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## The Cooperative Collaborative of Columbus (C<sup>3</sup>)

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### Introduction to C<sup>3</sup>

In 2020, the Cooperative Collaborative of Columbus (C<sup>3</sup>) formed under the guidance of the Mathematics Teacher Education Partnership (MTE-Partnership). C<sup>3</sup> is a partnership between the Muscogee County School District (MCSD) teachers and principals, the Columbus Regional Mathematics Collaborative (CRMC), and Columbus State University (CSU). Though similar to other NICs in the MTE-Partnership, C<sup>3</sup> is unique in its three-prong approach, outlined in Figure 1, to improving mathematics education in midwest Georgia or the Chattahoochee area. The three-pronged membership of C<sup>3</sup> seeks to recruit and train future teachers from the MCSD at CSU and support these teachers after initial certification through CSU graduate school and the CRMC. Given the unique membership of C<sup>3</sup>, it is important to highlight how this partnership supports and interacts with one another.

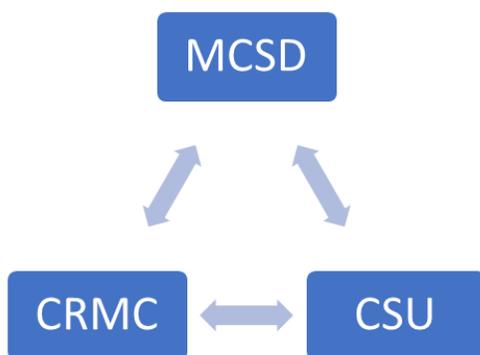


Figure 1. A three-pronged approach to improvement.

### Columbus State University

CSU brings a broad level of support to the C<sup>3</sup>, drawing membership from the dean and the mathematics education program in the College of Education and Health Professions (CoEHP), the mathematics department in the College of Arts and Sciences, and the Uteach program. This broad university platform is building a seamless teacher education experience for teacher candidates. In addition, the program is using a Noyce grant from the National Science Foundation to recruit new teachers into the program and provide financial assistance, professional development, and support, well into the second year of their professional careers.

### Columbus Regional Mathematics Collaborative

The CRMC is a center of excellence that works closely with the CoEHP at CSU. It provides professional support in mathematics education to in-service and pre-service teachers in the greater Columbus area. It encourages teacher networking and collaboration. With resource teachers at the elementary, middle, and high school levels, its resources provide a broad spectrum of support to teachers. Specifically, the CRMC conducts a wide variety of professional development sessions, works with teachers directly in their schools, and provides

curricular and pedagogical collaboration that supports the growth of teacher leaders in mathematics education. This past year the CRMC provided 86 virtual sessions with an average attendance of nine teachers per session. These sessions helped develop skills necessary for the transition to virtual learning. In these sessions the CRMC also solicited feedback for perceived needs and interest in future networking opportunities for teachers.

### **Muscogee County School District**

The MCSD is a large and diverse district with a strong commitment to providing the best mathematics educational experience for its students. The MCSD members represent administration, middle, and high school teachers. Dacia Irwin and Jose Rodriguez worked to create a symposium to help build relationships with teachers in the district. Andrew Smith, Rodriguez, and Irwin were tasked to initially contact a community of mathematics teachers to combine with the members' MCSD math support teams. This pandemic year made these initiatives difficult to implement with increased responsibilities and limited face-to-face opportunities.

With CSU's focus on recruiting, developing, and supporting new teachers, the CRMC's focus on developing and retaining teacher leaders through networking and collaboration, and MCSD's commitment to providing teachers with the resources needed to provide quality outcomes in mathematics, C<sup>3</sup> is uniquely situated to build on one another's strengths and needs.

As a byproduct of the strong partnership between CSU and MCSD, the two announced a job-guarantee program in which any graduate of a CSU education program is guaranteed a teaching position in MCSD (Jones, 2019). In 2018, Go2Teach was formed as a way to "grow your own" teachers from the secondary setting. MCSD provides an elective course for high school students interested in pursuing a career in teaching. Students participating in the course and interested in pursuing a career further, attend CSU and may participate in teaching competitions at the university.

High school students interested in exploring education as a profession are paired with CSU education representatives who communicate with these individuals and help guide them through planned activities such as senior night and full campus visits. They prepare for future teaching experiences by taking part in meaningful pre-teaching activities. Initial credit is also awarded to students moving from the high school course to the education program at CSU.

### **Aim and Goals of C<sup>3</sup>**

The aim of C<sup>3</sup> is that by July of 2022 Columbus State University, the Columbus Regional Mathematics Collaborative, and the Muscogee County School District will align goals for mathematic education toward:

- the use of Mathematical Teaching Practices (NCTM 2014),
- purposeful engagement of the mathematical practice standards (NGA, 2010), and
- awareness and use of the five equitable teaching practices (Aguirre et al., 2013).

