

Michigan State University's Center for the Study of Curriculum: Strategies for Achieving Curriculum Coherence

Improving Mathematics Instruction and Learning through Curriculum Coherence

Students who are taught a coherent, rigorous and focused mathematics curriculum acquire a deeper understanding of mathematics and are more able to progress to higher levels of mathematics achievement.

Mathematics is, by its very nature, a coherent discipline. It is comprised of logical progressions of concepts, ideas, and topics that increase in complexity and depth. It is essential for a student to build a deep understanding of the foundational concepts in order to reach the more advanced levels. Unfortunately, many textbooks do not introduce mathematics concepts in a logical way and fail to focus, providing too many topics. In 2010, Michigan adopted the Common Core State Standards for Mathematics (CCSSM). Developed at the request of the Council of Chief State School Officers, the CCSSM establishes grade level standards that follow the inherent logic of the mathematics discipline. The CCSSM are not a curriculum. Districts and schools are tasked with adapting their curricular materials and instruction to the CCSSM. Implementing the coherence embodied in these standards requires coordination to provide all students at each grade level equal access to the same topics in a logical way.

Working Together to Build Coherence

The Center for the Study of Curriculum (CSC) has worked with school leaders and teachers for many years to help them adapt their mathematics curricula so that instruction may reflect the coherence, rigor, and focus of the CCSSM. The CSC process entails the administration of integrated surveys for students and teachers to provide instructional leaders with baseline information for planning future instruction and measuring student progress.



Creating Curricular Coherence requires system-wide efforts. It entails teachers' active use of two tools developed by the CSC: evaluating their curricular materials with respect to the CCSSM through the *Navigator tool*; and documenting and examining their instruction through the use of the *Teacher Journal*.

These on-line analytical tools together with the CSC student assessments provide a full picture of the links between curriculum, instruction, and student achievement. The CSC team works with districts to assist them in analyzing and interpreting the data collected so as to make productive and effective adjustments in their practices.

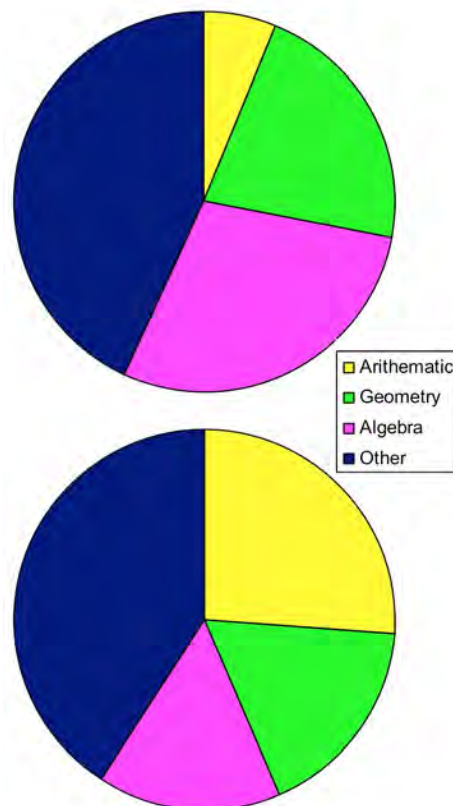
Linking student learning to standards

CSC provides districts and schools with assessments to measure student performance according to the standards.

The **Teacher Journal** enables teachers to record daily the content of each math lesson and to connect it to any appropriate CCSSM standard. It is designed to require about 5 minutes after each lesson. Teachers may review and modify their entries at any time. The **Teacher Journal** allows teachers to generate reports and diagrams of the content covered for their use and instructional planning.

The **Navigator tool** is an online database that maps every lesson in the district's mathematics textbooks to the CCSSM. These linkages have been identified and reviewed by a team of CSC reviewers. This information is made available to teachers for their use in two ways: 1) textbook lessons are linked to the specific CCSSM standards addressed, and 2) any specific CCSSM standard is linked to all the textbook lessons that address it. This allows teachers to make informed decisions about which lessons to teach and in what sequence.

Teachers Coverage of Mathematics Topics in Two Different Schools



Curriculum Incoherence in schools contributes to Achievement Inequity.

Building a Better Mathematics Curriculum

CSC's coordinated strategies for achieving curriculum coherence provide a wealth of information for analyzing and understanding the current state of the mathematics curriculum as evidenced in textbooks, classroom instruction, and student performance. This provides teachers and instructional leaders with the critical information needed to inform planning and future action to align instruction to standards bringing greater coherence, focus, and rigor to students' learning in order to improve their achievement.

