of highly trained Mathematics Intervention Teachers through funding provided by the Kentucky Department of Education.



“Participants came to realize the difference between real fluency and memorizing facts. Many commented that they will ‘throw out the old way of teaching math’ and will encourage their colleagues to do the same.”

-EERTI Leader

EERTI groups are professional learning communities led by an MIT who is provided with additional training and resources from KCM. In turn, the leaders provide professional development to classroom teachers. The professional learning is organized around developing greater understanding of fluency within the Kentucky Core Academic Standards for mathematics. Participating teachers gain the capacity to effectively assess and advance students' number knowledge.

During the 2013-14 school year, 17 new EERTI groups met throughout the state equipping more than 240 teachers with an advanced understanding of early numeracy development. Additionally this year, 14 existing EERTI groups continued to meet as part of an EERTI extension opportunity. Participants in phase two of the program engaged in a “Number Talks” book study and received on-site coaching from the MIT leader.

“All the materials have been used since the day I got them and brought them back to my classroom. I have been sharing these ideas with my co-workers. This has been the most worthwhile training I’ve been to in a long time.”

-EERTI Participant

241
Phase I (New) Participants in
2013-2014

103
Phase II (Continuing)
Participants in
2013-2014

ELEMENTARY MATHEMATICS RESPONSE TO INTERVENTION (PLUS)



“The changes I have seen in my students have been more confidence and patience in attempting to solve problems that once before they would have left blank....It has sparked creative thinking on how to approach problem solving.”

-MaRTI Plus Participant

MaRTI Plus (Mathematics Response to Intervention Plus), funded by a federal Mathematics Science Partnership grant distributed by the Kentucky Department of Education, builds on the Kentucky Center for Mathematics Primary Mathematics Intervention Program to help intermediate grades (3, 4, 5) teachers. The primary goals of this project are 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. 65 teachers from 24 school districts participate in 20 days of professional learning experiences held between July 2013 and March 2015, across eight in-person gatherings. Four phases of professional learning, each lasting five days focus on: 1) addition and subtraction; 2) multiplication and division; 3) fractions; and 4) algebraic reasoning to facilitate: shifts in educators' pedagogical content knowledge; transformations in attitudes and beliefs about the teaching and learning of mathematics; heightened competencies for professional noticing; and improved practice. Throughout the course, participants view student videos collected by themselves and others, perform collegial professional noticing, practice ways in which to engage students in implementing the Standards for Mathematical Practice, and acquire tools and strategies for use with their own students.

In addition to the in-person trainings and practical, job-embedded assignments, participants received coaching site visits from their leader, and prepared and delivered eight hours of professional development for the teachers at their schools—thereby internalizing their own learning as they helped others. Many participants also attended the Kentucky Center for Mathematics 2014 Conference, allowing them to further extend their learning experiences as they shared practices and experiences with the greater state-wide professional learning community. Administrators joined their teacher participants for days 1 and 11 of the training, participated in the on-site coaching visits, and supported/assisted with their teachers' delivery of school-based professional development.

1,300

Intermediate Grades
(3, 4 and 5) students
affected as their
teachers implemented
learned strategies from
MaRTI Plus.

450

Teachers received
at least 4 hours of
training, delivered by
participating MaRTI
Plus colleagues.

65

Elementary
Certified teachers
participated in
MaRTI Plus.

34

School
Administrators
participated in
MaRTI Plus.

24

School
Districts
participated
in MaRTI
Plus.

ELEMENTARY KENTUCKY NUMERACY PROJECT

2014-2015

Coming Soon

KNPIG entries will be made more accessible through social media (specifically, Pinterest). In addition, KNPIG entries will include Family Math Fun webpages, which can either be directly accessed by parents and/or can be printed and sent home by teachers.

2013-2014

KNP Goes National

The KNPIG 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.

2012-2013

KNP Grows

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

2011-2012

KNP is Launched

February 7, 2011, the restricted, KNP resource page is launched. The page is accessed about 3,000 times by approximately 700 educators between the launch date and June 30, 2012 and includes the KNPIG (KNP Intervention Guide) and KNP Webinar Series.

