Learning Disabilities: A Contemporary Journal 23(1), 27-47, 2025

A Tier 3 Middle School Math Intervention: An SRSD-Division Exploration

Leslie A. Rogers*
Montana State University

Jackie Dalton
Saint Croix Central School District

This single-subject design study examines the effectiveness of a Tier 3 math intervention designed to address the academic challenges of three fifth-grade students not meeting minimum proficiency standards in long division. Using the self-regulated strategy development (SRSD) model, the intervention targeted procedural fluency and conceptual understanding, fostering self-regulation skills such as goal setting, self-talk, and self-monitoring. A university teacher educator and two preservice teachers delivered six lessons over 12-15 sessions in a rural Midwest school. Results from a multiple-probe design demonstrated a functional relation between the SRSD intervention and improved long-division performance. Qualitative data also indicated enhanced conceptual understanding. These findings suggest that SRSD can support students struggling to meet academic expectations through explicit instruction and self-regulation strategies.

Keywords: **intervention, middle school, older students, mathematics, self-regulation, SRSD**

Introduction

Understanding Mathematics Difficulties in the Upper Grades

Many students are underperforming in mathematics, with increasing percentages falling below grade level (Bjorklund-Young & Plasman, 2020; National Assessment of Educational Progress [NAEP], 2023). As students progress through school, the academic diversity in regular education classrooms expands (Swanson et al., 2020). However, understanding how to support the wide range of learners in upper grades remains limited (Powell et al., 2021), despite ongoing legal mandates emphasizing differentiation and evidence-based teaching practices for students of all ages (e.g., Every Student Succeeds Act, 2015; Individuals with Disabilities Education Act, 2004; Section 504 of the Rehabilitation Act, 1973).

Research demonstrates that implementing effective, research-based teaching practices can significantly improve outcomes for students struggling to meet grade-level standards (Johnson & Smith, 2008; Stevens et al., 2018). This need is particularly urgent in mathematics, where national assessments (e.g., NAEP, 2023) reveal significant gaps in comprehension among students in grades 4 and above who encounter increasingly complex concepts and transitions (Johnson & Smith, 2016). Approximately 35% of students in regular classrooms experience mathematics

*Please send correspondence to: Leslie Rogers, Ph.D., Education Department, Montana State University, 322 Reid Hall, P.O. Box 172880, Bozeman, MT 59717-2880, USA, Email: Leslie.rogers1@montana.edu.

difficulties (MD), many of whom are not served through special education (Gersten, 2005, as cited in Rojo et al., 2024).

Students with MD are often defined by using cutoff scores on state standardized mathematics assessments. For example, Jitendra et al. (2012) defined MD as mathematics scores on the Measures of Academic Progress (MAP) that fell at or below the 40th percentile. Students with MD face compounding challenges as they progress in school, highlighting the critical need for targeted, evidence-based interventions, particularly during key transitions in grades four and beyond when mathematical concepts become increasingly complex (Nelson & Powell, 2018; Rojo et al., 2024).

Supporting Older Students with Mathematics Difficulties (MD)

While most research on improving outcomes for students with MD focuses on elementary learners (Nelson & Powell, 2018), older students often face a critical lack of tailored evidence-based practices (EBPs). Educators frequently rely on general frameworks such as Universal Design for Learning (UDL; Lambert et al., 2021) and Multi-Tiered Systems of Support (MTSS). UDL reframes academic difficulties as issues of classroom and curriculum accessibility, offering strategies in three areas: engagement, representation, and expression (CAST, n.d.). However, UDL lacks the robust processes needed to reimagine math instruction at the secondary level (Lambert et al., 2021).

Similarly, Response to Intervention (RTI) provides a tiered approach to improving academic outcomes, with Tier 1 offering universal classroom instruction, Tier 2 delivering small-group interventions, and Tier 3 focusing on intensive, individualized support (Bouck & Cosby, 2019). At the secondary level, Tier 2 interventions often include alternative pacing or additional classes (Bouck & Cosby, 2017). Despite its promise, RTI faces challenges such as identifying effective interventions, providing professional development, and ensuring fidelity to the process (Johnson & Smith, 2008).

While resources like High-Leverage Practices (HLPs; Aleve & Kennedy, 2024), What Works Clearinghouse practice guides (WWC, n.d.), and Vanderbilt's Iris Center modules offer valuable insights, more is needed to help educators incorporate these strategies into lesson plans effectively (Aleve & Kennedy, 2024). Research specifically addressing older students with MD suggests that explicit and intensive interventions (e.g., ~20 hours of 20–30-minute sessions; Powell et al., 2021) are essential. Additionally, dynamic approaches grounded in data-based individualization and self-regulation strategies (e.g., self-monitoring, goal setting, positive self-talk) have shown promise in fostering independent success (Manuella & Mangunson, 2018).

One such evidence-based program that integrates these components is the self-regulated strategy development (SRSD) model (Harris et al., 2003). While SRSD is widely validated in writing instruction, initial findings suggest its potential in mathematics, particularly for older students (Case et al., 1992; Cook et al., 2012; Losinski et al., 2021). These promising results underscore the need to further explore SRSD's application to address the critical gaps in math instruction for older learners with MD.

The Self-Regulated Strategy Development Model & Math Studies

SRSD is an evidence-based practice (EBP) that facilitates explicit instruction related to academic and self-regulation skills (Harris et al., 2003; Rogers & Graham, 2008; Institute of Education Sciences, 2017). SRSD actively involves students in ongoing and meaningful assessments throughout the learning process. This approach addresses the pressing need for self-regulation strategies in math interventions for older students, as research indicates that self-regulation plays a pivotal role in mitigating students' underachievement in mathematics (Manuella & Mangunson, 2018; Hacker et al., 2019), making SRSD a valuable tool for enhancing math instruction for older students.

SRSD is not a stand-alone curriculum but a teaching model implemented through lessons integrated into existing curriculum. SRSD has six stages of instruction, which assist teachers in planning lessons that guide students from developing their background knowledge (stage 1) through independent performance (stage 6). Teachers provide scaffolded levels of support with their instruction, moving from more teacher-centered lessons - where interactive teacher-facilitated modeling occurs - to more student-facilitated lessons where students engage in rich collaborative discussions. The stages of instruction, such as engaging in discussions (stage 2), modeling (stage 3), memorizing strategies so that they can be recalled and used without teacher assistance (stage 4), and providing additional supports such as re-engaging in previous stages (stage 5) are repeated as needed until students are confident and successful in completing their tasks independently (stage 6). Infused throughout the stages is a focus on self-regulation skills such as empowering self-talk, goal setting, self-monitoring, and self-reinforcement. The focus on self-regulation within the SRSD model is critical in helping students reach the independent performance stage in the class where the skills are learned and in other environments.

