Insights into Learning Disabilities 15(2), 175-194, 2018

Mathematics Instruction for Secondary Students With Learning Disabilities in the Era of Tiered Instruction

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In the era of multi-tiered system of support approach to learning, identifying mathematical interventions that have been found to be effective for students who are struggling academically is imperative. Given the divide between instructional approaches in general and special education mathematical teaching approaches, it is important to bridge the assumed gap between instructional fields that can be vastly different in teaching and learning. This article provides practitioners and other stakeholders with some guidance that can help to prevent failure in mathematics for students with and without Learning Disabilities (LD) and effectively utilize tiered interventions at the secondary level. In this connection, most favorable learning outcomes for students occur when their skills and abilities closely match the demands of the curriculum and instruction within the classroom.

Contemporary schools face an increasingly daunting task of addressing incredible learner diversity, more rigorous standards for teaching in the content areas, and the continuation of high-stakes accountability for the success in teaching learners at all levels of academic need or readiness (Reys & Reys, 2011; Thurlow & Johnson, 2000; ESSA, 2015). Caught in the middle of this notably challenging context are students with LD who are typically included in general education settings, fully participating in the general curriculum, and held accountable to the same rigorous standards in inclusive settings (U.S. Department of Education, 2008).

The number of students identified as having a LD and receiving special education services has more than doubled since the original passage of The Individuals with Disabilities Education Act in 1975. Since the creation of the LD category, approximately half of all students determined eligible for special education are found eligible under this category (Zirkel, 2006). According to the United States Department of Education (2008), 2.9 million children in the US have been diagnosed with having a LD and receive special education services.

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This represents over 5.5% of the total school-age population, and approximately one-half of all children receiving special education services.

The classic sign of a learning disability has been a distinct and unexplained gap between an individual's level of expected achievement and their actual performance level. Learning disabilities can present differently at various stages of development. Additionally, learning disabilities can range from mild to severe and it is not uncommon for individuals to have a learning disability in more than one area (NCLD, 2012). Three areas most affected by learning disabilities are reading (i.e., dyslexia), writing (i.e., dysgraphia), and mathematics (i.e., dyscalculia).

Looking at dyscalculia more closely, because math disabilities vary so much, the effect they have on an individual varies similarly. For instance, a student who has difficulty processing language will face different challenges in math than a person who has difficulty with visual-spatial relationships. Although researchers and practitioners may intend to address the same construct when referring to math disabilities; there is much variability in the characteristics of both the actual and intended groups of students described across studies and settings (Landerl, Bevan, & Butterworth, 2004; Mazzocco, & Thompson, 2005). When examining areas that affect mathematics, specifically, we know that (a) language, (b) visual-spatial processing, (c) attention, (d) psycho-social skills, (e) fine-motor skills, (f) organization, (g) cognitive processing, and (h) memory deficits can all impede students with learning disabilities from being successful in mathematics (Brodskey et al, 2002). Because learning disabilities can arise at any stage of development it is imperative that we identify strategies adolescents can use to help them be successful academically.

The General Curriculum and Core Mathematics Instructional Approaches

One of the goals of standards-based mathematics is for students to have and build a deep understanding of mathematical concepts (Brodesky et al., 2002). Understanding concepts involves making connections between ideas, facts, and skills and the metacognitive process of reflecting upon and refining that understanding. Looking more closely at the general education approach to problem-based learning, students are required to gain new knowledge by gathering information, identifying possible solutions, evaluating each of the solutions, and then drawing conclusions (Roh, 2003). The emphasis is for students to approach mathematical problems with assumed knowledge that there are multiple solution methods and it is their responsibility to determine the best solution; in other words, there is more than one way to solve a problem. The Problem-based inquiry approach to mathematics is said to help students develop problem-solving, creative, and critical thinking skills through heuristic learning (Hirsch, 2007). While for most students this may come naturally, students with

LD who struggle with mathematics may have difficulty knowing which solution method to utilize for a given problem. Furthermore, as students begin to explore the secondary mathematics curricula, the core instructional paradigm emphasizes more symbolic representations than during the elementary grades. Consequently, students who tend to think concretely may need additional support to help them transition from concrete to abstract representations (Brodesky et al., 2002; Steele & Steel, 2003). When this occurs, it may become necessary for the teacher to provide supports to help facilitate this learning process using tiered interventions in the general education classroom. In addition to these struggles, students often develop gaps in their mathematical knowledge base and fall further and further behind their peers (Witzel, 2016).