Considering educators' unfettered access to resources and the huge investment that school systems make in curricular programs, we must work to support the broad implementation of these goals to maintain consistent quality mathematics instruction. Educators know that "the implementation of a 'high-quality' curriculum—one that is aligned to rigorous state standards—leads to notable learning gains for students" (Chingos et al., 2012).

If schools and systems adopt a solid curriculum, there are still hurdles to overcome. A recent survey found that nearly one in four teachers use the textbook for all instruction, including lessons, activities, practice, and homework. Yet, they receive little support in presenting mathematics effectively (Kane et al., 2019). Understanding, using, and supporting teachers as they engage students in quality mathematics instruction is a vital component of student success.

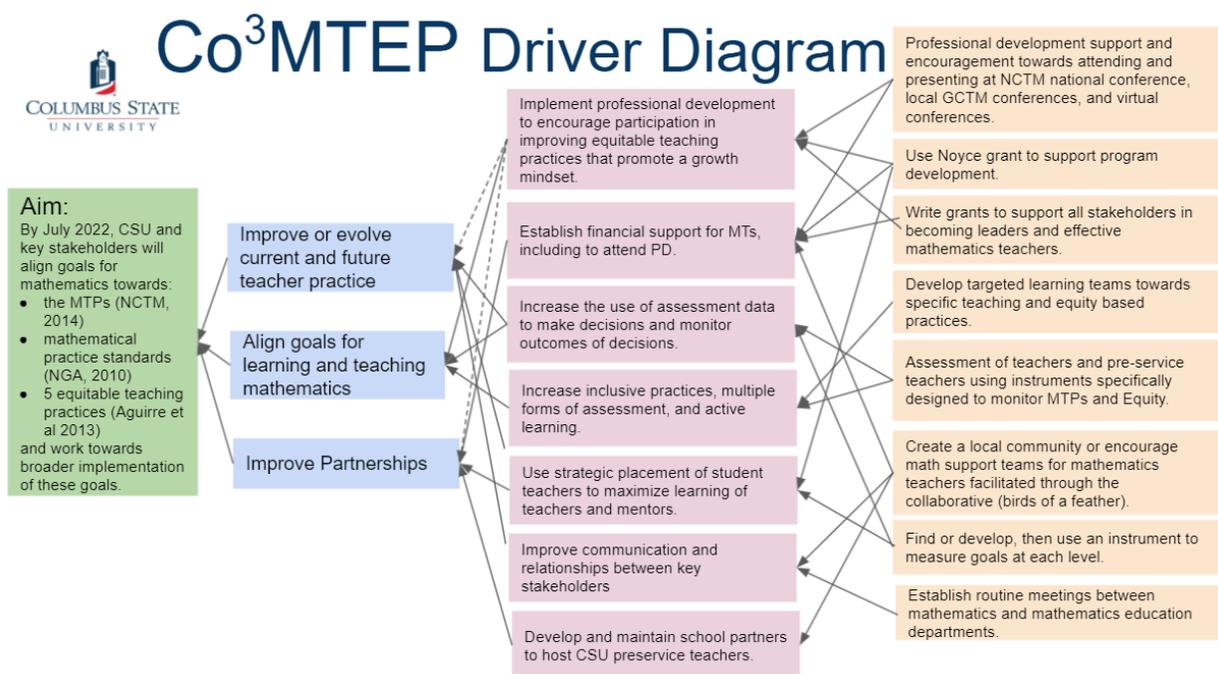


Figure 2. C<sup>3</sup> Driver Diagram

The C<sup>3</sup> program focuses on issues unique to the environment in the Columbus area. CSU is a university that provides many of the teachers who are employed by MCSD. By one estimate, nearly 70% of the teachers in the MCSD have at least one degree from CSU. The CRMC also assists both pre-service and in-service teachers, giving it a broad outreach. The driver diagram in Figure 2 outlines an effort that seeks to align the work of each of these entities into a more coherent force for mathematics education in Columbus.

Improving teacher practice cannot wait, so efforts are made to address them in the CoEHP at CSU through the use of instruction, practice, and reflection, all grounded in the Mathematics Teaching Practices (MTPs) and the Five Equitable Teaching Practices. In-service teachers benefit from professional development that involves best practices, with attention paid to equitable practices and growth mindset. In order to improve teacher practices, there needs to be support for the teachers in time and in compensation for professional development.

The primary driver for aligning goals for learning and teaching directs the use of assessment data to make and monitor decision outcomes. It calls for an increase in attention to inclusive practices and active learning models. Teacher candidate and professional development that is grounded in the MTPs is emphasized in this NIC.

None of the work that is done can be sustained without strong partnerships. There is a need for good mentors for young teachers. This community can be built when the MCSD and CSU are aligned in their commitment to high-quality math education. Communication is the foundation of the alignment. When the alignment of purpose and communication is strong, then partnerships can be developed and maintained for school to host CSU pre-service teachers.