There is compelling evidence of SRSD's effectiveness in writing (Rogers & Graham, 2008; Institute of Education Science, 2017); consistently large effects are observed in students' writing outcomes across various grade levels, from kindergarten to grade 12. While the evidence supporting SRSD's efficacy in teaching mathematics, particularly among older students, is still emerging, initial findings are promising.

The first evaluation of an SRSD math intervention occurred when researchers applied the SRSD model and created a 5-step strategy to enhance students' procedural and conceptual mathematical understanding (Case et al., 1992). The intervention was delivered two to three days per week and included a pre-intervention vocabulary session followed by five weeks of tutoring. The five-step intervention included reading problems aloud, identifying important words, drawing visual representations, writing math sentences, and providing answers. Utilizing a multiple baseline design, their study demonstrated positive outcomes related to the total number of correct problems (procedural fluency) for two out of four 5th- and 6th-grade students with learning disabilities. Despite some variations in interventionists, the authors suggested that fidelity to the intervention was relatively consistent among the preservice students who facilitated the intervention. They also noted common student errors, including reluctance to slow down and employ the strategy and errors primarily from incorrect operations. The teacher and students involved in this study provided positive feedback. The participants' special education teacher expressed satisfaction with students applying the strategy beyond the intervention sessions, while students reported that graphing their results aided in recognizing their progress.

Since the Case et al. (1992) study, only a few investigations have focused on applying the SRSD model to mathematics instruction for older students. Those that have occurred have extended the interventions for those with an identified disability and those who were "struggling." All have yielded positive results. For instance, Cuenca-Carlino et al. (2016) utilized a multiple-probe across pairs design to assess the impact of the SRSD model on the computational skills and accuracy of grade-level multi-step equations among six middle school students at risk for math difficulties or with a learning disability. Their intervention occurred during the school's Response-to-Intervention (RtI) period, lasted four days per week over 12 weeks, and enhanced students' performance in solving multi-step questions. Unlike the Case et al. study, this research group used a mnemonic to help students memorize the strategy. The primary mnemonic used was "Don't Catch my Cat's Whiskers," with each letter representing a specific aspect of the strategy aimed at solving multi-step equations (e.g., C stood for "Combine like terms" and W stood for "Way to go. You are Done.") The intervention, facilitated by a special education classroom teacher, yielded positive results, with students demonstrating increased accuracy in solving equations and improved strategizing. The authors noted that students who correctly answered more problems during baseline exhibited greater organization in their final work, suggesting a correlation between performance data and organizational skills development. They defined *organization* as "having a plan to work through each equation and demonstrating the plan through the work being shown on paper." Additionally, they recommended incorporating discussions related to generalization into future lessons.

Another application of the SRSD model to older students was conducted by Hacker et al. (2019). Their article described two studies, one employing a cluster-based randomized controlled trial and the other using a multiple-baseline design. The authors investigated how students with MD receiving an SRSD language-based metacognitive intervention improved their foundational understanding of fractions. The intervention included a writing component, as the authors hypothesized that writing would serve as a metacognitive tool to help students monitor and control their thinking. In total, their studies involved 90 4th- through 6th-grade students. The authors concluded that their strategy, FACT+R2C2, which followed the six SRSD stages, improved student outcomes. However, a visual analysis of the data points could not be confirmed as a single-subject design graph was omitted. The authors suggested that future research explore how the integrative experience of including writing during math intervention could benefit older students.

More recently, Losinski et al. (2021) advanced the understanding of SRSD-math instruction by implementing SRSD in long-division. This study held significance as long division is a fundamental skill closely associated with high school success (NCTM, 2013). In their study, a special education in-service teacher worked individually with three fifth-grade students identified as having or being at risk for emotional disturbances. The intervention consisted of five 45-minute sessions conducted over five school days. The researchers introduced the LSRA strategy, which students memorized using the mnemonic "Long division Seems Really Awesome." As with other SRSD studies, each letter represented a step in the strategy: List easy multiples for the divisor; Subtract from the dividend an easy multiple of the divisor; Record the partial quotient to the right of the problem and repeat until the dividend is reduced to 0 or the remainder is less than the divisor; and add the partial quotients to answer the problem.

To assess the effectiveness of LSRA, the researchers employed a multiple-baseline design, comparing results from baseline, post-intervention, and maintenance phases. The evaluation focused on differences in rubric scores, which measured the use of strategies and correct answers. Notably, students could receive a top score of 3 for each answer, even without demonstrating the use of strategies: the assessment involved 7-minute timed evaluations, each comprising 12 questions. Despite a maximum potential score of 36, the three students reached seven points during the post-intervention phase, with a decline observed during the 2-week maintenance probes. Researchers attributed this decrease to the student's difficulty completing multiple problems within the allotted time. They recommended that future research involve students with greater fluency in basic operations.

To summarize, there is a need to identify and support teachers in using effective targeted math interventions with older students. Although frameworks and examples exist, more is needed to model how to employ specific strategies with older students with MD. The studies examining the usefulness of applying the SRSD framework to math interventions have demonstrated promising outcomes in assisting older students facing math challenges. These studies, examined for this article, ranged from addressing word problems (e.g., focusing on addition and subtraction; Case et al., 1992) to tackling multi-step equations (Cuenca-Carlino et al., 2016), fractions (e.g., Hacker et al., 2019), and long-division (Losinski et al., 2021). Although helpful, it is still unclear what has occurred during the intervention phase or if it is practical to expand the use of the SRSD model to targeted math interventions for older students without a disability but displaying an MD.

Current Study

The current study aimed to test the effects of SRSD-influenced math lessons (hereafter called SRSD-Division lessons) on fifth-grade students' long-division understanding. The SRSD-Division lessons were designed to help 5th-grade students who were not receiving any other supplemental support improve their procedural fluency and conceptual understanding of long division. We scaffolded supports to align with SRSD's six instructional stages (e.g., Develop Background Knowledge, Discuss It, Model It). This study includes intervention data to show students' learning over time and highlight when revisiting earlier SRSD stages was necessary. The primary research questions were:

Research Question 1 (RQ1): How will SRSD-Division lessons impact fifth-grade students' understanding of long division during and after the intervention?

Research Question 2 (RQ2): How will fifth-grade students rate the SRSD-Division lessons?

METHOD

Design

This study employed a single-case, multiple-probe across-participants design to evaluate the impact of SRSD-Division lessons on students' long-division understanding. This design was particularly suitable for this study as we had a low number of participants and sought to demonstrate whether a causal relationship between the independent variable (SRSD-Division lessons) and the dependent variable (long-division performance) existed (Kennedy, 2005). The multiple-probe design allowed us to deliver repeated assessments and introduce the intervention across the participants in a time-lagged manner. The staggered implementation made it possible to observe changes that occurred as a direct result of the intervention. This design has been used to evaluate intervention effectiveness, as it provides robust evidence of functional relationships within educational settings, especially when the number of participants is low (e.g., Hughes, 2019).