Thus, teachers must be aware of strategies that are helpful for students who struggle with mathematical concepts as well as foundational skills. The purpose of this article is to provide general guidance to the field on how mathematics instruction might be taught at various tiers within an RtI framework, particularly as students' progress past the primary grades. The focus will be on research-based practices for students who are at risk for failure in mathematics and those students identified with LD. The emphasis will be on providing practitioners research-based strategies to help prevent school failure for students as they move on to the secondary level.

Tiered Instruction to Prevent Failure in Mathematics and the Need for Continued Intervention

When implemented correctly RtI can serve as a powerful preventative tool that aids "at-risk" students from being referred for special education services without proper interventions. Two advantages to using RtI for specific learning disability identification is that there would be a strong focus on providing effective instruction and improving all students' outcomes, and decision-making is supported by continuous progress monitoring closely aligned with desired instructional outcomes (Fuchs & Mellard, 2007). With RtI now being implemented at the secondary level it is important to examine factors that influence the acquisition of skills and concepts by students in addition to interventions and supports that respond to challenges students experience (Marita & Hord, 2017). It is imperative that general education teachers have knowledge of instructional approaches that differentiate instruction to meet the needs of students they serve who may be struggling. Further, at the secondary level intensity of instruction, implicit in tiered instruction, must continue for students with LD regardless of previously being deemed "non-responders."

The Bridge to Special Education for Students with Learning Disabilities

To provide guidance to core instruction in upper grades, math teachers would do well to derive critical supports from the research base established in the teaching of mathematics to struggling students and students with LD. According to Johnson et al. (2010), deficits in verbal working memory, visual working memory (Hitch & McAuley, 1991), processing speed (Bull & Johnston, 1997; Swanson & Jerman, 2006), attention (Fuchs, Compton, Fuchs, Paulsen, Bryant, & Hamlett, 2005), and executive function (Geary, 2004) have been demonstrated to differentiate between average achievers and students with math disabilities. These deficits manifest in difficulties with math fact fluency (Geary, Brown, & Samaranayake, 1991), problem solving (Geary, 2004), and number sense.

It is imperative for practitioners to understand how to provide mathematics instruction at each of the intervention levels to improve student academic achievement. RtI should be used as a progress monitoring system that assesses and evaluates students who are considered "at-risk," intervene with students who have behavioral or academic difficulties and determine whether a LD exists with a variety of assessment tools and strategies (Fuchs & Fuchs 2006; Fuchs & Fuchs, 2007). Because the diagnosis of a LD is not a clear objective medical condition and involves the use of psychometric evaluation, the field of special education has struggled with developing consensus around an operational definition of LD, which has left room for ambiguous and biased decisions with regard to diagnosis (Artiles, Kozleshi, Trent, Osher, & Ortiz, 2010). RtI aids students before they fall behind academically, and instructional services are organized as tiers or levels in which students are able to move fluidly between groups based on their responses to the intervention services provided.

Mathematical Divide Between General and Special Education

One of the major issues in providing tiered intervention in mathematics is the perceived philosophical divide between general education and special education approaches to teaching mathematics (Boyd & Bargerhuff, 2009). Because of this divide, researched-based instructional approaches used in special education are often rejected in general education settings. There is a misconception that special education is a watered-down version of general education curriculum, when in fact, the opposite is often true. Special education offers more intensive, specialized instruction that appears to be the opposite of problem-based inquiry approach to learning that general education teachers use. We propose that both approaches have validation and can be used to teach mathematics to students who are struggling academically (Cook & Schimer, 2003).