2009

KNP is Born

November 2009, the KCM began building the Kentucky Numeracy Project in response to a critical need of MITs who wished to support each other and spread their acquired expertise to more teachers, for the benefit of all Kentucky students.

Realizing the urgency to help more teachers than those attending KCM professional learning experiences, the KCM has 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 KCASM (Kentucky Core Academic Standards for Mathematics) allowing teachers to find appropriately targeted activities for developing early numeracy according to student need.



“I love the way [the KNPIG] correlates with the KCAS, the ‘I Can’ statements, the assessments, the print and video links, the interactive websites, oh my gosh, I just LOVE the whole thing!”

-Teacher, KNPIG User

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 select from the 415 Intervention Guide tasks (task number as of July 1, 2014, but growing) that support in-depth understanding and skill. In the fall of 2013, the KNP became freely available to all educators across the nation.

During 2013-14, 761 new users registered for access to the KNPIG site, bringing the total number of registered Kentucky users to 863. In addition, the site has experienced 7,134 hits from 48 out of the 50 states.

The Fluency Assessments, with eight series of nine tests each, are used by MITs and classroom teachers bi-weekly across 18 weeks to determine student progress toward foundational, conceptual-based fluency and to find learning gaps where more work is needed. During 2013-14, the Fluency Assessments became available online and the related printable materials were



“I am confident that the Fluency Assessments are focused on the most important aspects of mathematical abilities. Many other progress monitoring assessments do not measure what is important.”

-Teacher, Fluency Assessment Implementer

made tablet-friendly. In addition, 7,672 Fluency Assessments were given by 258 Kentucky teachers throughout the year.



MIDDLE & HIGH MIDDLE GRADES MATHEMATICS CONTENT COACHING

Since 2010, KCM has partnered with the KDE to offer content coaching PLEs for educators across the Commonwealth.

 “I have been through another coaching program and numerous PD sessions over my 25+ years in education, and this is the most powerful and practical training I have ever had. It will have an immediate impact on my practice.”

-Coaching Participant

Content coaching provides mathematics coaches, teacher-leaders, and administrators with job-embedded learning opportunities that are aimed at initiating profound, sustainable, school-wide improvements in teaching and learning. The content coaching model works to cultivate a shared understanding of effective

instruction among all stakeholders. This collaboration across roles results in a collective clarity about how to engage students in learning mathematics through well-designed learning tasks and activities.

In 2013-14, 70 Kentucky mathematics coaches and teacher-leaders participated in the content coaching PLEs.

In addition to face-to-face meetings, three online meetings were offered in 2013-14 for content coaching participants. The goal of these online meetings was to extend the professional learning beyond the school-based meetings and provide a forum to support the ongoing development of instructional leaders. Topics covered included: orchestrating rich classroom discussions; changing the role of the student in the instructional process; ways to develop the capacity of students to talk, listen, and reason; and discussion of academic rigor in a thinking curriculum.



 “Those of us who are still in the classroom should have a renewed sense of purpose. We all want to make things better. We want students to have better reasoning skills in mathematics, and this PD provided rich opportunities...”

-Coaching Participant

Through Mathematics Content Coaching, Participants Experienced...

 **Growth** in understanding of and ability to implement mathematics content, while guiding others to do the same.

 **Strengthened Professional Relationships** that guide school improvement for greater student achievement in mathematics.

 **Content Coaching**, which incorporates lesson co-planning focused on the mathematics content, observation of the lesson with scripting and co-leading, and a post lesson debrief with an outline for next steps.

MIDDLE & HIGH MAKING MIDDLE SCHOOL MATHEMATICS ACCESSIBLE



44

Kentucky teachers from nine counties participated in the Making Middle School Mathematics Accessible PLE in 2013-14.



“The information presented in the session was very hands on and can be used in the classroom in any grade level.”

-Making Middle School Mathematics Accessible Participant



“I got to see what thought processes students are going through and where they make their mistakes.”

-Making Middle School Mathematics Accessible Participant

83%

of participants said the course had already impacted their practice before the final training date occurred.

For the second year in a row, KCM worked on closing the achievement gap in middle school by offering a unique PLE designed to bring together middle grades mathematics and special education teachers. This PLE nurtures the collaboration and sharing of expertise across disciplines (mathematics and special education) in order to support teachers to meet students' needs in making mathematics more accessible while maintaining the integrity and rigor of the mathematics.