Data Analysis

We employed visual analyses to assess the functional relation between the independent (i.e., the SRSD-Division lessons) and the dependent variables (i.e., the total number of correct long-division problems on a 10-problem worksheet). This procedure first involved establishing adequate stability and trends in the baseline data (Kennedy, 2005). Next, we assessed within-phase data for trends, levels, and variability. Between-phase comparisons assessed overlap, immediacy of effect, and consistency across participants and determined whether performance improvements were associated with the intervention.

To evaluate the overall effect of the SRSD-Division lessons, we also calculated a Tau-U, a nonparametric method for analyzing single-case experimental design data (Lee & Chemey, 2018). This approach combines phase non-overlap with trend analysis during the intervention phase, allowing baseline trends to be controlled. An online calculator developed by Vannest et al. (2016) was used to compute Tau-U values and is available at www.singlecaseresearch.org. Results closer to 1 indicate more substantial intervention effects.

Setting and Participants

Three fifth-grade students (one girl and two boys) attending a rural middle school serving fifth to eighth-grade students participated in this study. The decision to focus on fifth-grade students in our study was influenced by the school's structure, which encompasses grades five through eight, and the district's commitment to enhancing support for older students. Fifth graders, positioned at the onset of early adolescence, are at a pivotal developmental stage where targeted interventions can significantly influence their academic trajectories (Bishop & Harrison, 2021). By focusing on this group, we aimed to address learning gaps early, aligning with educational standards that emphasize the importance of developmentally responsive practices for young adolescents (Association for Middle Level Education [AMLE], 2022).

The school, located in a Midwestern state, had a total enrollment of 347 students, with the majority identifying as White (93% White, 4% Multiracial, 2% Hispanic/Latino, and <1% Asian, African American, and Native Hawaiian or Other Pacific Islander). Approximately 36% of the student population participated in the free or reduced-price lunch program, 12% had a disability, and fewer than 1% were identified as English language learners (ELLs).

To participate in the study, the first author contacted the fifth-grade math teacher at the school to identify students who needed additional math support. The fifth-grade math teacher shared names of students who scored below grade level on 4th and 5th-grade district math assessments, were not receiving special education services or other supplemental math instruction, were willing to participate, and had parental consent. Six students met these criteria. To qualify for the math intervention, the referred students also needed to score less than 40% on three consecutive researcher-designed 3-digit by 1-digit long division problem assessments. Three of the six students met these criteria (all pseudonyms): Avery, Ben, and Chris (see Table 1).

Table 1. ***Demographic Information***

Student	Gender	Age	Living Location	Ethnicity	State-Level Math Assessment: Percentiles	5th-Grade September STAR Math Assessment Results: Percentiles		
						T1	T2	T3
Avery	Female	10.4	Rural	White	37th	14th	64th	64th
Ben	Male	10.9	Rural	White	3rd	9th	31st	28th
Chris	Male	11.4	Rural	White	*25th	5th	23rd	29th

Note. Pseudonyms used. For Avery and Ben, 4th-grade state-level standardized assessment data from the Wisconsin Knowledge and Concepts Examination (WKCE) are described. The WKCE Scale Scores for math ranged from Advanced (526-650), Proficient (474-525), Basic (425-473), to Minimal Performance (240-424). *For Chris, 3rd-grade state-level standardized assessment data from the Oklahoma Core Curriculum Tests (OCCT) are described. The OCCT Scale Scores ranged from Advanced (821-990), Satisfactory (700-820), Limited Knowledge (622-699), to Unsatisfactory (400-621). STAR = Standardized Test for Assessment of Reading. Math assessment covered number sense and operations, algebra, geometry, measurement, and data analysis/probability. All tests occurred before the intervention began. T1 = September 9th assessment; T2 = October 20th assessment; T3 = October 29th assessment.

Avery, who was 10 years old, attended the same school district during the previous two years. In the fourth grade, Avery had 14 school absences and attained As and Bs in her subjects, except for one “C” in Math. No supplemental academic assistance had been provided. Avery’s overall motivation to participate in the study seemed high - Avery typically jumped right in during all testing and tutoring sessions.

Ben - also 10 years old with school records from the same school district for the previous two years – had three excused absences in the fourth grade. His 4th-grade report card also revealed primarily As and Bs, except for a “C” in Math. Ben received supplemental literacy-specific support from a Title I educator (e.g., Sonday intervention) in the third grade. Ben's last standardized assessments were from the fourth grade. They indicated he was performing at the "minimal performance" level in all subject areas. Ben appeared motivated to participate in and put forth effort during each discussion and testing session.

Chris was 11 years old and had attended six elementary schools in other districts before the fifth grade. He received As, Bs, and Ds on his previous report card, with a "C" in Math. No attendance records were included. The last state-level standardized tests available were from the third grade and indicated he was performing at the "satisfactory" level in reading and the "limited knowledge" level in math. There was no indication that Chris had received previous supplemental academic supports. Chris was willing to attend the supplemental tutoring and assessment sessions and appeared to put forth his best effort throughout. For example, in an early session, before introducing the independent variable, Chris discussed how he knew there was a trick for solving the problems, but he couldn't recall it.

Independent Variable

The independent variable was a set of six innovative long-division lessons grounded in the self-regulated strategy development (SRSD) model: the SRSD-Division lessons. Designed collaboratively by two seasoned university professors from educational studies and mathematics, these lessons focused on building foundational knowledge, fostering dynamic student-teacher interactions, and providing explicit modeling and instruction. Key elements included memorization, tailored data-driven supports, and fostering students' independence in achieving procedural fluency, conceptual understanding, and self-regulation skills (e.g., positive self-talk, goal setting, self-monitoring). Lessons were repeated as needed to ensure mastery of each concept.

The six SRSD-Division lessons aimed to develop conceptual understanding and procedural fluency through the mnemonic 'What? Dead Monkeys Smell Bad! Really? Check it out!' to represent each step of long division. The lessons progressively increased in complexity, providing students with opportunities to demonstrate independent success. For instance, Lesson 1 introduced foundational concepts with visual aids, while Lesson 2 integrated the mnemonic steps with self-monitoring. Lessons 3-6 emphasized independent practice with real-life applications, culminating in a final lesson that focused on review, reflection, and independent strategy application.