Along those same lines, the National Mathematics Advisory Panel (2008) recommended that students be taught mathematics using explicit instruction. Explicit instruction with students who have learning disabilities was shown to consistently and positively affect performance with word problems and computation. The Panel defined explicit instruction as the teacher providing clear models for solving a problem type using an array of examples, students receiving extensive practice in use of newly learned strategies and skills, students are provided with opportunities to think aloud (i.e., talk through the decisions they make and the steps they take), and students are provided with extensive feedback. While the Panel did not endorse all mathematics instruction be taught using explicit instruction, it was recommended that struggling students receive some explicit mathematics instruction regularly similar to the recommendations in the Special Education literature (e.g., Krawec, Huang, Montague, Kressler, & de Alba, 2013; Montague, Krawec, Enders, & Dietz, 2014; Strickland & Maccini, 2012).

We are suggesting these instructional approaches do not have to be polar opposites of each other, but instead used in conjunction with one another to provide students with supports they need to be successful. For example, in order for a student to be successful during a lesson that is inquiry-based, it may be necessary to pre-teach vocabulary words that would help them during the whole group instruction. Vocabulary strategies that are research-based, help students acquire the knowledge they need to be successful when they begin the inquiry-based lesson.

Interventions and Secondary Students Who Struggle

Tiered interventions should not be looked at as a replacement to general education curriculum, but instead, as a support for students who may be struggling academically. It is important to recognize the different purposes for each tier and the overall goals for students. According to the National Center on Response to Intervention (2010), Tier I instruction involves high-quality core instruction (in the general education classroom) that meets the needs of most students using research-based interventions. Tier II instruction uses evidence-based interventions of moderate intensity, which includes small group instruction. Tier III instruction is individualized with increased frequency and duration for students who are not demonstrating progress based on previous tier's interventions put in place.

While the field of reading instruction has made great strides outlining what RtI instruction looks like at each Tier (e.g., Berkeley, Scruggs, Mastropieri, 2010; Chard, Vaughn, & Tyler, 2002; Dallas, 2017; Fletcher, Denton, Fuchs, & Vaughn, 2005; Gersten, Fuchs, Williams, & Baker, 2001; Vaughn, Wanzek, Woodruff & Linan-Thompson, 2007), there remains more ambiguity and division in mathematics instruction (Boyd & Bargerhuff, 2009) leading to lesser clarity for practicing teachers who need to support students with learning difficulties.

There is a push in the Common Core State Standards-Mathematics toward problem-based learning through inquiry instruction in general education classrooms; however, decades of research with students who have struggled in mathematics has shown that explicit instruction is highly effective at increasing academic performance as evidenced by the Gersten, Chard, Jayanthi, Baker, Morphy, & Flojo (2008) report. Explicit instruction involves the teacher (a) clearly modeling the solution specific to the problem, (b) thinking aloud the specific steps during modeling, (c) present multiple examples of the problem and applying the solution to the problem, and (d) providing immediate corrective feedback to the students on their performance. Archer and Hughes (2011) identified 16 elements of explicit instruction found to be effective for students with disabilities. However, it is important to remember that explicit instruction steps can be combined as demonstrated in the previous meta-analysis. The 16 steps identified by Archer and Hughes (2011) include: (1) focus on critical content; (2) sequence skills; (3) break down complex skills and strategies into smaller parts; (4) design lessons that are focused and organized; (5) clearly state the lesson's goal and your expectations; (6) review prior knowledge and skills; (7) clearly model the task or skill in a step-by-step approach; (8) use clear and concise academic language; (9) provide a wide range of examples and non-examples; (10) use guided practice with supports in place; (11) purposefully plan frequent opportunities for students to respond; (12) closely monitor student progress; (13) provide affirmative and/or corrective feedback; (14) deliver instruction at a pace that optimizes learning; (15) help students make connections with the content; and (16) provide multiple opportunities for students to practice skills independently.

It is important to point out that we are not suggesting explicit instruction always be the starting point for instruction. Instead we propose that explicit instruction is not in conflict with the more traditional general education approaches to teaching, but instead can be used as an enhancement for students who are struggling. Furthermore, we acknowledge the importance of providing recommendations for teachers currently in the field based on present understanding and available literature.

