Introduction to the *TEC* Special Issue on Data-Based Individualization

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Nationally, there is a critical need to improve outcomes for students with disabilities who have severe, persistent learning and behavioral problems. The National Assessment of Educational Progress (NAEP) reported that 68% of fourth graders with disabilities and 64% of eighth graders with disabilities lack even basic reading skills (National Center for Education Statistics, 2011b). The NAEP reported similarly high percentages for Grade 4 (45%) and Grade 8 (65%) for students with disabilities who lacked basic mathematics skills (National Center for Education Statistics, 2011a). The second National Longitudinal Transition Study also reported that one in three high school students with disabilities has had a school discipline problem (Wagner et al., 2003), over one in four drop out before graduating, and four in five are either unemployed or work in low-paying jobs as young adults (Wagner, Newman, Cameto, Garza, & Levine, 2005). These national data paint a stark picture of poor academic and behavior outcomes for students with disabilities, which contribute to a lack of career and college readiness for this population.

Most states currently implement some type of a multitiered system of support in academic areas (typically referred to as response to intervention,

RTI) and to address behavior (typically referred to as positive behavior intervention and supports, PBIS). Many of these initiatives have focused on improving school-wide instruction and behavior for all students or implementing targeted interventions that are validated for small groups of struggling students, but these efforts

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have not adequately addressed the unique learning and behavioral needs of most students with disabilities, particularly those who function at the lowest achievement levels or who have the most serious behavioral difficulties.

This special issue of *TEACHING Exceptional Children* offers practical suggestions to help meet the needs of students who have seemingly intractable learning and behavioral challenges. There is no consensus on

the number of students with disabilities nationwide who continue to demonstrate learning and behavioral problems despite participation in generally effective core curricula or research-based supplemental programs. However, using data from RTI studies on students who are unresponsive to rigorous supplementary interventions (e.g., Conduct Prevention Problems Research Group, 2002; D. Fuchs, Fuchs, & Compton, 2012; Wanzek & Vaughn, 2009)—and excluding those who participate in the alternate assessment program—we estimate that about 2.5 million students (5% of the general school population) require intensive academic interventions, and about 1.5 million students (3% of the general school population) require intensive behavioral interventions.

This special issue features the ongoing work of the National Center on Intensive Intervention (NCII: www.intensiveintervention.org) to help educators serve this population. The U.S. Office of Special Education Programs funded NCII in 2011 under the Individuals with Disabilities Education Act Part D (National Programs) to provide technical assistance to build school and district capacity to support the widespread use of intensive academic and behavioral interventions for students who require this support.

Table 1. Definition of Terms

Data-based individualization (DBI)	An iterative, multistep approach to intensive intervention that involves the analysis of progress monitoring and diagnostic assessment data, followed by individualization of a validated academic or behavioral intervention program.
Evidence-based practice	An instruction or intervention approach that improves results for students who receive the intervention, based on data from rigorous, scientific research studies.
Fidelity	The accurate and consistent delivery of instruction, intervention, or assessment in a manner that is consistent with the developer's recommendations.
Intensive intervention	An intervention that addresses severe and persistent learning or behavior difficulties, characterized by increased intensity (e.g., smaller group, expanded time) and individualization of instruction or behavior support. Intensive intervention may also be referred to as Tier 3 or tertiary intervention.
Progress monitoring	An assessment used to track students' performance over time, quantify rate of improvement, and evaluate program effectiveness.
Response to intervention (RTI)	Integration of assessment and intervention within a multilevel prevention system to maximize student achievement and reduce behavior problems. With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student's responsiveness, and identify students with learning disabilities, or other disabilities.
Standard intervention protocol	A consistent, often scripted evidence-based instructional program intended for students with similar academic or behavioral needs. Standard intervention protocols are often used at the secondary intervention level within a multitiered intervention system. Within the context of intensive intervention, standard intervention protocols may be referred to as "intervention platforms" because they serve as a starting point for intensification.

