KENTUCKY READING RESEARCH CENTER

# Systematic Review of Effective Reading Fluency Interventions for Students in Grades 4-9

March 2, 2026


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# Systematic Review of Effective Reading Fluency Interventions for Students in Grades 4-9

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**Abstract**

This review focused on fluency interventions or practices designed to help children in fourth grade through ninth grade learn to develop adolescent reading skills related to fluency. Eleven peer-reviewed studies published between 2014 and 2024 met inclusion criteria, representing 115 students, including those with disabilities, multilingual learners and students at risk. The majority of studies used single-case research designs and implemented Tier 3 interventions. Repeated reading emerged as the most common and effective strategy, often paired with phonics, vocabulary instruction, or progress monitoring practices such as graphing results. Findings suggest repeated reading combined with explicit instruction and motivational supports improved fluency, particularly for students with disabilities. Evidence for multilingual learners was limited, and most interventions occurred in Tier 3 settings, constraining generalizability. Future research should expand to Tier 1 and Tier 2 interventions, address student motivation, and evaluate technology-based interventions.

Keywords: adolescent fluency, repeated readings, systematic review

## Introduction

Fluency plays a critical role in adolescent reading development (Clemens et al., 2017). Fluency, defined as the rate of one's reading, accuracy, and prosody, relies on well-developed word recognition skills, though these skills alone do not necessarily lead to fluent reading (National Reading Panel [NRP], 2000; Paige, 2020). Although fluency is widely recognized as a critical component of skilled reading (National Reading Panel, 2000), effective instructional strategies for developing fluency are not consistently implemented in classroom practice (e.g., repeated reading, guided oral reading; Paige & Magpuri-Lavell, 2014). Fluency also relies on a foundational mastery on phonological awareness; if a student's phonological awareness is underdeveloped it could proceed to affect reading fluency into adolescence (Paige & Magpuri-Lavell, 2014).

Research from the National Reading Panel suggests that many students fail to attain fluency by upper elementary school, which can substantially hinder reading comprehension (NRP, 2000). Additionally, Cirino et al. (2013) examined the intersection of decoding, comprehension, and fluency in middle school students and found that many had deficits in more than one area. Comprehension was the most commonly affected skill, but they also found students struggling with decoding and fluency. In addition to the NRP, research suggests these difficulties persist beyond elementary school. Underdeveloped fluency has been shown to impact up to 40% of fourth grade students (Paige & Magpuri-Lavell, 2014). It should be noted, oral reading fluency accounted for 50% to 62% of the variance in comprehension for sixth and seventh grade students, and 28% for ninth grade students (Paige & Magpuri-Lavell, 2014). This contributes to the conceptualization that a substantial portion of students' reading comprehension may be attributed to their fluency skills.

However, it is important to consider how fluency is measured and interpreted, particularly for adolescents. Oral reading fluency (ORF) is commonly assessed through words correct per minute (WCPM) or words per minute (WPM) in both educational and research settings (Nguyen et al., 2020). While these measures capture two aspects of fluency (i.e., accuracy, rate), it may be less effective for examining prosody. Prosody (i.e., the patterns of stress or inflection of language) has been linked to reading comprehension, specifically in students in late elementary grades (Groen et al., 2019). The transition from elementary to middle and high school presents many challenges, including an increased comprehension of text, during which ORF deficits may become more apparent (Washburn, 2022). Research also suggests that adolescents often experience difficulties with automaticity and prosody, exacerbating difficulties in their reading development (Paige & Magpuri-Lavell, 2014).

### *Oral Reading Fluency Strategies*

Repeated reading (RR) is one of the most frequently recommended interventions to ameliorate reading fluency (Lee & Yoon, 2017). This intervention involves having a student read the same passage numerous times with the goal of increasing reading accuracy, prosody, and speed. As students read the passage and become more familiar with the text, decoding becomes

automatic, which reduces their cognitive load and allows them to focus on prosody and comprehension (LaBerge & Samuels, 1974). Research suggests that RR not only improves fluency but also enhances reading comprehension (Stevens et al., 2017). RR remains an effective intervention for supporting students experiencing difficulties with reading fluency because it is both accessible and resource efficient. As a result, it remains an effective tool for supporting students experiencing difficulties with reading fluency across both general education and students with learning disabilities.