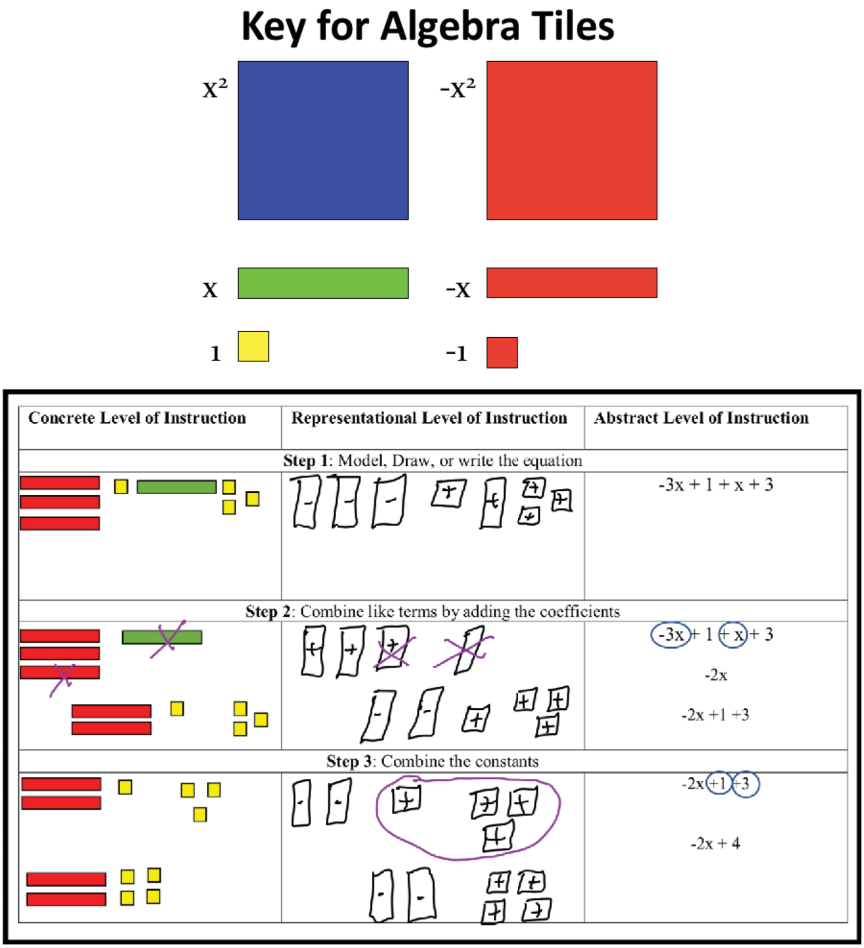
Sample Practices to Differentiate Instruction for Various Group Sizes

The practices described in this section should not be looked at as an exhaustive list. We provide at least two examples of well research-based interventions that can be used to teach various group sizes for students who are struggling with mathematics.

Whole Group Instructional Strategies

At the Tier 1 level, students are still receiving instruction in the general education classroom, and each of the practices described below can be taught using whole group instruction. While we are only providing two strategies with visual examples, there are many more practices teachers should have in their repertoire. Some of the additional practices include whole-group mnemonic instruction, concept mapping/graphic organizers, and embedded learning strategy instruction to name a few (Gersten, et al., 2008). Below are two examples of whole group instructional strategies found to be effective for students with learning disabilities and those who are struggling with mathematics.

Concrete-representational-abstract (CRA). CRA is a framework that guides students through a given mathematical concept by using manipulatives and visual representations to help students link conceptual and procedural knowledge (Strickland and Maccini, 2012; Witzel, 2005). The first component of CRA is the concrete level where students work with different manipulative devices (e.g., base ten blocks, unifix cubes, pattern blocks) to gain an understanding of a variety of math concepts through exploration and discussion (Gersten, Joran, & Flojo, 2005). Once students have developed conceptual understanding through the use of manipulatives, they are then instructed at the next level in which pictorial representations are drawn based on the manipulatives used at the concrete level (Agrawal & Morin, 2016). Pictorial representations may include items such as tally marks, dots, or circles. Finally, after mastering the representational level students are transitioned to the abstract level. The abstract level is the final objective of the framework for students to demonstrate their ability to complete the algorithm without any instructional supports. According to Strickland and Maccini (2012), because the abstract component is most difficult, it is important to provide a mnemonic device, cue, or other cognitive strategy to help students transition to this final phase. CRA has a large body of research to demonstrate its effectiveness and to show different mathematical concepts that have been taught using this strategy (e.g., Flores, Hinton, & Strozier, 2014; Strickland & Maccini, 2010; Strickland & Maccini, 2012; Mancl, Miller, & Kennedy, 2012; Witzel, Riccomini, Schneider, 2008). The following is an example of how to use the CRA graduated sequence of instruction to solve a simplify an expression.