The tutors emphasized conceptual understanding throughout the lessons by guiding students to ask, "What is this problem asking me to do?" Lessons that targeted challenging concepts like place value were supported by aids such as base ten blocks. A tutor-created video, available at https://www.youtube.com/watch?v=WxLdZwpqCDU (Dalton, 2024), demonstrates the use of concrete objects to help students visualize and understand the long-division problems. We structured the lessons based on the SRSD model, incorporating self-regulation strategies such as self-talk, goal setting, and self-monitoring. These self-regulation components were reinforced throughout the lessons, allowing the tutors to individualize instruction and provide supports to help students grasp the underlying demands of academic tasks. In mathematics, this included guiding students to identify foundational skills, such as dividing hundreds before moving to tens and ones, regrouping with remainders, and using self-talk to effectively apply these strategies to long division problems beyond the tutoring session

Dependent Variable

The primary dependent variable was the number of correct answers on one of three 10-problem long-division worksheets. Each worksheet consisted of 10 problems involving 3-digit by 1-digit long-division calculations. The worksheets were matched for difficulty, with each containing an equal number of 2-digit and 3-digit quotients, as well as an equal distribution of quotients with and without remainders. Worksheets were administered in a standardized manner: students completed them independently in a quiet school setting, supervised by an individual other than their tutor, and were provided unlimited time to complete each worksheet.

The order of the worksheets (Forms 1, 2, and 3) was randomized to ensure no student received the same worksheet in consecutive testing sessions. Worksheets were administered approximately every three school days, as indicated by the tick marks on the X-axis of Figure 1, which represent this three-day interval.

General Procedures

As indicated above, this study was conducted as a one-on-one supplemental math intervention during school hours. The SRSD-Division lessons (i.e., the intervention) consisted of 12 (Avery), 13 (Chris), or 15 (Ben) sessions, each lasting 12-28 minutes (average 21 minutes), and were delivered over 7 to 12 weeks. The SRSD-Division lessons were supplementary, allowing students to continue their daily general education math curriculum with peers. The tutoring sessions were led by a teacher educator and two university students enrolled in a teacher preparation program, each pursuing dual certification in general and special education and one (tutor 2) with a minor in mathematics.

Baseline

During the baseline phase, students participated in standard whole-class math instruction led by their general education teacher. This instruction included topics that partially overlapped with the intervention, such as subtraction, multiplication, and basic problem-solving steps. However, based on a survey the students' fifth-grade math instructor completed at the start of the study, the general classroom math instruction did not include advanced problem-solving, conceptual understanding of long division, goal setting, self-monitoring, and self-reinforcement. Baseline assessments were administered weekly by a trained preservice teacher, with no contact between the students and the assessor outside these sessions. These assessments focused on evaluating students' proficiency in long division prior to the intervention, with additional conceptual understanding questions included only during the initial baseline prompt. During the intervention and post-intervention phases, the assessor, blind to the study, was asked to monitor the strategies the fifth-grade students used when solving problems (e.g., type of self-talk, use of fingers).

Intervention

The intervention phase involved one-on-one SRSD-Division lessons, introduced sequentially across students following baseline stability. Sessions were conducted outside the general classroom and followed a standardized protocol to ensure consistency. Lessons were repeated as necessary to support students in achieving procedural fluency and conceptual understanding until a pre-determined criterion was reached.

Post-intervention

The postintervention phase replicated the baseline conditions. As occurred throughout the study, the students continued to engage with their classmates in their whole-class math instruction, but during post-intervention, the SRSD division lessons discontinued. Weekly assessments were administered using the same methods as in the baseline phase. An assessor distinct from the intervention tutors conducted all post-intervention evaluations to maintain objectivity.

Interrater Agreement and Treatment Fidelity

To ensure scoring accuracy, all problems on each 10-problem worksheet were rescored by two individuals other than the first author. They independently evaluated each problem as correct or incorrect using an answer key. The interrater agreement, calculated by dividing the total number of agreements by the sum of agreements and disagreements, was 100%, confirming consistency in evaluating the dependent measure.

Treatment fidelity, or the degree to which key components across the SRSD-Division lessons were adhered to, was maintained through scripted lessons provided by the first author. Each lesson included descriptions and checklists of essential components, which tutors used during sessions. All lessons were audiotaped except for 1 out of 12 for the first tutor and 1 out of 13 for the third tutor. All audio recordings were reviewed to ensure the inclusion of key components, covering both general pedagogical practices (e.g., reviewing prior sessions, generating engagement) and SRSD-specific elements (e.g., developing background knowledge, discussing strategies, modeling, and providing individualized supports such as using objects to represent place values). Treatment integrity was 100% across all lessons.

Social Validity

After the SRSD-Division lessons, an individual other than the students' tutors assessed social validity through a semi-structured interview. During the interview, students were asked pre-formulated questions to gauge their perceptions of the intervention and the use of the strategy outside of the tutoring sessions, with follow-up questions asked when necessary to gain further clarification of students' responses. During the interviews, handwritten responses to the following questions were recorded on a sheet of paper.

1. Can you recall the long division strategy taught during the tutoring sessions?
2. Should this strategy be taught to other students?

3. What did you like about how your tutor taught you the long-division strategy?
4. What did you dislike?
5. Have you used anything you learned at home or in another class? Tell me what you did. (Follow-up questions were asked when necessary to gain further clarification of students' responses.)

RESULTS

The SRSD-Division lessons positively influenced the three fifth-grade students' understanding of long division. All students showed notable improvements in procedural fluency, and the use of problem-solving strategies during the intervention. These gains were maintained after the intervention, with students continuing to perform better than before the lessons. The students also found the strategies helpful, applying them in real-life situations and recommending them for other peers who struggle with long division. Feedback highlighted the lessons' practical value and the students' engagement throughout the process.