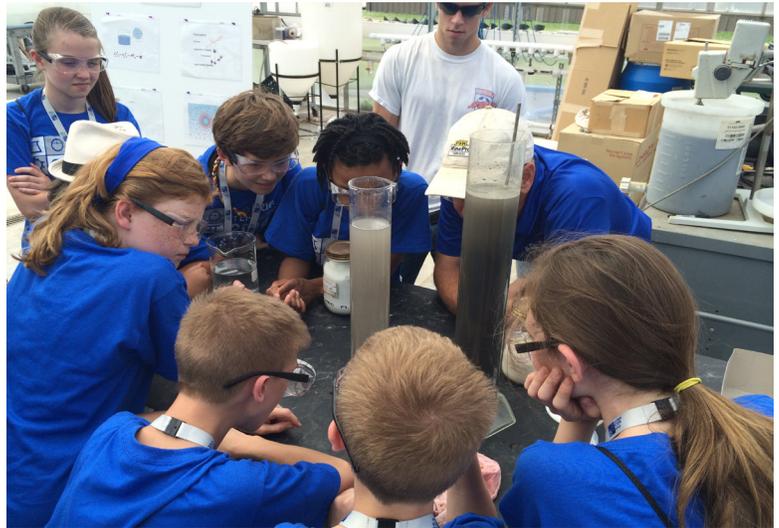
Making Middle School Mathematics More Accessible for Struggling Students was designed by EDC (Education Development Center, Inc.), a global non-profit organization with funding

from the National Science Foundation. In 2013-14, KCM facilitated multiple cohorts of this PLE with the goal of empowering teachers to apply practical differentiated strategies with their students while enacting the school's core mathematics curriculum.

In 2013-14, 44 Kentucky teachers from nine counties participated in the course. Teachers engaged in three days of training spread across three months in order to provide for practical applications of the learning between sessions. Participants explained how this course was targeted to meet their specific needs and included high quality tools and practices to support their teaching and efficacy.

MIDDLE & HIGH SEE BLUE MATHEMATICS CLINIC

The See Blue Mathematics Clinic, an outreach activity hosted by the University of Kentucky's P20 STEM Education Innovation Lab and funded in part by the KCM during 2012-13, has blossomed into an NSF funded project of the College of Education and the College of Engineering at the University of Kentucky. In 2013-14, See Blue demonstrated outstanding achievement and growth in their dedication to inspiring the next generation of STEM learners.



The See Blue STEM Camp, now an NSF funded project (EPSCoR Track III 1348281), does the following:

- Exposes students to a variety of positive learning experiences and career options in the STEM fields.
- Targets middle grades students (grades 5-8), focusing especially on females and students of color.
- Provides authentic hands-on STEM learning environments on UK's campus.
- Utilizes pre-service teachers and graduate students from STEM disciplines in assisting with camp, while also allowing these volunteers to gain valuable content knowledge and experiences in an informal low-stakes environment.
- Partners with area school Youth Service Coordinators to recruit and retain underrepresented populations.
- Works with area inservice teachers who assist with the camp and gain valuable STEM laboratory experience and ideas that they can incorporate into their own classrooms.

See Blue STEM Camp by the Numbers



HIGH & POSTSECONDARY FLIP PROJECT



Project FLIP allows teachers to “flip” the traditional instructional sequence of their classrooms in an effort to better engage students and meet their needs. Teachers record a video lesson and students then review the video the night before as homework. The next day when students

come to class, teachers use class time for more integrated learning that may include classroom discussions, hands-on activities, answering questions, and/or small group work.

Year 1 of the FLIP project (2012) was funded with a \$130,000 grant from the Kentucky Council on

Postsecondary Education with additional support from the KCM, asking teachers to flip at least 10 lessons during the school year.

During the 2013-14 school year, data regarding teacher and student perspectives on the flipped classroom as well as student engagement and instructional practices data were collected from approximately 30 teachers. In general, the data suggests that flipped classrooms have the potential to make a significant impact, but that effectiveness depends upon numerous factors.