*The concepts of zero pairs and combining like terms are prerequisite skills

Figure 1. **Example of solving one-step equations using CRA**

Schema-based instruction (SBI). SBI is a teacher-directed program that is aimed toward students with LD in the elementary and middle school grades. It promotes conceptual and procedural understanding by organizing mathematical word problems around two strands; (a) solving addition and subtraction problems and (b) solving multiplication and division problems. The problem schemata that pertain to all four operations include Change, Group, Compare (additive), Multiplicative Compare, and Vary. Change problems usually begin with an initial quantity and involve an action, causing a decrease or increase in the original quantity. Group problems help students to learn the concept of part-part-whole relationship. Compare (additive) problems address the similarities or difference between two things. Multiplicative Compare problems compare two objects, persons, or things using a common unit. This type of problem tells the quantity of one thing as a multiple and involves multiplication or division. Often students with LD use pictorial representations rather than the use of schematic diagrams. Schematic imagery is positively correlated with problem-solving (Hegarty & Kozhevnikov, 1999). The extensive research on SBI by Jitendra and colleagues (e.g., Jitendra et al. 2007; Jitendra, DiPipi, & Perron-Jones, 2002) incorporates explicit instruction, self-monitoring, and scaffolding which are all research-based instructional practices. The sample word problems below are intended to be at a lower level to demonstrate efficiently three of the problem types.

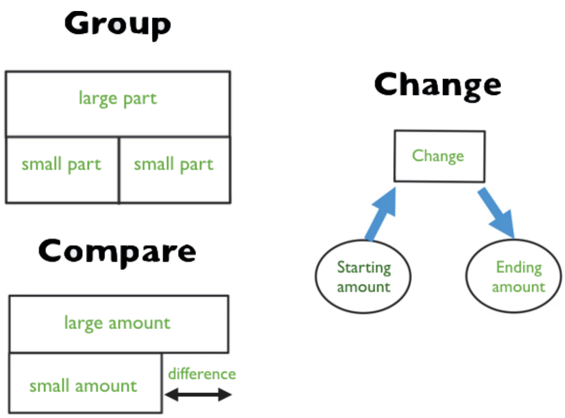


Figure 2. **Additive Problem Type Structures using Schema-Based Instruction**

Brandon had 10 toy cars, his grandparents bought him 5 more for is birthday, how many toy cars does he have in all?

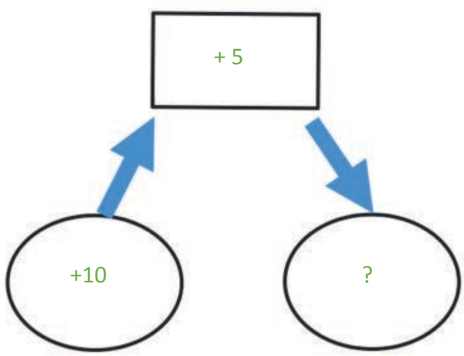


Figure 3. **Change Problem Type with Ending Amount Missing**

Brandon had 10 toy cars, he received more toy cars from his grandparents for his birthday and now has 15. How many toy cars did his grandparents buy him?

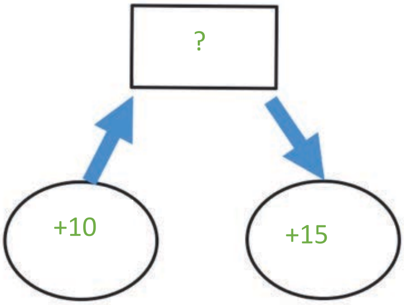


Figure 4. **Change Problem Type with Change Amount Missing**

Brandon really likes toy cars and has quite a few. For his birthday, Brandon's grandparents bought him 5 more toy cars to add to his collection, and he now has 15 toy cars. How many toy cars did Brandon have before his birthday?