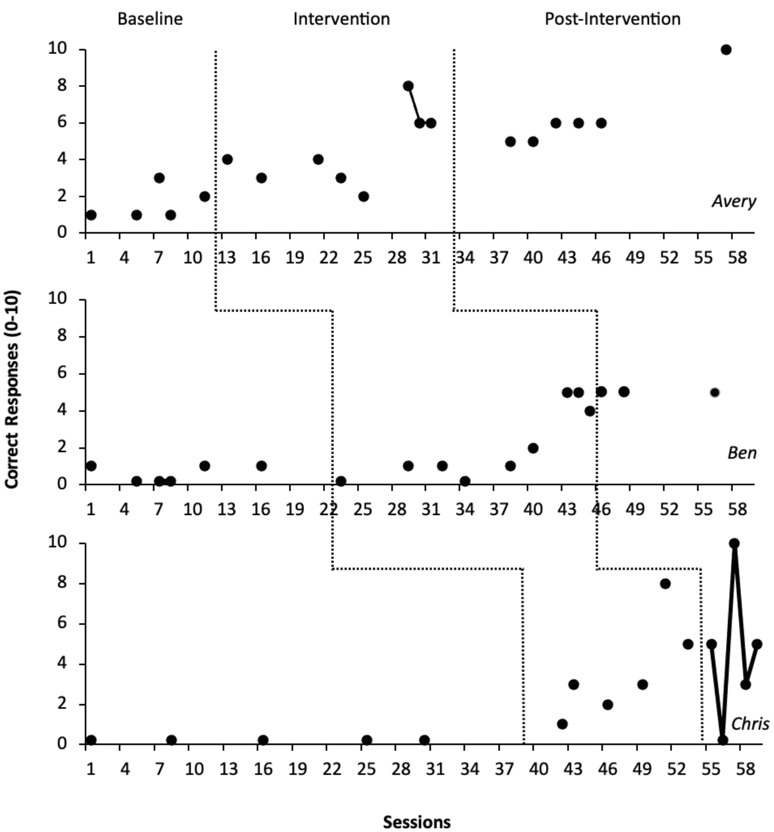

Figure 1. **5th-grade Students Long-Division Scores: Number of Corrent Answers (0-10)**

Avery

Visual and Tau-U Analyses

As summarized in Table 2, visual analyses of Avery's data revealed low baseline performance with some upward trending. Avery's average baseline score was 1.6 (SD = 0.89), with a slope of 0.1. During the intervention phase, her performance improved, achieving a high score of 8.0 and an average score of 4.5 (SD = 2.0), with a slope increase to 0.2. The percentage of nonoverlapping data (PND) between baseline and intervention phases was 63%. Post-intervention, her scores increased further to an average of 6.3 (SD = 1.9), with a slope of 0.3 and a PND between baseline and post-intervention of 100%

Tau-U analysis indicated an upward trend in baseline data (Tau-U = 0.35; $p = 0.5$), prompting a trend correction. The corrected Tau-U analysis revealed a marked improvement between baseline and intervention phases (Tau-U = 0.83; $p = 0.02$).

Table 2. ***Visual Analyses: Correct SRSD Long Division Problems (0-10) and PND***

Student	Phase	Correct Problems (1-10)			
		M (SD)	Slope	PND (%) $A_{1-}B_1$	PND (%) $A_{1-}C_1$
Avery	A_1 Baseline	1.6 (.89)	0.1		
	B_1 Intervention	4.5 (2.0)	0.2	63%	
	C_1 Postintervention	6.3 (1.9)	0.3		100%
Ben	A_1 Baseline	0.4 (0.5)	0.0		
	B_1 Intervention	2.0 (1.9)	0.2	44%	
	C_1 Postintervention	5.0 (0.0)	0.0		100%
Chris	A_1 Baseline	0.0 (0.0)	0.0		
	B_1 Intervention	3.7 (2.5)	0.4	100%	
	C_1 Postintervention	4.6 (3.6)	0.3		80%

Note. SRSD = Self-regulated strategy development; Pseudonyms used. PND = Percentage of nonoverlapping data. PND was calculated based on changes between baseline ("A") and intervention phases ("B") and, as in similar studies, between baseline ("A") and postintervention ("C").

Closer Examination of Avery's Results

A closer examination of Avery's procedural fluency revealed that during the baseline phase, she consistently subtracted (97% of the time) and recorded the remainder (73% of the time), but showed lower accuracy for dividing (35% of the time), multiplying (34% of the time), and bringing down numbers (42% of the time). Her overall correct response rate during the baseline phase was 16% and she had one instance of recording a quotient that was larger than the problem's dividend.

During baseline, a common error for Avery involved her misplacing digits and overlooking the hundreds column. For example, she placed a "6" above the "7" in 872 ÷ 6,. Strategies used during baseline included Avery using her fingers and some self-talk, using touch points for subtraction and mouthing her thoughts. When asked to explain her process for solving the long-division problems, Avery indicated she didn't really know what the problem was asking.

During the intervention phase, Avery's accuracy on specific long-division steps improved to 60% for division, 61% for multiplication, and 80% for bringing down numbers. By the sixth intervention probe, she achieved a new high score of 8.0. After she completed Lesson 6 (~3.5 hours of instruction), she consistently scored at least a 6.0. During the intervention, errors continued to occur, particularly with correctly completing the initial division step. The assessor's comments indicated that Avery continued to use her fingers to help her multiply and use touch points to help her subtract. Additional strategies were noted during the intervention phase. The assessor wrote on the seventh intervention probe, "She seems very sure of what she is doing on the worksheet and did not skip the hundreds place value as she had previously done. She writes math equations below the problems to help check her answers."

More information on changes in her conceptual understanding were drawn from tutoring session transcripts. After Lesson 4, Avery began articulating problem requirements or using drawings to demonstrate better conceptual understanding. As Avery divided the one's place in a division problem, she verbalized her thoughts through the final steps by saying, "...bring down; there is nothing to bring down. Repeat or remainder: That would be a remainder of three. That makes sense."

In the post-intervention phase, Avery's use of specific long-division steps remained high, with division and multiplication accuracy reaching 87%. Although slightly lower than her end-of-intervention scores, her post-intervention performance consistently exceeded baseline levels. The assessor's comments revealed that Avery continued to use her fingers as math tools. No comments were made related to confidence or the use of other strategies.

Ben

Visual and Tau-U Analyses

Visual analyses of Ben's graphed data revealed low and stable baseline performance, averaging 0.4 accuracy (SD = 0.5) with no observable trend (slope = 0). During the intervention phase, his performance remained low until the seventh probe, after which his scores increased to 5.0 and stabilized. His average intervention score was 2.0 (SD = 2.1), with a slope increase to 0.2. The PND between baseline and intervention phases was 44%. Post-intervention, Ben's scores remained consistent with his end-of-intervention levels, achieving an average of 5.0, no observed trend (slope = 0) and a PND between baseline and intervention phases of 100%.

Tau-U analysis indicated no baseline trend (Tau-U = 0.25; $p = 0.6$) and no measurable change between baseline and intervention phases (Tau-U = 0.45; $p = 0.22$).

Closer Examination of Ben's Results

During the baseline phase, Ben's accuracy for completing long division steps was 15% for division and 17% for multiplication, with an average of three errors per probe where the quotient exceeded the dividend. Ben's strategies during baseline included using his fingers as mathematical tools and drawing arrows on the paper when bringing down items. When asked during baseline to answer the question, "Create a story for the following problem: 325 divided by 5," Ben shared, "You start with a set of 325 pencils, add five more, then use four, resulting in 321 pencils. After lending one to a friend, you only have 320." On the second prompt, "Listen and answer the following problem: Sally completed a problem: 148/4. Analyze whether her response is correct. If yes, explain why. If not, explain her error," Ben responded, "I'm guessing yes." For the third problem, "Listen and answer the following problem: Jake completed the following long-division problem. Use his work to explain the meaning of the two circled digits: 738/6 = 123. The "6" and the "1" were circled," Ben initially attempted to subtract 13 from 12, then went on to share additional calculations involving division and multiplication but did not arrive at a final answer.