To continue further exploration, nearly 30 middle and high school math teachers spent a week training at Murray State and Northern Kentucky University to learn how to flip their classrooms. The project received an additional \$120,000 to expand the program during 2014-15 to include 50 teachers who will pilot flipped classrooms with mentor support from 18 teachers who participated during the 2013-14 school year.

PRIME

The PRIME (Preparing Regional Increases in Mathematics Education) project, funded by the National Science Foundation (award #0934709) and supported by the KCM, is a collaborative effort that exists to increase the number and effectiveness of high school mathematics teachers. The project aims to increase the number and diversity of highly qualified students who graduate as secondary mathematics teachers and increase the number, retention, and effectiveness of secondary mathematics teachers who take positions in high-needs schools.

The project provides two types of funding opportunities with ongoing professional development. Noyce scholarships are available to secondary mathematics majors; for each semester awarded, the student commits to teach one year in a high-need school district. PRIME Internships are available for freshman or sophomores interested in secondary mathematics education as a future career.

As of June 2014, the project has funded 13 interns and 77 student-semesters of scholarships have been awarded to 23 Noyce scholars. In addition, a total of 68 person-years of teaching in high-need districts is currently anticipated, 18 of which have been completed.



The CINSAM Summer Camp Scholar/Intern Experience during summer 2013 was an intensive three-week experience culminating in a week-long mathematics camp for middle grades students. Interns worked with current pre-service and in-service Noyce scholars to: a) plan a creative, but intensive, four-hour lesson for middle grades students, b) create appropriate supplemental materials to support the lesson, c) implement their lesson for their peers and make modifications based on feedback, and d) implement their lesson with the middle school campers.

POSTSECONDARY PROJECT FORCE

Project FORCE (Focus on Occupations, Recruiting, Community, and Engagement) was awarded \$999,930 through the National Science Foundation (NSF) STEP Type 1a program to build coordinated efforts in recruitment and retention across the science, technology, (pre-)engineering, and mathematics (STEM) disciplines at Northern Kentucky University.

The project began in May 2010 and involves the departments of Biological Sciences, Chemistry, Computer Science, Mathematics & Statistics, and Physics & Geology, with support from the KCM. Through a strong collaboration with Project SOAR, PRIME, CINSAM, and Admissions, the Project FORCE team has developed a STEM-wide approach to recruiting.

The two overarching goals of Project FORCE are to: a) increase the retention rate of first-time freshmen who declare a STEM major at NKU from under 30% to at least 60%, and b) increase the number of undergraduates (freshmen and transfer students) who complete a bachelor's degree in STEM at NKU.

Project FORCE has exceeded Goal B with a four-year mean of over 200 degrees conferred and has demonstrated evidence-based practices supporting Goal A. Funding for the project primarily supports students and continues through the 2014-15 academic year.



NOTICING NUMERACY NOW/ TECHNO

N3 (Noticing Numeracy Now) is a collaborative effort, founded by the KCM in 2009, with six public Kentucky postsecondary institutions, designed to refine elementary pre-service teacher preparation in mathematics. The N3 project aims to specifically enhance professional noticing capacities of pre-service elementary teachers in the area of early numeracy. Here, professional noticing is defined as a set of practices that help aspiring teachers observe, interpret, and respond with effective instruction to advance the mathematical thinking of individual children. In 2011, this team was awarded nearly \$200,000 from the National Science Foundation to conduct this work.

At each of the implementing universities, pre-service elementary teachers experienced significant growth in their professional noticing skills, as well as their attitudes towards mathematics teaching and learning. In the summer of 2014, the collaborative team was awarded nearly \$500,000 from the National Science Foundation to expand professional noticing into the area of early-algebraic thinking with pre-service teachers via an electronic professional learning module.

During 2013-14, N3 collaborators continued their dissemination efforts to advance the understanding and application of professional noticing at a national scale. Research from this project has been represented in the Research Trends in Mathematics Education book series and Teaching Children Mathematics. Additionally, this research has been presented at a variety of national conferences including the Psychology of Mathematics Education – International Group and the National Council of Teachers of Mathematics Research Conference.