### Progress and Activities of C<sup>3</sup>

In 2020–2021, much work was done through the determination and devotion to the educators in C<sup>3</sup>. As follows are some of the activities.

### **Improve and Evolve Current and Future Teacher Practices**

The CRMC presented a regular schedule of virtual workshops supporting the math teacher practices and the eight mathematical practices. Attendance at these workshops were sporadic, but on a regular basis they reached six teachers per session. In these sessions, teachers were actively engaged using the methodology supporting the teacher math practices and using the eight mathematical practices. Reviews were overwhelmingly positive, and many teachers expressed an interest in continuing with the session in the future.

### **Align Goals for Learning and Teaching Mathematics**

The CoEHP at CSU developed the *Teaching and Mathematical Practices Indicators for Equity-Based Instruction* rubric with the guidance of Basil Conway. This “look for” rubric reflects MTPs but also includes the Five Equitable Teaching Practices. The intention is to increase inclusive practices, multiple forms of assessment, and active learning outcomes. Conway used the rubric with students in methods classes, allowing them to observe teachers on video. Students reflected on the teacher practices.

The “look for” rubric has evolved as an instrument through the use of Plan-Do-Study-Act (PDSA) cycles. In sessions involving MCS D teachers, where the use of the rubric was discussed, changes were suggested to allow for observers to focus on specific practices. The whole tool was thought to be overwhelming for new teachers observing lessons. The consensus of the group was that it was an invaluable tool for formation and reflection of equitable teaching practices. The instrument was revised to focus on only two elements at a time and include its intersection with the mathematical practice standards. The current instrument provides space for students to identify characteristics of teachers using MTPs and students implementing the mathematical practice standards, along with a space for detailed notes for justification.

The CoEHP and the mathematics department scheduled regular meetings beginning in October of 2020 and continuing monthly until March 2021. These meetings were to align programs and course schedules to support teacher candidates. These meetings have led toward the inclusion of more project-based learning cycles in mathematics classes, with a new focus on how assessment may be used to guide student learning.

### **Improved Partnerships**

A major goal for C<sup>3</sup> is to improve partnerships. In October of 2020, MCS D participants Dacia Irwin and Luis Ruiz invited a speaker to a gathering of math teachers and CSU mathematicians to begin to build relationships and a connection to the goals of the C<sup>3</sup>. As the CRMC provided over 60 virtual sessions, teachers were surveyed about involvement in a local mathematics teacher organization. Thirty-eight teachers expressed an interest in starting a community of mathematics teachers.

The CoEHP at CSU is committed to increasing the number of teacher mentors available to teacher candidates; the Noyce grant plays an important role in this by providing support for the teacher mentors. This grant allowed for three different presentations that focused on the aims of C<sup>3</sup>. Marilyn Strutchens provided a session on practices that relate to enacting equity in the classroom; Maureen Grady and Charity Cayton provided routes to improving collaboration with mentors and teacher candidates through co-planning and co-teaching strategies; and John Staley, Brian Lawler, and Basil Conway focused on the use of mathematics lessons to explore, understand, and respond to social injustice in the classroom.

In the coming year the C<sup>3</sup> will continue the work of creating an [Equitable Teaching Practices and Impact on Students Survey](#) that was started this past fall using the PDSA cycle. Teacher candidates will use this to observe and reflect on teaching practices during their methods courses. These researchers might consider how this

instrument might be used in a larger context with MCSD and other training with the CRMC. The instrument may also be expanded for use in some of the components in student teaching or internship. Teacher leaders from C<sup>3</sup> are looking to begin a local affiliate of NCTM to help in building a local community of teachers to support the mission of C<sup>3</sup>. Teachers from the NIC are working to begin an initial virtual session in Fall 2021 and a joint conference with East Alabama Council of Teachers of Mathematics in Spring 2022. The NIC will continue to work with the mathematics department at the university to see how mathematics classes might work as a pump to mathematics education rather than a sieve keeping students out. The CRMC will work with the CSU and MCSD to create “birds of a feather” groups where teachers with similar interests can support and collaborate with one another. Zoom-like applications make this much more accessible.

In the MCSD, it’s important to be aware of how the efforts of the NIC can support the personalized learning initiative from the district. The district is moving ahead in a one-to-one Chromebook initiative, to put in the hands of every student technology and access points for the community. Supporting teachers to understand what research-based practices that foster student learning from personalized learning is on the radar for C<sup>3</sup>.

C<sup>3</sup> will keep the program’s drivers at the center of its efforts. The aim is to improve mathematics instruction and learning through the alignment of best teaching and learning practices; thus, the group needs to stay focused and adapt by using flexibility. Focusing on the primary and secondary drivers will allow C<sup>3</sup> to shift its action plans to monitor and achieve its primary goals.

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