Issue authors have synthesized research on intensive intervention, which primarily focuses on students in elementary schools, but applications for students in middle and high school are also noted where appropriate and relevant. In addition, the authors provide examples to illustrate how schools and districts across the country can design, implement, and sustain NCII's approach to providing intensive, individualized academic and behavioral interventions based on the best available evidence. The terms defined in Table 1 are used by authors throughout this issue.

What Is NCII's Approach to Intensive Intervention?

The term *intensive intervention* is not commonly understood. Variations abound regarding both its definition in the research literature and its implementation in classrooms, schools, and districts across the country. NCII's approach to intensive intervention is grounded in the concept of data-based individualization (DBI), a systematic method for using assessment data to determine when and how to intensify intervention in reading, mathematics, and behavior. This approach originates from a program of research conducted at the University of Minnesota (Deno & Mirkin, 1977), which was funded in the 1970s by the U.S. Department of Education's Office of Special Education

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and later expanded upon by others (e.g., Capizzi & Fuchs, 2005; L. S. Fuchs, Deno, & Mirkin, 1984; L. S. Fuchs, Fuchs, & Hamlett, 1989). DBI relies on the systematic and frequent collection and analysis of student-level data, the modification of intervention components when those data indicate

inadequate response, and use of teachers' clinical expertise to individualize intervention.

The distinguishing characteristics of NCII's evidence-based approach to using DBI are:

1. DBI is a validated process and not a single intervention program or strategy.
2. DBI is an ongoing process that links intervention and assessment to adjust a student's academic or behavior program over time. DBI is neither a one-time fix nor a single, static intervention program.
3. DBI is often domain-specific, meaning that a student may receive DBI in one domain (e.g., reading, behavior), or even on one component of that domain (reading comprehension, social interactions), while receiving core or supplemental instruction in other domains (e.g., word-level reading, school-wide expectations). DBI can be implemented in multiple domains at the same time, based on a student's learning and behavioral needs.

4. Students with the most intensive needs will likely require DBI over a sustained period of time. Decisions about if and when to reduce the intensity and individualization of the intervention must be data driven, taking into account the student's responsiveness, as well as the breadth and nature of their skill deficits.

The DBI process is ongoing, validated, and often implemented within a multitiered intervention system such as RTI or PBIS (typically at the tertiary or Tier 3 level), although it can be used outside such a framework. Specifically, DBI involves adapting and individualizing secondary-level (e.g., Tier 2) interventions to make them more intense. This process may be used for students who require intensive intervention in one skill area (e.g., mathematics problem solving), but receive core instruction (e.g., Tier 1) or secondary intervention in other areas (e.g., numeracy, computational fluency). In this way, DBI is intimately connected with the full continuum of supports that comprise an evidence-based, multitiered intervention framework (National Center on Response to Intervention, 2010).

The quality and fidelity with which core instruction and secondary interventions are implemented is critical, and set the foundation for successful DBI implementation. At the universal level, this foundation means that all students receive the same core curriculum and that the school implements a school-wide behavior program comprising a common set of expectations, rewards, and consequences. At the secondary level, this foundation means teachers use standardized, evidence-based academic and behavioral intervention programs with fidelity. In other words, they deliver programs in a manner consistent with what developers intended: Teachers cover all lesson components, and follow session frequency, duration, and group size recommendations. DBI begins when a student does not respond to this level of intervention.

Although DBI can be used for students who have the most severe and

Figure 1: The Data-Based Individualization Process
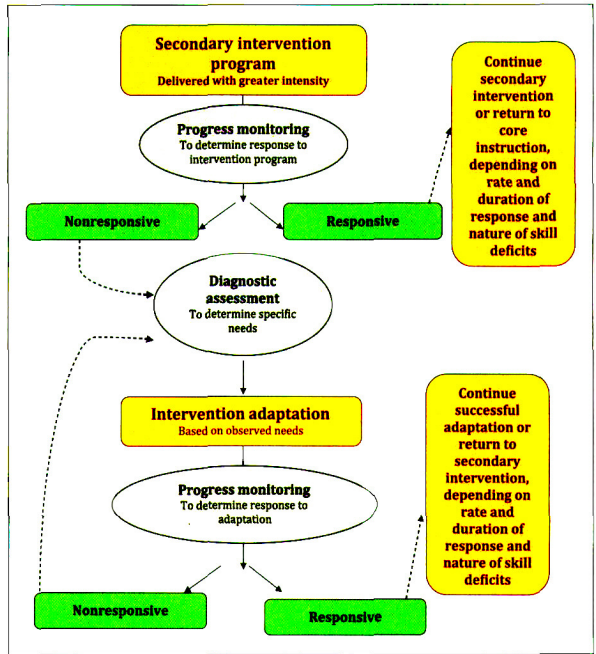
Note. This graphic assumes that, prior to DBI, a secondary intervention was delivered with fidelity and the student did not sufficiently respond.