In the intervention phase, Ben's correct use of division steps increased to 33%, with an overall correct response rate of 17%. By the 13th lesson, Ben noted that the SRSD strategy helped him "go through the problem, step by step," and his correct response rate reached 40-50%. Errors continued to relate mainly to initial division steps. The assessor's comments during the intervention phase indicated using a written strategy (i.e., writing W D M S B R C down the side of his paper) beginning on the seventh intervention assessment. Notes also indicated that Ben continued to use his fingers as math tools.

In the post-intervention phase, Ben achieved a 77% accuracy for division and a 53% overall correct response rate across three probes, with no quotient errors. The assessor continued to note that the WDMSBRC mnemonic was written on the paper and was used to help him solve problems. He also continued to use his fingers as math tools.

Chris

Visual and Tau-U Analyses

Chris's baseline data showed no correct responses and stable performance across five probes. During the intervention phase, visual analyses revealed early improvements, with Chris achieving a high score of 8 and an average intervention score of 3.7 (SD = 2.5). The slope of his intervention data was 0.4, with a PND of 100% between the baseline and intervention phases. Post-intervention, Chris's average score further improved to 4.6 (SD = 3.6), with a slope of 0.3 and a PND between the baseline and post-intervention phases of 80%

Tau-U analysis indicated no baseline trend (Tau-U = 0.0; $p = 1.0$). During the intervention, Tau-U analysis confirmed substantial improvement (Tau-U = 1.0; $p = 0.01$).

Closer Examination of Chris's Results

During the baseline phase, Chris attempted only one problem, with low accuracy on long-division steps (e.g., correctly bringing down 3% of the time and subtracting 13%). No strategies were seen during baseline assessments. The assessor's notes indicated that Chris self-corrected by erasing errors. However, he struggled with multiplication facts, particularly larger ones, and became discouraged when unable to divide specific place values by the divisor, which appeared to affect his confidence and interest (i.e., put his head down).

During the intervention, Chris's correct use of division steps rose to 94%, with an overall correct response rate of 69%. The assessor noted that during the intervention phase, Chris used strategies such as writing down problem-solving steps (W D M S B R C) and checking them off (2nd intervention prompt). He continued to use his fingers and an extra sheet for multiplication. By the final intervention prompt, he also shared that he had set a goal to complete seven problems (he completed five correctly). Notes also indicated that Chris continued to experience challenges with multiplication fluency, maintaining focus, and occasionally overlooking problem details. Chris reported that the strategy helped him remember steps in problem-solving. During the fifth session, after utilizing checkmarks to monitor his progress, Chris noted that the strategy provided clear guidance. When asked what happens when he does not use the strategy, he replied that he would "just get some random answer."

During the post-intervention phase, some of Chris's accuracy rates declined slightly (e.g., correct division dropped from 94% to 83%), but his overall correct response rate remained above baseline at 55%, with no oversized quotients across all phases. During this phase, the assessor noted that Chris consistently used strategies like writing out multiplication tables, marking problems with an asterisk to prioritize them, and retracing numbers. However, she also noted that Chris faced continued challenges with multiplication fluency, maintaining focus, and organizing steps efficiently. Additionally, he occasionally showed a conceptual misunderstanding by correctly writing out multiplication facts but then incorrectly applying them; for example, he looked at the multiples of 8 but mistakenly chose a multiple of 5 when solving a problem. Other strategies were not mentioned (e.g., W D M S B R C.)

Social Validity

After completing the tutoring sessions, all three students unanimously recommended the SRSD-Division lessons for other fifth graders, emphasizing their value for peers struggling with long division. In response to the question about recalling the strategy, Avery shared that the lessons helped her remember the steps and appreciated the variety and practice provided. Ben highlighted that the steps became easier to follow with the strategies, while Chris noted that the lessons showed him how to both complete and check his work.

When asked whether the strategy should be taught to other students, all three agreed it would be beneficial. Regarding what they liked about the instruction, Avery suggested incorporating more group activities to enhance engagement, while Ben preferred occasionally using the time for other assignments to balance his workload. Chris expressed no complaints, sharing that he felt satisfied with his improved long-division skills. Pedagogical improvements included Avery's idea to use the whiteboard more frequently and Ben's suggestion to allocate some sessions for other homework, though Chris felt no need for changes.

In response to the question about applying the strategy outside of tutoring, all three students indicated that they used the SRSD-Division strategy in other contexts. Avery applied the steps to solve story problems during math class, while Chris incorporated the strategy into his math homework and even used it to share candy evenly with his cousins.

DISCUSSION

Our study highlights how adapting the self-regulated strategy development (SRSD) model can effectively support older students with mathematics difficulties (MD) through explicit, intensive lessons in long division. The SRSD-Division lessons incorporated dynamic, data-based individualization and self-regulation strategies, such as goal setting and self-monitoring, leading to significant improvements in students' understanding of long division. These findings underscore the importance of tailored approaches to help older students enhance their mathematical understanding and develop as empowered self-regulated learners.

Unlike previous SRSD math interventions, our study focused on students struggling with grade-level standards but not receiving special education support, addressing a critical gap in Tier 2 and Tier 3 practices within RtI systems. This emphasis responds to the poor performance of older students on national math assessments (Bouck & Cosby, 2017) and the pressing need for research-based interventions for this group. By reporting detailed intervention data, we demonstrated the gradual nature of student progress and emphasized the importance of differentiation, patience, and persistence in achieving independent problem-solving skills.

For example, while students quickly recalled long division procedures, they initially struggled to articulate the underlying problem requirements. Through lessons that included tutor modeling, robust discussions, and the use of concrete tools like base ten blocks (see Dalton, 2024), students gradually improved their understanding and application of long division. This progression highlights that independence in problem-solving develops over time and requires targeted support.

Addressing the broader need for effective strategies, we adapted the SRSD model—an evidence-based practice for K-12 writing instruction (Harris et al., 2003; Institute of Education Sciences, 2017)—to create supplemental long-division lessons. These lessons were designed as a Tier 3 intervention to support procedural fluency and conceptual understanding. Our findings align with prior SRSD research (e.g., Losinski et al., 2021), showing a functional relation between the intervention and improved student performance. Additionally, students reported that the lessons positively impacted their understanding of long division, emphasizing their engagement and the meaningful nature of the intervention.

Ultimately, our study provides a framework for RtI systems to implement evidence-based practices that meet the needs of all students, including those not identified as having a disability.