Timed reading is another method that supports fluency development by having students read a passage aloud while the teacher evaluates the student's performance for an allotted amount of time. Then, the student's performance is evaluated by the teacher. Although timed reading often results in improved reading speed, research suggests that there may be a decrease in accuracy and comprehension (Stevens et al., 2017). For example, research has found that when comparing covert timing and overt timing, students have an increased reading rate with overt timing; however, there was reduced accuracy and comprehension (Staubitz et al., 2005; Yurick et al., 2006, as cited in Stevens et al., 2017). Echo reading is another assisted reading method used to support and improve reading fluency and prosody (Hudson et al., 2005). In echo reading, a teacher may model a sentence or prompt, and the student repeats it directly afterward. This method supports students to develop appropriate accuracy and expression by imitating a fluent reader, which provides support for students improving their fluency (Kuhn et al., 2006; Decker & Buggey, 2014). Together, these findings highlight that while timed and assisted reading strategies can enhance reading rate and expression, careful implementation is needed to ensure that gains in fluency do not come at the expense of accuracy and comprehension.

### *Factors Affecting Adolescent Fluency*

Despite the well-established importance of reading fluency in adolescent development, many students continue to face challenges that hinder their comprehension and academic progress (Cirino et al. 2013; Paige & Magpuri-Lavell, 2014; Washburn, 2022). There are various factors that affect adolescent fluency including multilingual learner status, the presence of disabilities, implementation of the multi-tiered system of supports framework, and time constrained academic settings. For multilingual learners, fluency development is often complicated by the need to acquire both decoding and oral language skills before leaving elementary school (Roberts et al., 2022). Roberts et al. (2022) found that those in early elementary grades (i.e., K-3) are disproportionately represented among students experiencing reading difficulties. Therefore, it is important to recognize intersecting factors such as socioeconomic status, exposure to English, and potential risks for reading disabilities. While this study focused on younger students, many of these challenges persist into the upper grades where the need for reading fluency development intensifies. Research suggests that students who experience difficulty developing fluency by upper elementary years have an increased risk for experiencing comprehension difficulties (NRP, 2000; Cirino et al. 2013; Paige & Magpuri-Lavell, 2014), and students may require targeted interventions to prevent these challenges.

An additional population requiring targeted fluency interventions includes students with disabilities. The percentage of students receiving special education services demonstrates an upward trend in the United States, with the national average at 15% and the state of Kentucky reporting 17% (National Center for Education Statistics [NCES], 2024b). Students with disabilities often experience difficulty with foundational reading components, which in turn affects their fluency. Fluency depends on foundational reading components; therefore, students who have underdeveloped skills in earlier grades may continue to experience difficulty in later grades (NRP, 2000; Paige & Magpuri-Lavell, 2014).

### *Barriers*

The Multi-Tiered System of Supports (MTSS) framework is intended to ensure students receive the appropriate level of support based on their individual needs (Nitz et al., 2023). This framework includes three levels: Tier 1, Tier 2, and Tier 3. Tier 1 includes whole group evidence-based interventions and aims to support approximately 80% of students (Nitz et al., 2023). When students do not make expected progress within Tier 1, they receive more targeted interventions in Tier 2. Within this tier, students are typically in small groups and instruction is more individualized. This tier includes around 15% of students. If Tier 2 intervention is insufficient for the student, they may receive Tier 3 intervention. This level of intervention is the most individualized, provides intensive support, and is often one-on-one instruction (e.g., student, teacher). This tier makes up about 5% of students. In the present review, most of the studies were focused on this tier. (Nitz et al., 2023).