persistent learning and behavioral needs, successful implementation of DBI also may provide a mechanism for schools to improve their broader tiered intervention system that serves all students. For example, schools that implement DBI successfully may be better able to make distinctions between interventions used at the universal, secondary, and intensive levels. This differentiation may help allocate school resources more efficiently. In addition, interventionists using DBI need to have expertise using data for instructional decision making at both the individual and group levels.

How Is Intensive Intervention Delivered?

Figure 1 illustrates the key steps of the DBI process. DBI is an iterative, multistep process involving analysis of

progress monitoring and diagnostic assessment data, followed by individualization of a validated intervention. For most students, DBI begins when they have made insufficient progress in a secondary intervention program. A small number of students may present with very significant difficulties where a standardized secondary intervention alone is unlikely to be effective. In such cases, intervention teams may choose to move directly to intensive intervention; these decisions should be rare and occur on a case-by-case basis.

In this introduction to the *TEC* special issue, we describe each of these steps in greater detail. We also show what they look like in practice for Kelsey, a fictional student with intensive academic needs, and Ryan, a fictional student with intensive behavioral needs.

DBI Step 1: Secondary Intervention Program, Delivered With Greater Intensity

The first step in intensive intervention is to implement a strong, validated, evidence-based secondary intervention program with greater intensity (e.g., smaller group size, more instructional time) than initially prescribed by the developers. These types of intensification strategies may be considered quantitative changes to an intervention because they increase the amount of engaged instructional interactions the student experiences. Examples of quantitative changes include increasing the frequency or session length, decreasing the group size, increasing the homogeneity of the intervention group, or increasing behavior supports.

Kelsey's story. Kelsey experienced serious reading problems, reading at an early second-grade level at the beginning of Grade 4. Kelsey's teacher discussed her concerns with the school's intervention team, and together they selected a validated program that addressed phonological awareness, word study, and fluency skills, to be delivered by a skilled reading specialist, Ms. Hayes. This program comprised 20- to 40-minute sessions, administered three to four times per week to groups of two to six students over a period of 7 weeks. After this time period, progress monitoring data showed Kelsey was not responding adequately, so Ms. Hayes intensified the program by adding 15 minutes per session.

Ryan's story. Ryan was identified as having externalizing behavior problems in January of his fourth-grade year. He had an excessive number of office discipline referrals, with frequent outbursts in class. The school intervention team decided to implement a check-in/check-out system that corresponded with the goals of the school-wide positive behavior support system. Ryan's teacher, Mr. Jones, checked in with Ryan at the beginning of each school day to review expectations and goals. After each class period, Ryan's teachers

provided behavioral ratings and feedback. Ryan "checked out" with Mr. Jones in the afternoon, when they reviewed the ratings and discussed the entire day. Mr. Jones sent a daily report card home with Ryan for his parent's signature. Although Mr. Jones implemented this intervention with fidelity every day for 7 weeks, Ryan continued to have excessive discipline referrals. Mr. Jones scheduled a meeting with the intervention team, and they decided that Ryan might benefit from additional adult contact. They decided to implement an intensified version of the daily report card by pairing Ryan with a mentor who could check in every half hour.

Assessment data allow teachers to identify specific areas of difficulty when a lack of progress is evident, and can inform decisions about how to adapt the intervention.