Limitations and Future Research

Several limitations should be considered when interpreting the results of this single-subject design study. First, while the findings are promising, further studies are needed to confirm that the results were due specifically to the SRSD-Division intervention rather than the individualized attention students received. The data-driven process central to this study allowed for continuous monitoring and ensured that instructional adjustments were made when students were not responding as expected. The SRSD model facilitated a systematic approach to intervention, guiding students through explicit instruction and scaffolding until they achieved independence—a hallmark of SRSD's final stage. Simply providing additional one-on-one attention without employing effective data-based intervention strategies, explicit instruction, and systematic guidance toward mastery is unlikely to yield comparable results. However, future studies should explore comparative approaches that are likely to have positive effects, evaluating which intervention has the most significant impact.

This study also included a limited number of replications—one demonstration and two replications. While common in exploratory studies (e.g., Flores et al., 2023), small sample sizes necessitate caution when interpreting results. Replicating the study with larger and more diverse populations would enhance the findings' reliability and generalizability to other contexts.

Another limitation relates to the maintenance data and the applicability of our procedures to classroom practices. Related to maintenance data, we could not collect data for all students due to the study's design and timing for the third participant - near the end of the school year. While the SRSD framework aims to promote skill retention and generalization, the lack of follow-up data limits our ability to confirm that students retained and continued to apply their long-division skills over time. Future research should prioritize collecting maintenance data to evaluate the long-term impact of the intervention.

The design of our study focused on one-on-one instruction, which raises questions about its scalability to inclusive general education classrooms. We can draw guidance from over 30 years of research on the self-regulated strategy development (SRSD) model for writing instruction. Initially, SRSD was developed as an intervention for students facing writing challenges, but it has since become a widely implemented Tier 1 practice (Rogers et al., 2024).

Researchers involved in SRSD have emphasized several key actions to enhance its adoption and sustainability in general education settings. Among these recommendations are the importance of having a local champion to provide ongoing feedback and guidance, securing administrative support, and organizing collaborative planning meetings where teachers can develop lessons that incorporate essential elements into their existing math curriculum practices (Rogers et al., 2024). Further research is needed to investigate the effectiveness of similar processes in successfully adapting SRSD-Division lessons for the Tier 1 and 2 settings.

Future research should also consider how to improve the reliability and validity of assessments used to evaluate the overall success of the intervention (Leko et al., 2024). For example, additional work to identify assessments for evaluating improvements in conceptual understanding and self-regulation practices, such as goal setting, self-monitoring, and using specific reinforcing positive self-talk is needed. Although tutor and assessor notes related to students' use of these practices in the current study were insightful, improving the assessment of these skills would have meaningful outcomes related to noticing and appropriately differentiating for students within these areas.

Finally, future research should examine the impact of this work on preservice teachers. In the current study, three of the four participating individuals were preservice teachers. Further studies should examine how engaging in this type of class project during an undergraduate teaching program influences their immediate knowledge of research-based practices and long-term application of the learned pedagogical practices.

Conclusion

We demonstrated what can be achieved when core mathematics instruction falls short for older students or when foundational math concepts remain underdeveloped in earlier grades. While evidence-based practices (EBPs) are beneficial, they often prove challenging to translate directly into everyday teaching practices (Rapport, 2018). Additionally, the students included in EBP studies may not always reflect the diverse needs of other classrooms, and the lessons themselves often require substantial adaptations to be both practical and effective. Our study demonstrates how to apply an EBP to a specific math area and adapt it for students who may not align with those typically included in other EBP studies.

Ultimately, our work provides valuable guidance for those seeking evidence-based math practices for older students—a critical and underexplored area of research (Aceves & Kennedy, 2024; Mulcahy et al., 2024). Extending previous studies (e.g., Losinski et al., 2021; Mulcahy et al.), we go beyond describing implementation procedures by evaluating their effectiveness during and after the intervention, with students in need but not receiving targeted supplemental math support. Our study offers a model that transcends academic labels, providing a pathway to help all students—regardless of their starting point—advance to higher levels of learning.

REFERENCES

Aceves, T. C. & Kennedy, M. J. (Eds.) (2024, February). *High-leverage practices for students with disabilitie*s (2nd ed.). Council for Exceptional Children & CEEDAR Center. https://ceedar.education.ufl.edu/wp-content/uploads/2024/03/High-Leverage-Practices-for-Students-with-Disabilties-updated.pdf

Association for Middle Level Education (AMLE) (2022). *2022 Revised middle level teacher preparation standards*. Association for Middle Level Education.

Bjorklund-Young, A., & Plasman, J. S. (2020). Reducing the achievement gap: Middle grades mathematics performance and improvement. *RMLE Online*, *43*(10), 25-45. https://doi.org/10.1080/19404476.2020.1836467

Bouck, E. C., & Cosby, M. D. (2019). Response to intervention in high school mathematics: One school's implementation. *Preventing School Failure: Alternative Education for Children and Youth*, *63*(1), 32-42. https://doi.org/10.1080/1045988X.2018.1469463

Bouck, E. C., Satsangi, R., & Park, J. (2017). The concrete-representational-abstract approach for students with learning disabilities: An evidence-based practice synthesis. *Remedial and Special Education*, *39*(4). https://doi.org/10.1177/0741932517721712

Case, L. P., Harris, K. R., & Graham, S. (1992). Improving the mathematical problem-solving skills of students with learning disabilities: Self-regulated strategy development. *The Journal of Special Education, 26*(1), 1-19. https://doi.org/10.1177/002246699202600101

CAST. (n.d.) *Universal Design for Learning (UDL)*. CAST. https://www.cast.org/impact/universal-design-for-learning-udl

Cook, B. G., Smith, G. J., & Tankersley, M. (2012). Evidence-based practices in education. In K. R. Harris, S. Graham, T. Urdan, C. B. McCormick, G. M. Sinatra, & J. Sweller (Eds.), *APA educational psychology handbook, Vol. 1: Theories, constructs, and critical issues* (pp. 495–527). American Psychological Association. https://doi.org/10.1037/13273-017

Cuenca-Carlino, Y., Freeman-Green, S., Stephenson, G. W., & Hauth, C. (2016). Self-regulated strategy development instruction for teaching multi-step equations to middle school students struggling in math. *Journal of Special Education*, *50*(2), 75-85. https://doi.org/10.1177/0022466915622021

Dalton, J. (2024, August 16). *Tutor demonstrating long-division representation* [Video]. YouTube. https://www.youtube.com/watch?v=WxLdZwpqCDU

Ellerbrock, C. R., & Vomvoridi-Ivanovic, E. (2019). A framework for responsive middle level mathematics teaching. In K. M. Brinegar, L. M. Harrison, & E. Hurd (Eds.), *Equity & cultural responsiveness in the middle grades* (pp 45-68). Information Age Publishing.