An additional barrier that can impact adolescents' academic progress is the extended summer break, which is common in the United States. When students are away from school for an extended duration, they often experience regression in the progress they have made over the academic year (Gierczyk & Hornby, 2023). This concept is often referred to as "summer learning loss" and it tends to affect reading and language skills (Campbell et al., 2019; Gierczyk & Hornby, 2023).

### *Present Study*

In response to the prevalent concerns about fluency and its impact on reading development, the NRP emphasized the importance of evidence-based instruction. As students move into upper grades, the demands of reading fluency increase. This review focuses on fluency interventions aimed at supporting students in grades four through nine as they develop more advanced reading skills. Through this review, we analyzed 11 articles suggesting the most prevalent intervention components are fluency, phonics, vocabulary, comprehension, instructional strategies, and error correction procedures.

**Research Questions:**

- Research question 1: What instructional and intervention characteristics (e.g., use of Elkonin boxes, multicomponent instruction, intervention dosage, group size,

implementer, modality) and student characteristics (e.g., age, English Learner, disability status) have been tested as part of fluency interventions?

- Research question 2: What does the research say about the effectiveness of fluency instruction in improving adolescent reading outcomes for readers in grades 4-9?

- Research question 3: What features of instructional interventions (e.g., type of instruction, duration, grade level) are associated with improved outcomes? Do these features differ according to student characteristics?

## Method

### Study Eligibility Criteria

The present review included studies of adolescent fluency instruction based on the following criteria:

1. Participants were students in fourth through ninth grade (ages 9 years 0 months through 15 years 11 months).

2. The study was published in English between January 2008 and December 2024 and took place in the United States and its territories, Canada, Australia, Ireland, New Zealand, or the United Kingdom.

3. The study was published in a peer-reviewed journal. Conference papers and dissertations were not eligible.

4. The study investigated a practice or curriculum implemented with children, not related to teacher professional learning, teacher preparation, textbook design, or school reform.

5. The study included at least one outcome related to intervention, instruction, strategy, curriculum, program, or treatment on multisyllabic word reading.

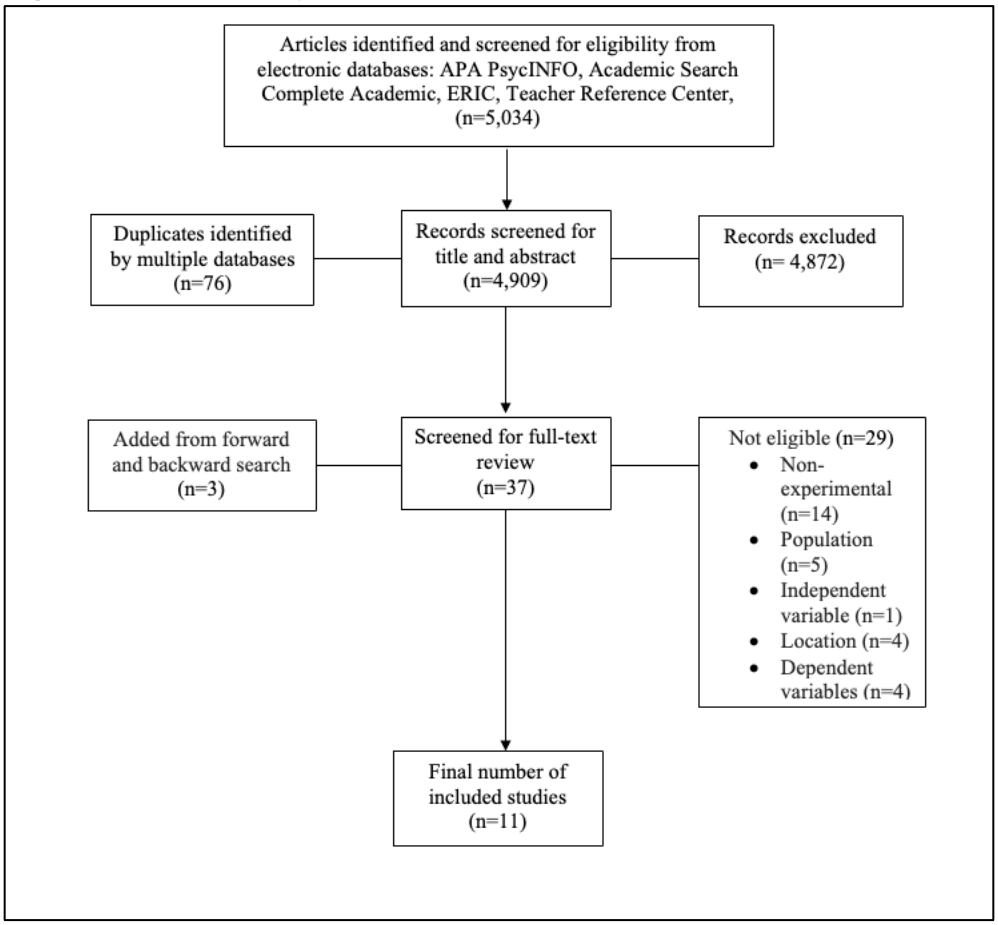
6. The study utilized an experimental design.