DBI Step 2: Progress Monitoring

While the intensified secondary intervention is implemented, the teacher gathers progress monitoring data and evaluates these data against a student's instructional or behavioral goals to determine progress. If the student's progress is sufficient, the teacher continues to implement the intensified program, evaluate progress, and adjust goals as appropriate. However, if the student's progress is insufficient, the teacher will need to further intensify the intervention.

Kelsey's story. Ms. Hayes set a reading fluency goal for Kelsey and implemented formal progress monitoring using a passage reading fluency assessment. This progress monitoring tool could detect changes in Kelsey's reading skill level. After several weeks, Ms. Hayes reviewed Kelsey's scores, which revealed that she was not progressing at the rate needed to meet her goal. This let Ms. Hayes know that she needed to intensify the intervention.

Ryan's story. Ryan's teacher used his check-in/check-out monitoring system to track the extent to which Ryan was meeting the three school-wide behavioral expectations: "Be Safe," "Be Respectful," and "Work Hard." Mr. Jones also collected data on Ryan's discipline referrals. Although some progress was evident, Ryan continued to have an unacceptable number of referrals, and he met his daily report card goals only 40% of the time. The intervention team decided more intensive supports would be needed.

DBI Step 3: Diagnostic Assessment

Progress monitoring data help teams to determine when an intervention change is needed; diagnostic assessments, on the other hand, can help teams determine the nature of the intervention change needed. If after receiving the intensified version of the secondary intervention program the student's progress is insufficient, the team uses progress monitoring data, in combination with other diagnostic information and analysis of the current program, to identify intervention changes that may be effective for the student. Diagnostic assessment tools may include standardized measures, error analysis of progress monitoring data and work samples, or a functional behavioral assessment, among others. These assessment data allow teachers to identify specific areas of difficulty when a lack of progress is evident, and can inform decisions about how to adapt the intervention.

Kelsey's story. Ms. Hayes knew she had to make a change, but she wasn't sure how to best individualize her instruction. To help her identify what to change, she conducted an error analysis of Kelsey's most recent passage reading fluency data. This analysis provided more detailed information about Kelsey's mistakes and helped Ms. Hayes gain insight into productive directions for supplementing the reading intervention. Ms. Hayes also administered a phonics survey to determine Kelsey's decoding strengths

and weaknesses. She brought these data to the intervention team to discuss potential strategies for intensifying Kelsey's intervention.

Ryan's story. Mr. Jones knew that Ryan was making insufficient progress and that he needed to change his intervention. A closer look at Ryan's check-in/check-out data revealed that he had difficulty earning points for the "Be Respectful" goal. Ryan's teachers also noted that he often disrupted class with verbal (yelling out) and physical (throwing pencils, touching peers) outbursts. Deciding that Ryan needed an even more intensive intervention, the intervention team conducted a functional behavior analysis to identify antecedents and potential functions of Ryan's challenging behavior. Results indicated that Ryan engaged in these behaviors to gain attention from adults and avoid difficult tasks.

DBI Step 4: Adaptation of the Intervention

Using multiple data sources, the teacher or team makes a decision to adapt the intervention program to target a very specific need. Strategies for intensifying an intervention often occur along several dimensions. Quantitative changes (e.g., smaller group size, more time) are often the first step in the intensification process, but they are often not sufficient for students with the most intensive needs. As a result, additional qualitative changes may also be necessary, such as altering:

- the way content is delivered (e.g., more carefully aligning skills with students' needs, providing more systematic, explicit instruction),
- how a student responds (e.g., more opportunities or practice with feedback), or
- the environment (e.g., providing instruction in a setting that minimizes distractions).

Kelsey's story. Despite the increase in intervention length, Kelsey continued to make insufficient progress. Ms. Hayes decided that qualitative changes were also needed. Diagnostic assessment data suggested

that Kelsey had difficulty applying decoding strategies to vowel teams. So Ms. Hayes intensified her decoding instruction by (a) incorporating fluency practice of newly taught teams, with specified mastery criteria; and (b) providing explicit instruction and error correction.

