

Strengthening the Federal Education Research Engine: Value and Impact

Improving Mathematics Achievement in Kentucky

In 2022, Kentucky students in grades 4 and 8 consistently performed at or below students nationally on the National Assessment of Educational Progress (NAEP) and the State's mathematics outcomes had stagnated or declined over the last decade. To address this, the State legislature redesigned Kentucky's Mathematics Achievement Fund (MAF) to provide training and dedicated time during the school day for school-based mathematics coaches who are charged with improving mathematics instruction for all students in their schools through one-on-one coaching and by leading schoolwide professional learning and other instructional improvement efforts.

To ensure MAF was most effective, the Kentucky Department of Education (KDE) called upon REL Appalachia (REL AP) to help develop a tool to support the training and supervision of MAF coaches. In order to develop the tool and improve student math scores, each engine of Federal R&D was needed. *Let's break it down....*



Engines of Federal R&D:

- **Accountability:** The NAEP scores showed Kentucky that its 4th and 8th graders were performing at or below the national average.
- **Research:** REL AP used foundational research to understand what effective math instruction is and used applied research to help KDE understand its specific math challenges.
- **Data Tools & Systems:** REL AP designed a tool for observation of the MAF coaches to ensure they were being effective.
- **Innovation:** REL AP was able to develop a first-of-its-kind coaching rubric paving the way for similar work in other States.
- **Evaluation:** REL AP collected and analyzed data over two years of the MAF program, enabling real-time learning and program iteration. REL AP used evaluation data to improve coaching and training, including developing new resources and training sessions focused on areas where observations showed teachers needed more support.
- **Communication:** Since the success in Kentucky, REL AP has shared the MAF rubric with other State departments of education: Alabama, Arkansas, Tennessee, and Utah.

Each of the engines of Federal research are a critical piece of this story and led to significant outcomes for students. *Let's look at the results...*

Driving Impact:

- **Students:** 10 MAF schools with students in tested grades had improved their performance on the Kentucky Summative Assessment in Mathematics and, as a group, MAF schools had outpaced the Statewide average 2-year gain.
- **Parents, teachers, school leaders, community:** MAF coaches supported over 176 teachers in 11 elementary schools across Kentucky and 97 percent of teachers who were supported by a MAF coach improved their teaching practice.
- **State Policy and Action:** Using evaluation data demonstrating the success of MAF, KDE leaders have been able to get the Kentucky legislature to buy-in for a new and expanded cohort of 40 MAF schools and coaches.