### Search Strategy

Studies included in the present review were identified in two steps. First, the terms (Fluen OR Speed OR Accura* OR reading expression OR prosody OR reading aloud OR reading rate OR Oral reading) AND (Interven* OR Curricul* OR Program* OR Strateg* OR Instruct* OR Teach* OR Train* OR Approach* OR Monitor* OR Treat* OR Self-regulat* OR transfer) were used to conduct a search of four electronic databases: (1) Academic Search Complete, (2) APA PsycINFO, (3) ERIC, and (4) Education Full Text. The database search returned 5,034 unique records, of which 34 studies met criteria for full article coding. Of those 34 articles, eight met

inclusion criteria for full coding. Next, an ancestral search of all references cited within the included studies was conducted, and a forward search of all articles citing the included studies which yielded three additional studies. A total of 11 studies were included in the analysis.

**Figure 1.** *PRISMA diagram*




## Coding Procedure

Information relevant to the present review was extracted using a detailed code sheet and organized according to the following categories: research design, implementer, participants, setting, independent variable, and dependent variables. Eligible research designs included randomized controlled trials, quasi-experimental designs, and single-case designs. Implementers in the reviewed studies included researchers, special education teachers, general education teachers, and hired interventionists. Participant demographic data included grade level, multilingual status, disability status, and at-risk status. Independent variables were coded according to name, description, whether a curriculum was used, whether it was researcher developed, the unit of delivery, duration, intensity, and fidelity. Finally, dependent variables were coded according to name, description, and effects.

### Analysis

The coded data from the 11 full-text articles were consolidated into three Excel datasets and synthesized to address the research questions. These datasets provide a foundation for understanding the contexts in which the interventions were conducted. The first dataset (see Table 1) identified study demographics including study design, student characteristics, implementer type, intervention dosage, whether the program was researcher-created, and curriculum name. This dataset was used to address the first research question:

> *Research question 1: What instructional and intervention characteristics (e.g., use of Elkonin boxes, multicomponent instruction, intervention dosage, group size, implementer, modality) and student characteristics (e.g., age, English Learner, disability status) have been tested as part of fluency interventions?*

The second dataset was developed to code the six pillars of adolescent fluency (e.g., phonics, fluency, vocabulary, comprehension, instructional strategies, error correction procedures). Each study was coded by marking an "X" in the columns corresponding to its identified components. As additional components were identified throughout the review, they were incorporated into the dataset to ensure inclusion of all strategies across the studies. Once coding was complete, overlapping codes were consolidated and frequencies of each component were categorized within the six pillars. These frequencies were then visualized in bar graphs, illustrating the relative prevalence of different strategies. This dataset was used to address the first and third research questions:

- *What instructional and intervention characteristics (e.g., use of Elkonin boxes, multicomponent instruction, intervention dosage, group size, implementer, modality) and student characteristics (e.g., age, English Learner, disability status) have been tested as part of fluency interventions?*
- *What features of instructional interventions (e.g., type of instruction, duration, grade level) are associated with improved outcomes? Do these features differ according to student characteristics?*

