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chapter 1

The RTI Process in Elementary Mathematics

The instructional process referred to as response to intervention (RTI) has quickly taken root in the United States (Buffum, Mattos, & Weber, 2009; Kavale & Spaulding, 2008; Spectrum K12 School Solutions, 2009). In fact, proponents of RTI, as well as several advocacy groups and educational support organizations, have indicated that RTI may represent a fundamental paradigm shift in education (Fuchs & Deshler, 2007; Fuchs & Fuchs, 2007; Gersten & Dimino, 2006). For example, the National Association of State Directors of Special Education (NASDSE, 2006) indicates that RTI represents a "dramatic redesign" of general and special education. RTI has been implemented in reading and literacy in school districts across the United States, and in a survey of directors of special education, over half of the school districts reported implementation of RTI in mathematics as well (Spectrum K12 School Solutions, 2009).

Clearly, there is a great deal of emphasis on RTI, and RTI is resulting in a refocusing of educational endeavors. Furthermore, fundamental changes in teaching practices are stemming from the RTI initiative, and these changes will probably impact most teachers in kindergarten through grade 12 (Bender, 2009a; Kame'enui, 2007; Spectrum K12 School Solutions/Council of Administrators of Special Education [CASE], 2008). For that reason, these changes must be considered carefully by school leadership teams and PLCs within the school as educators move into RTI implementation in mathematics.

This chapter presents an overview of the RTI process in mathematics, with a focus on advocacy for RTI as a school improvement initiative. While this book is not primarily an introduction to RTI or a review of research on the RTI process, leadership personnel serving as proponents of RTI in mathematics will need some understanding of the research basis that provides the rationale for RTI procedures. We will also address questions, concerns, and problems that have arisen in the implementation of RTI in the areas of reading and literacy; these issues are likely to arise

when RTI is implemented in mathematics as well. We introduce these issues here to suggest possible solutions.

What Is RTI?

Response to intervention is a network of support intended to assist all students in their learning by providing increasing levels of intensive, research-proven instructional interventions targeted to the needs of the individual student (Kame'enui, 2007; NASDSE, 2006). For students who are struggling in any academic area or struggling behaviorally, the RTI process results in timely interventions that should assist in overcoming those threats to learning and development (Gersten & Dimino, 2006; Kame'enui, 2007). During the RTI process, student progress is monitored repeatedly in order to document how students respond to instruction. That evidence is then used for data-based decision making relative to students' educational programs. Through the practice of universal screening, which is typically conducted at least three times each year, it is likely that the recent emphasis on RTI for meeting mandated standards will impact every student in the public schools.

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The Three-Tier RTI Pyramid

In most of the literature on RTI, as well as in most state department of education guidelines, the RTI process is depicted as a pyramid of increasingly intensive, specifically targeted instructional interventions—referred to as intervention tiers—such as those presented in figure 1.1 (Berkeley, Bender, Peaster, & Saunders, 2009). Each tier within the pyramid contains more specifically targeted interventions. The pyramid shape suggests that fewer students require the more intensive interventions that appear at the top. This three-tier pyramid of interventions model was first used in the public health arena (Kame'enui, 2007), but has since been adapted to various areas in education, including reading interventions such as the national Reading First initiative, and interventions to reduce problem behaviors in schools (Bender, 2009a).

While various states have adopted slightly different models, the most commonly used RTI model is the three-tier RTI pyramid (Berkeley et al., 2009; Howell, Patton, & Deiotte, 2008; NASDSE, 2006; Spectrum K12 School Solutions, 2009). For example, in a 2008 survey on RTI among special education administrators, 73 percent of the respondents indicated that their state had implemented a three-tier RTI pyramid (Spectrum K12 School Solutions/CASE, 2008), whereas only 22 percent of respondents indicated that their state had implemented a four-tier model. Given this rather robust implementation of the three-tier pyramid, that model is the basis for this text.

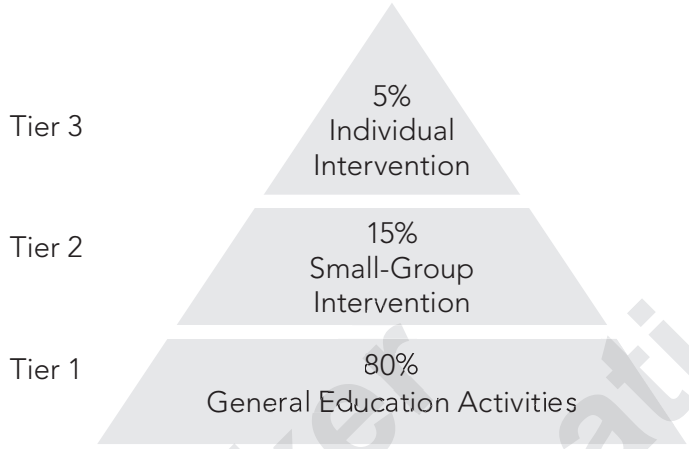

Figure 1.1: The three-tier RTI pyramid.

In the three-tier RTI model, as well as in some of the four-tier RTI models (such as those used in North Carolina and Georgia), the lower tier of the pyramid represents effective instruction provided for all students within the general education classroom (Fuchs & Fuchs, 2005, 2006; Howell et al., 2008; NASDSE, 2006). Instruction delivered in this tier may include whole-class, smaller-group, or tutorial instruction. A wide variety of research-proven instructional procedures are typically implemented as the basis for Tier 1 instruction, such as grouping students for instruction, scaffolding instruction, and using group projects, learning centers, cooperative instruction, or differentiated instruction. The general education teacher is the primary facilitator of instruction for Tier 1.

Tier 1 Instruction

Tier 1 instruction is the foundation for all instructional interventions in mathematics, and it should be considered the single most important tier in the intervention pyramid, since effective instruction at this level greatly reduces the number of students requiring more intensive instruction at other levels of the pyramid. Proponents of the three-tier model suggest that this instructional tier should meet the needs of perhaps 80 percent of the students in a classroom (Boyer, 2008; Bradley, Danielson, & Doolittle, 2007; Fuchs & Fuchs, 2007). Because of the critical importance of effective mathematics instruction in Tier 1, chapter 2 focuses exclusively on effective instructional and performance monitoring procedures in Tier 1 mathematics for primary and elementary classes.

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