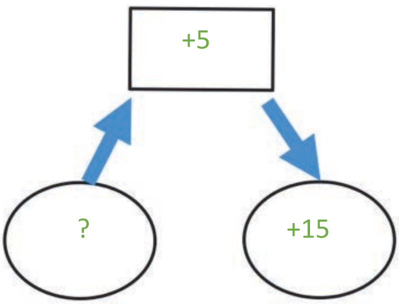


Figure 5. **Change Problem Type with Beginning Amount Missing**

Small Group Instructional Strategies

Tier 2 instruction takes place in addition to core instruction students receive in the whole group setting. Students may be in groups of five to eight and receive increased opportunities to practice and learn skills taught at Tier 1(Baker, Fien, & Baker, 2010). According to the RtI framework, approximately 15% of students need services at this level.

At this level there is an increase in intensity and duration of the interventions. These interventions are taught in conjunction with general education mathematics instruction just at a different time during the day. The instructional strategies we propose here are intended for small groups where the teacher is able to provide more specific affirmative and corrective feedback using learning strategy instruction. Tier 2 instruction can also be viewed as differentiated instruction, providing accommodations, and problem solving (Fuchs, Fuchs, Compton, 2012). An aspect that is important to note is that the interventions listed below (i.e., learning strategies) can also be taught during whole group instruction and embedded without the level of intensity and duration described here.

Learning strategy instruction. Learning strategies are instruments used to approach learning to help students understand information and solve problems (Schumaker & Deshler, 1992). Learning strategy instruction focuses on helping students to be more active learners. This is accomplished by teaching students how to learn and use what they learn to successfully solve problems. Strategy instruction provides struggling students with the same tools and techniques that resourceful learners use to help them understand and learn new material or skills (Deshler, et. al., 2001). With guidance and sufficient opportunities for practice, struggling students learn to link new information with previously taught information in meaningful ways, accordingly making it easier for them to recall the new information or skill at a later time, regardless of the situation or setting.

According to Swanson (1999) the most effective form of teaching students with learning disabilities is to combine components of direct instruction (e.g., teacher-directed lecture, discussion, and learning from books) with components of strategy instruction (e.g., teaching ways to learn such as memorization techniques and study skills). The heuristic learning strategy described below combines explicit instruction and strategy instruction to teach students how to attack word problems.

SOLVE strategy. According to Freeman-Green, O'Brien, Wood, and Hitt (2015) the SOLVE Strategy is a five-step mathematical problem-solving strategy that can be taught using the eight stages of instruction (i.e., Pretest, Describe, Model, Verbal Practice, Controlled Practice and Feedback, Advance Practice, Posttest Procedures, and Maintenance and Generalization) established as the explicit-intensive model of instruction by the KU CRL (Schumaker, & Deshler, 1992). During the first step, "Study the problem," students (a) highlight, (b) circle, or (c) underline the question in the word problem. The students then ask themselves, "What is the problem asking me to find?" The students will write the answer to this question in their own words. During step 2, "Organize the facts," students (a) identify each fact in the word problem by "striking" the facts, (b) eliminate unnecessary facts by putting a line through it, and (c) list all necessary facts. The next step, "Line up a plan," involves the students choosing an operation or operations (i.e., add, subtract, multiply, divide), and telling in words how they are going to solve the problem without using numbers. During step 4, "Verify your plan with action," students estimate their answer to the word problem and then carry out the plan they created in the "L" step by computing the equation that they created. The final step, "Examine your results," calls for students to make a logical decision about the appropriateness and accurateness of their final answer. Students ask themselves (a) does my answer makes sense (check what the problem was asking them to find); (b) is my answer reasonable (check their estimate), and (c) is my answer accurate (check their work). The last step the students take is to write their answer to the problem in a complete sentence. Below is an example of how to solve a word problem using the SOLVE Strategy.