Every Student Succeeds Act (ESSA), 20 U.S.C. § 6301 et seq. (2015). https://www.congress.gov/bill/114th-congress/senate-bill/1177

Flores, M. M., Hinton, V. M., & Schweck, K. B. (2023). Teaching rational number concepts to fifth-grade students who struggle with mathematics. *Remedial and Special Education*, *45*(5). https://doi.org/10.1177/07419325231217315

Hacker, D. J., Kiuhara, S. A., & Levin, J. R. (2019). A metacognitive intervention for teaching fractions to students with or at-risk for learning disabilities in mathematics. *ZDM Mathematics*, *51*(4), 601-612. https://doi.org/10.1007/s11858-019-01040-0

Harris, K. R., Graham, S., & Mason, L. (2003). Self-regulated strategy development in the classroom: Part of a balanced approach to writing instruction for students with disabilities. F*ocus on Exceptional Children*, *35*(7), 1–16. https://doi.org/10.17161/foec.v35i7.6799

Hughes, C., (2019). Point of view video modeling to teach simplifying fractions to middle school students with mathematical learning disabilities. *Learning Disabilities: A Contemporary Journal*, *17*(1), 41-57. https://files.eric.ed.gov/fulltext/EJ1218030.pdf

Individuals with Disabilities Education Act (IDEA), 20 U.S.C. § 1400 (2004). https://sites.ed.gov/idea/

Institute of Education Sciences, National Center for Education Research. (2017). *What Works Clearinghouse intervention report: Self-regulated strategy development – Students with a specific learning disability*. https://ies.ed.gov/ncee/wwc/Docs/InterventionReports/wwc_srsd_111417.pdf

IRIS Center (n.d.). *IRIS Resource Locator*. https://iris.peabody.vanderbilt.edu/resources/iris-resource-locator/

Jitendra, A., Rodriguez, M., Kanive, R., Huang, J-P., Church, C., Corroy, K. A., & Zaslofsky, A. (2012). Impact of small-group tutoring interventions on the mathematical problem solving and achievement of third-grade students with mathematics difficulties. *Learning Disability Quarterly*, *36*(1), 21-35. https://doi.org/10.1177/0731948712457561

Kennedy, C. H. (2005). *Single-case designs for educational resear*ch. Allyn & Bacon.

Lambert, R., Imm, K., Schuck, R., Choi, S., & McNiff, A. (2021). "UDL is the what, design thinking is the how:" Designing for differentiation in mathematics. *Mathematics Teacher Education and Development*, *23*(3), 54-77. https://eric.ed.gov/?id=EJ1321118

Lavania, M., & Nor, F. B. M. (2020). Barriers in differentiated instruction: A systematic review of the literature. *Journal of Critical Reviews*, *7*(6), 293-297. https://www.researchgate.net/publication/354156146_BARRIERS_IN_DIFFERENTIATED_INSTRUCTION_A_SYSTEMATIC_REVIEW_OF_THE_LITERATURE

Lee, J. B., & Chemey, L. R. (2018). Tau-U: A quantitative approach for analysis of single-case experimental data in Aphasia. *American Journal of Language Pathology*, *27*, 495-503.

Leko, M. M., Griffin, C. C., & Ulrich, T. G. (2024). Setting the stage for a new prologue. *Teacher Education and Special Education*, *47*(4), 319-329. http://dx.doi.org/10.1177/08884064241281591

Losinski, M., Thiele, J., Ennis, R. P., & Shaw, A. (2021). An investigation of the use of self-regulated strategy development to teach long division to students with or at-risk for emotional disturbance. *Education and Treatment of Children*, *44*(3), 169-183. https://doi.org/10.1007/s43494-021-00050-6

Maccini, P., & Gagnon, J. C. (2000). Best practices for teaching mathematics to secondary students with special needs. *Focus on Exceptional Children*, *32*(5). https://doi.org/10.17161/foec.v32i5.6919

Manuella, B. D., & Mangunson, F. M. (2018). Enhancing an underachieving middle school student's motivation and self-regulation in learning mathematics with self-regulated learning program. *Advances in Social Science, Education and Humanities Research, 135*, 223-233. https://doi.org/10.2991/iciap-17.2018.19

Mulcahy, C. A., Gagnon, J. C., Atkinson, V. S., & Miller, J. A. (2024). Self-regulated strategy development for algebra problem solving. *Teaching Exceptional Children*, *57*(2), 104-114. https://doi.org/10.1177/00400599231167816

National Association for Educational Progress (NAEP, 2023). *NAEP long-term trend assessment results: Reading and Mathematics*. The Nation's Report Card. https://www.nationsreportcard.gov/highlights/ltt/2023/

National Council of Teachers of Mathematics (NCTM, 2013). *Putting essential understanding of multiplication and division into practice in grades 3-5*. National Council of Teachers of Mathematics.

Powell, S. R., Mason, E. N., Bos, S. E., Hirt, S., Ketterlin-Geller, L. R., & Lembke, E. S. (2021). A systematic review of mathematics interventions for middle-school students experiencing mathematics difficulty. *Learning Disabilities Research & Practice*, *36*(4), https://doi.org/10.1111/ldrp.12263

Rapport, F., Clay-Williams, R., Churruca, K., Shih, P., Hogden, A., & Braithwaite, J. (2018). The struggle of translating science into action: Foundational concepts of implementation science. *Journal of Evaluation in Clinical Practice*, *24*(1), 117-126. https://doi.org/10.1111/jep.12741

Rojo, M., Bryant, B. R., Shin, H., & Klingbeil, D. A. (2024). A meta-analysis of mathematics interventions: Examining the impacts of intervention characteristics. *Educational Psychology Review*, *36*(9), 1-34. https://doi.org/10.1007/s10648-023-09843-0

Rogers, L., & Graham, S. (2008). A meta-analysis of single subject design writing intervention research. *Journal of Educational Psychology*, *100*(4), 897-906. https://doi.org/10.1037/0022-0663.100.4.879

Swanson, J. A., Ficarra, L. R., & Chapin, D. (2020). Strategies to strengthen differentiation within the common core era: Drawing on the expertise from those in the field. *Preventing School Failure: Alternative Education for Children and Youth, 64*(2). Pp. 116-127. https://doi.org/10.1080/1045988X.2019.1683802

Vannest, K.J., Parker, R.I., Gonen, O., & Adiguzel, T. (2016). *Single Case Research: Web-based calculators for SCR analysis.* (Version 2.0) [Web-based application]. Texas A&M University. Retrieved Sunday 24th March 2024. singlecaseresearch.org

What Works Clearinghouse (WWC, n.d.). *Practice guides.* https://ies.ed.gov/ncee/wwc/practiceguides