Chapter 6
Response to Intervention in Middle and High School Mathematics

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ABSTRACT

Secondary schools are complex in structure and are challenged daily to provide high-quality, effective Response to Intervention (RTI) models in their school settings. RTI must be handled very differently in a middle or high school compared to an elementary school, and larger numbers of students, stricter time constraints, lack of resources, and larger academic gaps are among the typical obstacles secondary teachers face, including math teachers. However, there are RTI models that will work well in math classes, including the Adolescent Mathematics Intervention Structure (AMIS), which focuses on providing motivation, opportunities for academic discourse, cooperative learning, and a positive mathematical classroom environment. Additionally, students thrive in a mathematical learning environment that includes a focus on multiple representations for the mathematics, manipulatives, and targeted learning centers designed specifically for middle and high school students. This chapter focuses on discussing AMIS and providing recommendations for its implementation in secondary math classes.

INTRODUCTION

Response to Intervention (RTI) is a type of school improvement that is designed to help all students achieve. As Fitzell (2011) stated, all RTI really stands for is *Really Terrific Instruction!* Response to Intervention must be handled very differently in a middle or high school setting compared to an elementary setting, where most classes are self-contained and teachers have the luxury of adjusting instructional minutes according to need. Two of the largest barriers middle and high schools face in implementing an RTI service delivery model are finding the time for interventions and developing creative ways of offering

DOI: 10.4018/978-1-4666-8516-1.ch006

the interventions. At the same time, creating effective educational support for a mathematics program is always challenging. Couple that with the complexity of the middle school and high school format, and math educators really do have to become creative in their delivery methods. This chapter presents a four-tiered system of intervention entitled the Adolescent Mathematics Intervention Structure (AMIS); the components of time and structure of interventions are addressed with each tier. In addition, the chapter examines specific ways to motivate students involved in mathematics interventions, provides detailed examples of possible interventions, and discusses important considerations for AMIS implementation.

There are four obstacles secondary teachers face in implementing an RTI structure that elementary teachers typically do not have to face: (a) much larger numbers of students, (b) stricter time constraints, (c) not as many resources, and (d) potentially larger academic gaps. A middle or high school teacher may see 160+ students a day. Keeping data on all of these students can become a challenge, but it is a necessary one to overcome. These large numbers also mean that there are many more parents to keep involved throughout the academic year. Most middle and high schools operate on a bell schedule with class periods lasting anywhere from 45 minutes to 1.5 hours. When the bell rings, students must move to their next class, and the teacher must be ready for the new group of students entering the classroom. The flexibility of spending even 5 more minutes with a student does not exist, as it might in a self-contained elementary classroom.

There is very little research on implementation of Response to Intervention at the secondary level (Shores & Chester, 2009). RTI was initially focused on intervening with elementary literacy. It has spread now to mathematics and to the upper grades, but many middle and high schools are struggling to adapt elementary-based RTI models into their school structure. One major obstacle they are encountering has to do with the ever-increasing achievement gap that RTI seeks to shrink. It is only natural that as a student progresses through grade levels and falls a bit further behind each year, his or her academic achievement gap will grow, creating a much larger gap than that of an elementary-age student. This makes the task of tiered intervention even more difficult at the upper grade levels.

OVERVIEW OF ADOLESCENT MATHEMATICS INTERVENTION STRUCTURE

In education, we entered the Age of Accountability with the passage of the 2001 No Child Left Behind legislature. We have now entered the Age of Differentiation, with general education teachers being held responsible for meeting the needs of all learners. Gone are the days of preparing a lesson at targeted grade level, delivering it to the class, and hoping that most students benefit from it. Gone are the days of even varying instructional practices to attempt to meet learner needs yet still being surprised by achievement results once a summative assessment is given. Teachers must now know the needs of each individual student in their classroom and be responsible for helping each student advance academically.

In its most simple form, RTI is differentiated instruction coupled with data-based decision making. Instruction is differentiated to meet learner needs. The nature of RTI is multi-tiered. Some schools choose to use more than three levels of interventions. For this reason, we will refer to Tier 1 as primary supports and Tier 2 and above as secondary supports. Primary supports are designed to occur in the classroom and be provided by the general education teacher. Secondary supports usually do not involve the general education teacher, but other trained personnel instead. The highest tier is usually administered by the special education teacher. AMIS uses a four-tier system, with the general education teacher offering support for Tier 1; peers, parents, community volunteers, and instructional assistants offering support for Tier 2A and 2B (under the guidance of the general education teacher); and the special education teacher offering support for Tier 3.