2014 KCM CONFERENCE FLUENCY FORWARD



“Over the past 10 years, I have attended and presented at more than one hundred conference venues around the nation...the KCM conferences have surpassed them due in no small measure to [its] warm and personal touch.”

-2014 KCM Conference Presenter

The KCM hosted its sixth annual conference on March 10 and 11, 2014, in Lexington, Kentucky. The theme of the conference, “Fluency Forward,” was dedicated to professional learning among P-16 educators working to improve mathematics achievement through the development of mathematical fluency—defined by the Kentucky Committee for Mathematics Achievement

as, “a deep understanding of mathematical concepts, which results in facility to efficiently and accurately access, compare, and apply strategies, knowledge, and skills.”

Over 400 educators gathered to participate in this state-wide event, representing 86 K-12 Kentucky school districts, 10 Kentucky post-secondary institutions, and a variety of educational organizations throughout the state and across the nation. Additionally, 79 different breakout sessions were offered throughout the course of the two days addressing preschool through postsecondary education content.

During the evening of March 10, the KCM hosted a Celebration Dinner at the Lexington Convention Center for all conference attendees. The dinner included remarks from the Kentucky Department of Education Chief of Staff, Dr. Tommy Floyd, who affectionately referred to Kentucky’s teachers as “rockstars”!

402

people attended the 2014 KCM conference.

86

KY school districts were represented.

10

KY colleges were represented.

104

hours of presentation time were logged.

79

breakout sessions were offered.

EVALUATION

CENTER EVALUATION

The KCM provides high-quality PLEs for Kentucky teachers. This successful system of PLEs is based on best practice for engaging adults in relevant and interesting, job-embedded, collegial experiences focused on student learning, leading to increased educator effectiveness in alignment with Kentucky's Comprehensive Professional Learning System for Kentucky Educators.

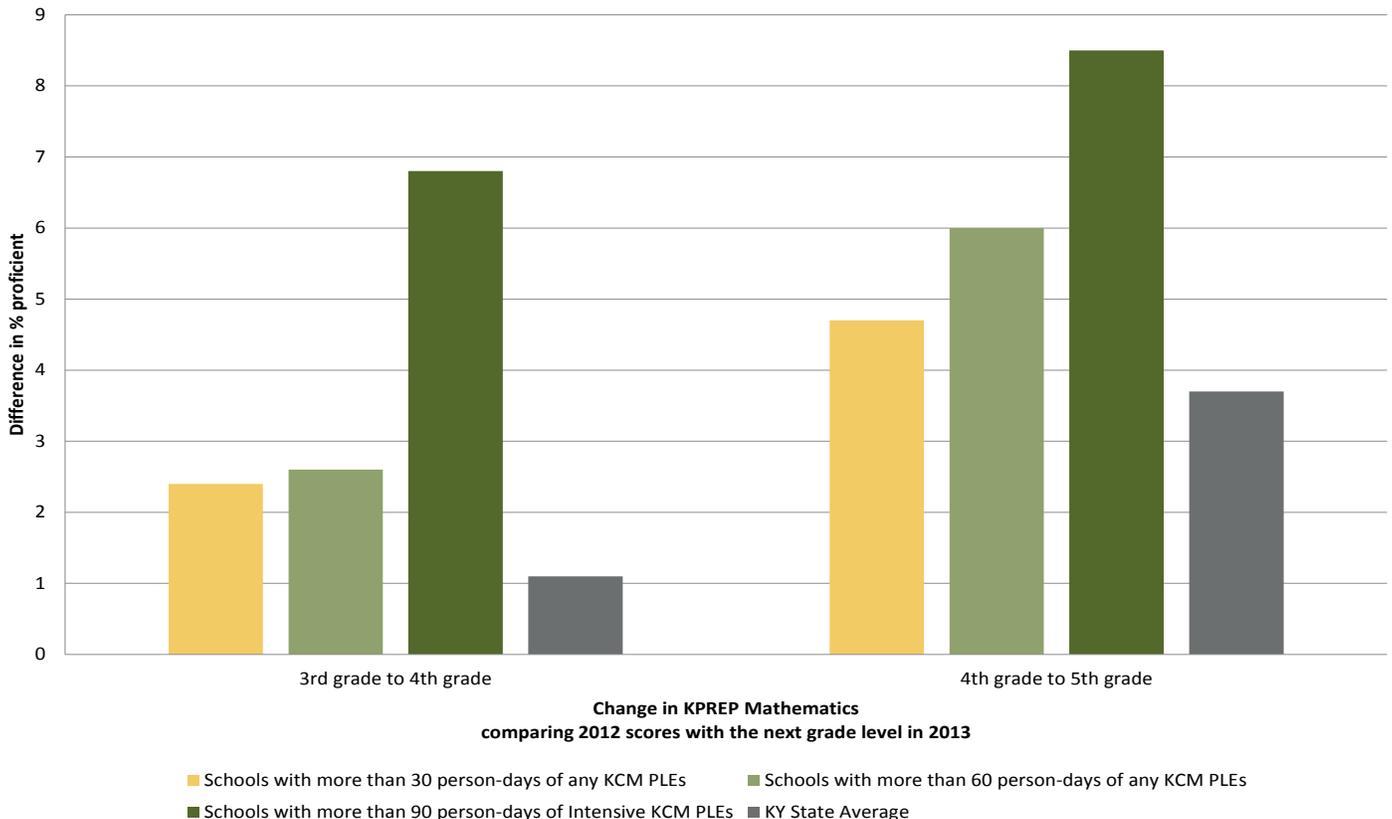
In analyzing the schools participating in the KCM's PLEs, an encouraging trend of sustained engagement is revealed. Of the 235 schools on record as having at least one teacher participating in at least one KCM PLE before July 1, 2013, nearly all (222) have sent the same or additional teachers to subsequent KCM PLEs—a 94% return rate!

