

Appendix L

Comprehensive Mathematics and Science Plan- Mathematics and Science Literacy: Bridges to Careers

Miami-Dade County Public Schools (M-DCPS) faces great challenges and has very critical needs in terms of educational support for the students of this diverse community. Implementing programs to narrow the achievement gap for mathematics and science and providing more opportunities for minority students is a district priority. It is essential to emphasize that the single most powerful determinant of student success in mathematics and science is excellent teaching. As a result, the Miami-Dade County School Board funded a comprehensive mathematics and science plan, entitled *Mathematics and Science Literacy - Bridges to Careers* for all district schools in March of 2000 which is an integral component of the District's National Science Foundation's Urban Systemic Program (USP).

For sustainability of mathematics and science reform to occur across the entire district, a model of school-site professional development has been implemented. At the core of this model is the requirement that every school implement a mathematics and science instructional improvement team. The Instructional Improvement Team (IIT) is a team of school-site leaders that meet to assist the principal in making important data-driven decisions about the mathematics and science instruction that will have a direct impact on student achievement. This approach is designed to help build a culture of continuous learning among the faculties of Miami-Dade public schools, and a commitment to on-going improvement in the quality of teaching and learning.

To facilitate this process, the Division of Mathematics and Science Education has hired mathematics and science educational specialists to work with specific elementary and secondary schools that are clustered by feeder patterns. The role of these educational specialists is to meet the specific school-site needs for professional development and to facilitate the instructional improvement teams, as well as working with school-site administrators in the following capacity:

- Facilitating the implementation of the Mathematics and Science Instructional Improvement Team to promote leadership among the team and help identify professional development needs in curriculum content and instructional strategies for district mathematics and science teachers;
- Assisting the Instructional Improvement Team in using school-wide data to set school goals and make decisions about mathematics and science curriculum, instruction, and assessment;
- Deepening the content knowledge of all mathematics and science teachers;
- Providing modeling of teaching strategies to the mathematics and science teachers at the assigned school site;

- Coaching and assisting early career teachers in the curriculum areas of mathematics and science and the development of their individual Professional Development Plan;
- Implementing the protocols involved in examining student work with mathematics and science teachers as a reflective process in order to increase student achievement;
- Providing teachers positive and informative feedback that will enhance their professional growth;
- Assisting in the development of classroom assessment tasks that promote higher-order thinking skills in mathematics and science with a focus on the mathematics and science performance on the Florida Comprehensive Assessment Test (FCAT) to guide these assessments;
- Assisting teachers in the examination of their expectations of their students; and
- Planning and implementing collaborative lessons based on research findings that support increased student achievement.

This type of model will allow for ongoing dialogue about what is working, what is not, and how the curriculum, instruction, and assessment should look in order to improve teaching and learning.

The following goals represent the most important intended outcomes of the District Comprehensive Plan and Urban Systemic Program. These goals should be achieved over the next three years, and sustained as regular occurrences in subsequent years.

1. All teachers will utilize on a daily basis best practices and instructional strategies that target curriculum, examining classroom practice, and collaboration among teachers.
2. School-wide Instructional Improvement Teams will be created to guide and implement professional development for mathematics and science at each school site.
3. All schools will be provided support by feeder pattern support teams that include Division educational specialists that are experts in mathematics and science.
4. All teachers will develop an individual professional development plan. These plans will focus on appropriate curriculum, instruction and assessment that support both local and national standards.
5. Division educational specialists will disseminate information to parents within the community regarding how the local, state, national and international standards in mathematics and science have increased.
6. Principals and assistant principals will receive professional development designed to support mathematics and science instruction at their school, to promote mathematics and science careers, and to improve the quality of programs at the school site.
7. Elementary teachers will deepen their content knowledge and comfort level in teaching mathematics and science concepts.

8. Elementary teachers will teach a sixty-minute block of mathematics and a thirty-minute block of science daily, or teachers may combine an integrated mathematics and science content into a ninety-minute block.
9. Middle school teachers will deepen their content knowledge and increase their capacity to teach mathematics and science concepts within the context of effective learning theory for middle school learners.
10. Middle school science teachers will utilize two lessons a week for laboratory activities that build conceptual development of science principles and their application to problem solving.
11. Senior high school teachers will increase the use of effective pedagogy such as contextual learning to deliver the mathematics and science content to students.
12. Senior high school science teachers will incorporate at least 100 minutes of laboratory experience per week into their instruction.

The M-DCPS Comprehensive Mathematics and Science Plan may be accessed at <http://mathscience/dadeschools.net/> or you may contact the Division of Mathematics and Science Education at 305-995-1989.