Ryan's story. Ryan's behavior team developed an intensified, multicomponent intervention program, which included having teachers provide Ryan with periodic positive attention throughout each class period. In addition, the team reduced academic task difficulty so that Ryan could successfully complete assigned work with 95% or higher accuracy. He also received intensive academic skill instruction in areas of deficit and was explicitly taught strategies for appropriately initiating contact with adults and peers and appropriately requesting help with difficult assignments. Check-ins and mentoring were continued in order to provide frequent, positive interactions with adults and reinforcement for appropriate behavior. Ryan also began participating in a social skills group to work on the goals of showing respect and using appropriate language with both adults and peers. Upon initiating this plan, the team monitored progress using a 10-point behavior rating scale, in addition to ongoing collection of discipline referral data.

DBI Step 5: Continued Progress Monitoring, Analysis, and Adaptation

After revising the student's instructional program, the teacher continues to collect progress monitoring data to determine whether the student's response is adequate. As needed, the teacher may also conduct further diagnostic assessment, adapting the intervention iteratively, thereby allowing for alignment of the intervention with the student's unique learning needs.
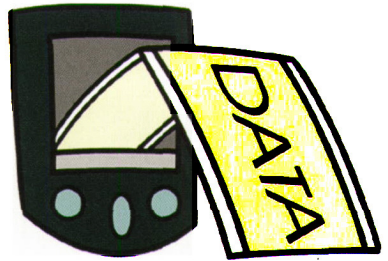
Kelsey's story. After several weeks, Ms. Hayes evaluated Kelsey's progress again. She had improved substantially with this revised program, but her four most recent progress monitoring scores still fell below her goal line. Ms. Hayes determined that, because Kelsey was not likely to achieve her goal, another instructional change was needed. She collected additional diagnostic data to inform the instructional change and determined that Kelsey did not appear to retain skills once they were no longer the instructional focus. Ms. Hayes modified her instruction to incorporate (a) more frequent checks for the retention of previously taught skills and (b) distributed practice and review of these skills. Ms. Hayes continued to collect progress monitoring data and found that after implementing the changes for several weeks, Kelsey's performance improved enough to meet her goal. Encouraged by this response, Ms. Hayes has decided to maintain the program and will continue to monitor progress to determine when additional changes are warranted.

Ryan's story. A review of Ryan's discipline referrals and behavior rating data after 6 weeks indicated that his behavior plan was working. His referrals decreased to an acceptable level, and he reached his goals on his behavior rating 90% of the time. Mr. Jones reported that Ryan was making progress in his social interactions, and that he appropriately asked for help with a task at least five times daily. The intervention team determined that Ryan continued to need this level of support, so they decided to continue to implement the plan and regularly collect and analyze data.

Organization of the *TEC* Special Issue

The other articles in this special issue provide additional details about academic and behavioral applications of DBI. First, Fuchs, Fuchs, and Vaughn synthesize research on intensive intervention and discuss why it is important. They describe the rationale for determining which students need intensive intervention, and contrast different approaches. They also offer proven strategies to help guide educators in planning intensified, individualized programs for students.

Two articles in this issue present hypothetical examples of how teachers can use DBI to adapt intensive interventions in reading and in mathematics. Lemons, Kearns, and Davidson describe an adapted reading intervention for a fourth-grade boy with severe learning disabilities, and

integration of functional behavior analysis and individualized function-based behavior plans. Wehby and Kern also present a hypothetical example of the DBI process, offering strategies for making data-based decisions about when and how to modify a standardized secondary platform to improve behavioral outcomes for an individual student.

In the concluding article, McInerney, Zumeta, Gandhi, and Gersten describe strategies that schools and districts have used to successfully address common challenges to implementing a program of intensive academic and behavior interventions. In interviews with NCII staff, local educators discussed the challenges they had experienced when individualizing intensive interventions on a student-by-student basis. The authors describe the strategies these educators used to deal with these challenges as they planned a new program, prepared their

long-term goal of improving outcomes for this most at-risk population of students.