Even with the removal of the 110 schools receiving Mathematics Achievement Funds (who are compelled to send at least one teacher to KCM PLEs), a balance of 115 schools voluntarily

sent participants to a KCM PLE. Additionally, the majority (102) of those schools have sustained participation in the KCM's state-wide professional learning community—an 88% return rate. The high return-rate of teachers from these schools and KCM's constancy of purpose in facilitating a growing system of inquiry-based PLEs not only improves teachers' capacity to support student understanding of mathematics, but also provides opportunities for improving school culture. As passion and expertise is developed and reinforced through extended professional learning, it is shared among the community of teachers, resulting in the potential for schoolwide improvements in mathematics teaching and learning.

The graph below indicates strong evidence that substantial and ongoing participation in KCM programs may be associated with greater school-wide improvements compared to the state average.

KPREP Improvement for Schools with Substantial Dedication to KCM PLEs (Professional Learning Experiences) from 2009-2013



BUDGET

FISCAL YEAR 2014 FUNDING*

	Expenditures
Personnel	
KCM Personnel Salary (Full and Part-Time Staff)	\$ 377,908
KCM Personnel Fringe Benefits	\$ 154,069
Faculty (Executive Director, Faculty Associates, Faculty Support for Projects such as FLIP, FORCE, etc.)	\$ 233,148
TOTAL STAFF & FACULTY	\$ 765,125
Other Personnel (Student Workers)	\$ 39,880
Regional Coordinators across the State of KY	\$ 514,213
Other Contracted Personnel (Evaluators, Trainers)	<u>\$ 129,021</u>
TOTAL OTHER PERSONNEL	\$ 683,114
SUBTOTAL PERSONNEL	\$ 1,448,239
Operating	\$ 184, 260
TOTAL EXPENDITURES FY 2013-2014	\$ 1,632,499

In addition to the above expenditures, the following external projects were entrusted to the KCM:	Grant Funding Received
MSP - MaRTI (Mathematics Science Partnership-Mathematics Response to Intervention)	\$ 195,000
KDE - Mathematics Content Coaching	\$ 92,967
KDE - EERTI (Enacting Effective Response to Intervention)	\$ 141,383
MSP - Kentucky Numeracy Project Intensive Plus Grant	\$ 160,000
CPE - Senate Bill 1	\$ 35,277
Funds generated from KCM grants and projects	\$239,990
Subtotal Grants	\$ 864,617

*FY 2014 is from July 1, 2013 through June 30, 2014.



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