A local business was looking to hire a landscaper to work on their property. They narrowed their choices to two companies. Flourish Landscaping Company charges a flat rate of $120 per hour. Green Thumb Landscapers charges $70 per hour plus a $1600 equipment fee. If it is estimated to take at least 35 hours to complete the job, which company will be cheapest and by how much?
S-Study the Problem 1. Ask yourself, "What is this problem asking me to find?" 2. Highlight, underline, or circle the question 3. Rewrite the question as a statement S- The company with the lowest price and the difference in price between the two companies
~~A local business was looking to hire a landscaper to work on their property. / They narrowed their choices to two companies.~~ / Flourish Landscaping Company charges a flat rate of $120 per hour. / Green Thumb Landscapers charges $70 per hour plus a $1600 equipment fee. / If it is estimated to take at least 35 hours to complete the job, / which company will be cheapest and by how much?
O-Organize the facts 1. Identify the facts by striking them (/) 2. Eliminate or cross out unnecessary facts by striking through them 3. List each fact O- FLC = $120 per hour GTL =$70 per hour + $1600 Total hours = 35

L-Line up a plan 1. Choose an operation or operations 2. Write the plan for solving WITHOUT using numbers L- Find the cost of FLC by multiplying the cost per hour by the total number of hours. Find the cost of GTL by multiplying the cost per hour by the total number of hours and then adding the equipment fee. Find the difference between the costs by subtracting
V-Verify your plan with action 1. Make an estimate of the answer 2. Carry out the plan you wrote in the 'L' step with action Estimate: $100 FLC - 120(35) = 4,200 GTL – 70(35) + 1600   Difference 2,450 + 1600   4,200 – 4,050 4,050   150
E-Examine your results 1. Did I answer what I was asked to find in 'S'? Yes 2. Is my answer accurate? Yes (checked with a calculator) 3. Is my answer reasonable?" Yes 4. Write your answer as a complete thought." E. **Green Thumb Landscapers is $150 cheaper.**

Figure 6. **Example of the SOLVE Strategy**

We would like to draw your attention again to the fact that strategies listed in Tier I previously can also be used as Tier II interventions, provided there is an increase in frequency and duration of the intervention. Likewise, Tier II practices such as learning strategy instruction can be embedded in daily practice. For example, SBI also has a mnemonic strategy, FOPS, to help students solve mathematical word problems. We encourage practitioners to research other mnemonic strategies in math such as (e.g., STAR, FAST DRAW, etc.) for other useful approaches. Mnemonic instruction has been well researched and validated for students with high incidence disabilities, particularly students with

LD (e.g., Cuenca-Carlino, Freeman-Green, Stephenson, Hauth, 2016; Maccini & Hughes, 2000; Manalo, Bunnell, & Stillman, 2000; Peltier & Vannest, 2016; Test & Ellis, 2005).

Consequently, if students are successful at acquiring concepts and skills targeted at Tier II with small group instruction, it is important for them to move back to Tier I. As stated previously, students should move fluidly between groups, so if they are not making academic progress at Tier II, then they should be moved to Tier III level of instruction.

One-to-One Instruction

Of all the instructional strategies mentioned previously, the ones in this section departs the most from the traditional teaching methods in general education classrooms. Tier III can consist of one-to-one instruction between the teacher and student. Unfortunately, at this level there are not many research-based interventions for mathematics. One strategy, Direct Instruction (DI), has been shown to be effective for students who are struggling academically. It is because of this that one should be reminded that only approximately 5% of students receive instruction at Tier III, and it is meant to be for students who are not progressing at the two previous Tiers. According to Stein, Carnine, and Dixon (1998), the major difference between DI and explicit instruction (discussed in previous sections) is DI's emphasis on curriculum design; every other component overlap.

