

Middle School Mathematics Task Force Subcommittee Report

Name of Subcommittee: Leadership
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Current Leadership Component Overview:

The essential organizing ideas for each of the three leadership courses are as follows.

- Leadership I focuses on quality instruction and guiding the prospective mathematics specialist in building an understanding of the state and national standards, standards based instruction, and becoming a reflective professional.
- Leadership II focuses on the school as a learning organization and guiding the prospective mathematics specialist to develop knowledge and skills in teacher leadership and practice based professional learning, to understand and begin to prepare for the multiple roles of a mathematics specialist, and to use coaching as a tool for improving teaching and learning.
- Leadership III focuses on continuous improvement of the school based mathematics program and preparing the prospective mathematics specialist to facilitate a professional learning community to evaluate the school mathematics program through an equity lens, to use formative and summative assessment to inform instructional planning, and to use Lesson Study as a process in which teachers systematically examine their practice with the goal of improving student learning.

Current Goals of the Leadership Courses:

The overarching goals for the three courses that make up the leadership component of the mathematics specialists program are for participants to:

- 1) Develop an understanding of the national mathematics standards and the capacity to provide coaching for standards-based mathematics instruction,
- 2) Develop skills for effective school-based leadership in the mathematics program and coaching in mathematics instruction.
- 3) Develop an understanding of how important mathematics concepts develop, how mathematics concepts are connected to and support each other, and how children come to make sense of these concepts.
- 4) Experience providing job-embedded professional learning opportunities for teachers around research based best practices in mathematics instruction and assessment,
- 5) Develop knowledge of formative and summative assessments and skills in using assessment data to inform a school based mathematics program and classroom teachers' instruction,
- 6) Interpret and apply current research in mathematics teaching and learning to inform instructional decision-making,
- 7) Develop skills and knowledge to work effectively with teachers, school based administrators, central office leaders, parents, and the community to facilitate

change that leads to the improvement of mathematics teaching and student learning.

- 8) Refine one's philosophy and vision for mathematics teaching, learning, and professional development.

Rationale for adaptations to accommodate the needs of Middle School Specialists:

A mathematics specialist working in the context of a middle school faces challenges that are not ordinarily encountered in the elementary school context. Based on informal accounts from the field, the three leadership courses currently offered in the Mathematics Specialist Program seem to be adequately preparing mathematics specialists to do their job. However, based on the findings of the committee, some minor changes in the leadership courses would better prepare middle school mathematics specialists to work within the middle school context.

Departmentalization, either by design or by default, assigns particular teachers the responsibility of teaching mathematics and often one teacher in the school is designated as the department chair. Teachers who have been identified as the “mathematics teachers” may be reluctant to seek or accept help with mathematics content if their credibility is threatened by admitting they need or want help. Teachers, parents, and administrators may be unsure how to interact with each of the mathematics leaders when a school has both a mathematics specialist and a department chair.

Gaining access to the mathematics teachers during the middle school day may be a challenge. During team meeting time, only one of the team's teachers may teach mathematics. If planning times are scheduled around teams, all of the mathematics teachers for a particular grade level may not have a common planning time and meeting with all the mathematics teachers at a particular grade level would not be possible during the school day.

Student placement into advanced mathematics courses at an accelerated pace is a common practice in middle schools. This practice presents several challenges for the middle school mathematics specialist. The administrators, the counselors, and the teachers turn to the mathematics specialist for direction in placing students in the appropriate mathematics course, counselors call upon the specialist to talk with parents to help them understand their child's placement, and the administration calls upon the specialist to coordinate the mathematics placements with the elementary and high school. The mathematics specialist's attention to equity is important and it becomes important for the specialist to help teachers differentiate their instruction and keep expectations high so that no matter when a student is tracked into a class every child is given the same opportunity to learn challenging mathematics.

Equity leadership to close the achievement gaps and to ensure that each student has access to relevant and rigorous mathematics courses that prepare them for 21st Century knowledge and skills is an important responsibility for the middle school mathematics specialist. Making Adequate Yearly Progress (AYP) becomes a greater challenge for middle schools when several feeder elementary schools come together the numbers of

students in subpopulations as identified in the No Child Left Behind (NCLB) policy increases leading to an increase in the number of subpopulations having to meet the AYP benchmarks at the middle school. The mathematics specialist is called frequently to assist ESL/ELL students and teachers, to facilitate teachers learning to co-teach as more special education students are in inclusion settings, and to help all teachers close the achievement gap. The mathematics specialist is responsible for ensuring that all students can access a rigorous curriculum by helping teachers design lessons that use the same learning tasks with all students but differentiate by making explicit how different children enter the task.

Administrators and mathematics specialists work together to provide leadership for the schools' mathematics program. The committee found that administrators in middle schools are more likely than administrators in elementary schools to ask the mathematics specialist to take on administrative responsibilities due to the larger student enrollment and the increasing complexity of the mathematics content in middle schools. Specialists are more likely to be called upon to coordinate testing, monitor the assessment data, and facilitate intervention programs for struggling learners. Mathematics at the middle school level is more complex and administrators who do not have a mathematics background seek guidance from the specialists about program decisions.

Recommended Course Adaptations:

The Committee recommends the following adaptations to the Leadership Courses.

- In all three leadership courses make more explicit the connections between equity and the opportunity to learn. Through class discussions, readings, and projects bring focus to differentiation while maintaining access to rigorous mathematics and high expectations for all learners.
- In Leadership II incorporate information and an activity that focuses on co-teaching and how to facilitate co-teaching especially between regular education and special education teachers.
- In Leadership III replace Chapin's *Classroom Discussions* with Stein, Smith, et. al *Implementing Standards Based Instruction*. The Silver and Stein book is based on the Quasar Project at the University of Pittsburgh which targeted raising cognitive demand for all middle school students and the inclusion of this book will bring more opportunity to revisit middle school mathematics content in Leadership III.
- Increase the attention to political awareness in Leadership III as a vehicle for exploring the issues and challenges in mathematics education such as the implications of Algebra for All and 21st Century skills in relationship to the default tracking that takes place in many middle school mathematics programs.