

The Blueprint - Mathematics and Science Curriculum

CURRENT STATUS

A revised M-DCPS Competency-Based Curriculum (CBC) provides the blueprint for rigorous subject matter content in both mathematics and science. This curriculum integrates National Standards, Florida Sunshine State Standards and Grade Level Expectations for grades K-8, and the objectives from the state course code descriptions for senior high content. There is significant focus on the sequential development of skills and competencies as students progress from grade to grade. Grade-level exit tests have been developed in mathematics for all grades K-8, and an exit examination for Algebra is being explored for use as a district-wide assessment of students completing Algebra I. Using these exit examinations will provide classroom teachers with an annual opportunity to determine student acquisition of grade-level skills and benchmarks.

While the CBC curriculum content includes computation and basic numeric literacy, such as operations, it also emphasizes problem solving, performance tasks, and higher-order thinking, which build real mathematical and scientific power for students. Without such power and the classroom experiences that create it, M-DCPS students will not be able to master the strands of Algebraic Thinking, Geometry and spatial sense, and Statistics/Data Analysis which are assessed on the Florida Comprehensive Assessment Test (FCAT). Students will also need the scientific power to succeed on the Science FCAT as they enter the 2002-2003 school year.

The CBC curriculum is built on a belief that students learn best by doing. Therefore, associated with the revised CBC are published curriculum activities such as: *Here Come the Sunshine State Standards*, *Awesome Activities for Achieving Success*, *Focus on Algebra I with a Sunshine State Standard Lens*, *The Elementary SHO-ME Guide*, and *The Mathematics and Science Middle School Curriculum Guides*. These documents were developed to assist teachers in helping students to learn by utilizing problem solving and critical thinking. Textbooks are not the curriculum. Instructional materials are only one tool that contributes to the resources for students to build their capacity to actually do mathematics and science. The Division of USI Mathematics and Science endorses the use of a variety of support materials that enhance student experiences and develop deeper understanding of science and mathematics concepts, especially those that incorporate the effective use of technology.

Miami-Dade County Public Schools offers a full range of mathematics and science curriculum, K-12, that incorporates the needs of limited English proficient (LEP) and Exceptional Student Education (ESE) students, as well as students in the gifted program and those accelerating into the advanced placement courses. Despite increasing enrollment in higher level mathematics and science courses, the Miami-Dade student population as a whole is performing below the state average on the FCAT and

below the national median in mathematics and science as measured by the Stanford-8, except in elementary mathematics.

The Blueprint goals that follow provide the focus for the CBC curriculum that must be in place for M-DCPS students to meet the required benchmarks within science and mathematics. They represent the most important intended outcomes of the District comprehensive plan. These goals should be achieved over the next three years, and sustained as regular occurrences in subsequent years.

GOALS

1. The intended curriculum of the CBC will be fully implemented so that it becomes the “taught” curriculum in all grade levels and in all classrooms.
2. Comprehensive improvement of the District mathematics and science curriculum will be undertaken based on analyses of the TIMSS-R data and the FCAT results.
3. The mathematics and science curriculum will incorporate practical applications of scientific and mathematical concepts connected with a variety of experiences that support school-to-career transition.

The following activities will provide the structure necessary to ensure that the content and pedagogy for mathematics and science literacy are in place within all District schools.

Action Plan

1. Structured staff development through the mathematics and science instructional improvement teams will be implemented at each school site. The content standards that are expected at each grade level and in all secondary mathematics and science courses will be communicated to all schools. Extensive support materials will be produced and disseminated for this effort.
2. Feeder pattern educational specialists and/or expert teacher leaders in mathematics and science will provide schools professional development opportunities one day per week. Florida State University graduates, Eisenhower Resource Teachers and Title I Mathematics Specialists will provide on-going support to all District schools to improve the quality and the delivery of the curriculum.
3. Teams of mathematics and science content specialists and specialists in data analysis/evaluation will conduct comprehensive analyses of the data from the Third International Mathematics and Science Study-Repeat (TIMSS-R) and the FCAT. These analyses will determine weaknesses in curriculum content, pedagogy and the sequence of topics covered.

4. The TIMSS Study Center at Michigan State University will conduct additional analyses in conjunction with district staff.
5. Curriculum writing teams will refine curriculum content, depth of content coverage, pedagogy and the sequence of topics covered in response to the analyses of data mentioned in items 3 and 4.
6. Focus groups that represent the targeted industries of One Community One Goal[®] will be established in order to provide input on curriculum revisions in mathematics and science.
7. The infusion of practical, real-world applications of mathematics and science and school-to-career objectives will be a priority at all grade levels.
8. District-developed assessments will be redesigned to assist schools in monitoring student acquisition of Florida Grade Level Expectations (GLE's) for grades K-8 and an exit examination for Algebra I will be developed.
9. The American College Testing (ACT) Work Keys evaluation of student work-skill levels among senior high school students will be utilized to target specific areas of focus in the curriculum in order to enhance preparation for high-skilled jobs in the local and state economy.
10. High quality, content-rich and interactive software will be provided to promote accelerated student learning and the effective use of technology in mathematics and science classrooms, particularly at the middle school and senior high school levels.
11. The use of standards-based and research-based curricula programs in mathematics and science, such as, *Mathematics in Context*, *Core Plus*, *Full Option Science System (FOSS)*, *Science and Technology for Children (STC)*, and *Active Physics* will be expanded.

This page intentionally left blank