Direct instruction. DI was created on the premise that struggling students who are not making progress academically can "catch up" with their non-struggling peers if they are provided more effective and efficient instruction (Bereiter & Englemann, 1966). The goal of this instruction is to teach more in less time. One way to do this is to make sure lessons are concise and focus on specific procedural knowledge. Perhaps the most distinguishing factor of DI is the use of scripted lessons. This seems to be one of the biggest points of contention for general education teachers and researchers. There is an identified belief that scripted lessons focusing on skills using drill and practice stifles student's creativity; however, with DI there is a gradual move to more student-guided instruction known as mediated scaffolding once students have mastered basic mathematical skills (Kameenui & Carnine, 1998). There appears to be a misconception that all special education interventions follow this model, which is not the case as we have attempted to point out in the whole and small group instruction sections above.

The sequence of instruction and examples have been tested and found to be empirically sound (see the National Institute for Direct Instruction) in the DI curriculum materials. Some of the key features of DI programs include: a) specific program design, b) organized instruction, and c) student-teacher interactions (Watkins & Slocum, 2003). The research behind DI spans over 40 years, and a lot of the documented research can be found at the National Institute for Direct Instruction website (www.nifdi.org). Below are brief descriptions of two DI mathematics programs found to be effective for secondary students struggling in mathematics.

Corrective mathematics. Corrective Mathematics is a remedial program designed for older students who struggle with basic skills (e.g., addition, subtraction) up to more advanced skills (e.g., ratios, equations). Instruction is carefully sequenced to where students who have not had success previously in mathematics are able to master basic skills and become ready for higher level math concepts. One of the key factors in students' success in higher level mathematics is their ability to do well in Algebra.

Essentials for algebra. Essentials for Algebra provides a foundation for middle or high school students to perform well in Algebra I courses. Some of the topics students are taught include: a) exponents, b) rate equations, c) signed-number multiplication, and d) geometry. The instruction is carefully sequenced with the beginning lessons focusing on prerequisite skills that would have been taught in earlier grades (e.g., rounding decimals, fractions, percent equivalences) and then progressing to more difficult content. The program gives specific time-frames for instruction for students at both the middle or high school level as well as appropriate homework practice.

Discussion

Most favorable learning outcomes for students occur when their skills and abilities closely match the demands of the curriculum and instruction within the classroom. Therefore, it is important to match quality classroom instruction to meet the needs of the students. Research has consistently found that RtI initiatives lead to gains in student achievement and schoolwide improvements, such as reduced referrals to and placements in special education and a higher rate of students scoring proficiently on state tests (Burns, Appleton, & Stehouwer, 2005). The essential focus of RtI is the notion of providing more intensive and specialized instruction for students with additional needs when core instruction fails impart the curriculum sufficiently. One would hope this would prevent student failure by "catching" students before they "fall." Two things are particularly notable, however, when considering students identified as having an LD in light of the RtI era. 1) Students with LD become eligible based in part on data collection that suggests a lack of responsiveness to core instructional approaches and tiered interventions; however, this does not mean they do not continue to benefit from specialized instruction and intervention as they proceed through the upper grades. 2) Students with LD who require specialized instruction and intervention primarily receive instruction in the general education setting; however, general education teachers may not have sufficient knowledge of the instructional approaches (i.e., explicit-intensive instructional strategies provided in this article) in order to promote the continued support these students require.

Implications

While there are a number of practical implications for the interventions highlighted in this article we emphasize this was not intended to be an exhaustive list of interventions for students struggling in mathematics. The primary implication of this article aligned with the purpose of this work relates to the needs of general education and special education professionals to recognize the continued need for specialized instruction for students with LD as they progress through the upper grades. Despite grounding in excellent research in two diverging paradigms of mathematics instruction, common ground can be found in the need to provide works in the moment. Dogmatic adherence to pedagogical foundations undermines a teacher's ability make practical decisions for differentiation. The wisdom of contemporary math theorists suggests that the promotion of problem-solving and inquiry aligns with a greater depth of conceptual mathematical understanding. It is not the place of those with expertise in Learning Disability to countermand these findings; however, genuine respect must be shown to those sound instructional principles that have been well established in special education research which with great replicability have been shown to promote progress in the math curriculum despite limitations in language processing, executive functioning, memory, etc. Ultimately the authors hope that RtI provides a model for viewing a more balanced continuum of instruction based on the need to provide effective instruction to ALL students even those for whom mathematics can be particularly challenging.

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