References

Capizzi, A. M., & Fuchs, L. S. (2005). Effects of curriculum-based measurement with and without diagnostic feedback on teacher planning. *Remedial and Special Education, 26,* 159–174. http://dx.doi.org/10.1177/074 19325050260030401

Conduct Prevention Problems Research Group. (2002). Evaluation of the first 3 years of the Fast Track prevention trial with children at high risk for adolescent conduct problems. *Journal of Abnormal Child Psychology, 30,* 19–35. http://dx.doi.org/10.1023/A:014274914287

Deno, S. L., & Mirkin, P. K. (1977). *Data-based program modification: A manual.* Minneapolis, MN: Leadership Training Institute for Special Education.

Fuchs, D., Fuchs, L. S., & Compton, D. L. (2012). Smart RTI: A next-generation approach to multilevel prevention. *Exceptional Children, 78,* 263–279.

Fuchs, L. S., Deno, S. L., & Mirkin, P. K. (1984). The effects of curriculum-based measurement evaluation on pedagogy, student achievement, and student awareness of learning. *American Educational Research Journal, 21,* 449–460. http://dx.doi.org/10.3102/00028312021002449

Fuchs, L. S., Fuchs, D, & Hamlett, C. L. (1989). Effects of instrumental use of curriculum-based measurement to enhance instructional programs. *Remedial and Special Education, 10,* 43–52. http://dx.doi.org/10.1177/074193258901000209

National Center for Education Statistics. (2011a). *The nation's report card: Math 2011* (NCES 2012–457). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

National Center for Education Statistics. (2011b). *The nation's report card: Reading 2011* (NCES 2012–457). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

National Center on Response to Intervention. (2010, April). *Essential components of RTI—A closer look at response to intervention.* Washington, DC: U.S. Department of Education, Office of Special Education Programs and the National Center on Response

> **The strong national evidence of poor learning and achievement among students with disabilities—despite ongoing state and local efforts for school reform—offers a compelling rationale for addressing the needs of students who do not adequately respond to core and supplemental interventions within a multitiered framework.**

Powell and Stecker describe an adapted mathematics intervention for a second-grade girl with severe learning disabilities. Both articles describe the DBI process for designing and implementing an intensive intervention, and highlight the various decisions teachers needed to make, across the school year, to intensify these programs effectively.

Wehby and Kern discuss an *evidence-based approach to using DBI* to intensify programs for students with significant behavior needs. They synthesize research and provide an operational definition of how a DBI approach can be used to intensify behavioral interventions on a student-by-student basis. They also describe the distinctive features of a DBI approach for behavior, including its

staff, and allocated resources for intensive intervention.

In summary, this special issue features NCII's ongoing work to operationalize a process to address the national need for intensive intervention. The strong national evidence of poor learning and achievement among students with disabilities—despite ongoing state and local efforts for school reform—offers a compelling rationale for addressing the needs of students who do not adequately respond to core and supplemental interventions within a multitiered framework. The authors of this special issue collectively offer practical suggestions for teachers, interventionists, and other local educators interested in implementing intensive intervention, with the

to Intervention. Retrieved from http://www.rti4success.org/pdf/rtiessentialcomponents_042710.pdf

Wagner, M., Marder, C., Blackorby, J., Cameto, R., Newman, L., Levine, P., & ... Sumi, C. (2003, November). *The achievements of youth with disabilities during secondary school. A report from the National Longitudinal Transition Study-2 (NLTS2)*. Menlo Park, CA: SRI International. Retrieved from www.nlts2.org/reports/2003_11/nlts2_report_2003_11_complete.pdf

Wagner, M., Newman, L., Cameto, R., Garza, N., & Levine, P. (2005, April). *After high school: A first look at the postschool experiences of youth with disabilities. A report from the National Longitudinal Transition Study-2 (NLTS2)*. Menlo Park, CA: SRI International. Retrieved from

www.nlts2.org/reports/2005_04/nlts2_report_2005_04_complete.pdf

Wanzek, J., & Vaughn, S. (2009). Students demonstrating persistent low response to reading intervention: Three case studies. *Learning Disabilities Research & Practice, 24*(3), 151–163. http://dx.doi.org/10.1111/j.1540-5826.2009.00289.x

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