The third dataset categorized the studies according to the type of Response to Intervention (RTI) framework (see Appendix). This categorization provided the basis for addressing the second and third research questions: *What does the research say about the effectiveness of fluency instruction in improving adolescent reading outcomes for readers in grades 4-9?* and *What features of instructional interventions (e.g., type of instruction, duration, grade level) are associated with improved outcomes? Do these features differ according to student characteristics?*

## Results

### Characteristics of Reviewed Studies

Table 1 provides an overview of student demographics including research design, implementation method, dosage, whether it was research-created, and curriculum. A total of 11 studies met the inclusion criteria. Of those studies, 9% ($n$ = 1) were randomized controlled trials,

82% (*n* = 9) were single case research designs (e.g., alternative treatments, multiple baseline, multiple probe), and 9% (*n* = 1) were quasi-experimental designs.

**Table 1.** *Overview of Studies and Reported Demographics*

| Study | Design | Students | Who implemented intervention? | Dosage | Researcher created intervention program? | Name of curriculum (if applicable) |
|---|---|---|---|---|---|---|
| Bryant et al. (2015) | Single-Subject Design - Alternating Treatment | 4 4th grade All SWD | RI, Tech | 30 min per day for 14 days over a 3-week period, divided into four waves | Yes | K12 Timed Reading Practice; Howie Finding Vowel; ABC Phonics Word Family Writing |
| Decker & Buggey (2014) | SCD- MB | 3 3rd grade, 3 4th grade, and 3 5th grade All SWD | Tech | 2 weeks | Yes | - |
| Escarpio & Barbetta (2016) | SCD- Alternating Treatments | 4 6th grade All SWD | RI | 4 times a week | Yes | - |
| Hawkins et al. (2015) | SCD- Alternating Treatments | 4 4th grade All AR | RI | 1-2 times a week for 12 weeks, 4–21-min sessions | Yes | - |
| Li et al. (2025) | SCD- MP | 1 6th grade, 1 7th grade, 1 8th grade All SWD | RI | 15 weeks | Yes | - |
| Lingo (2014) | SCD- MP | 4 6th grade All SWD | HI | Sessions lasted between 10 - 15 min | No | Great Leaps Reading program |

| | | | | | | |
|---|---|---|---|---|---|---|
| Pagan & Sénéchal (2014) | RCT | 23 3rd grade and 25 5th grade<br>All AR<br>8 ML | Parents | 5-15 min each day for 5 days of the week | Yes | - |
| Powell & Gadke (2018) | Single Case-Alternating Treatment Design | 1 6th grade and 2 7th grade<br>2 AR | RI | 25 min, once a week for a total of 4 weeks | Yes | - |
| Whitney & Ackerman (2023) | SCD - MP | 2 4th grade and 2 5th grade<br>All SWD | TI, Tech | 3 times a week, 7 min each session | No | Digital Fluency-Based Reading Program and The Great Leaps Digital Reading Program |
| Wu et al. (2020) | SCD- MB withdrawal | 1 5th grade and 2 7th grade<br>All SWD | RI | 25-30 min sessions, 2-3 times a week, 3.5-4.5 months | Yes | - |
| Young et al. (2015) | QED | 9 3rd grade, 11 4th grade, and 9 5th grade | RI, TI | 400 min over a month, 20 min a day | No | Reading Together |

*Note*. = information was not reported; AR= at-risk; HI= hired professional implemented; MB = Multiple Baseline; min= minutes; ML = Multilingual; MP= Multiple Probe; RCT= randomized control trial; RI=researcher implemented; SCD= single-case design; SWD= students with disabilities; Tech= technology implemented; TI=teacher implemented; QED = quasi-experimental design

A total of 115 students were represented across the 11 research studies which focused on adolescent fluency interventions. The majority of the students who received adolescent fluency interventions were 5th grade students representing 35% (*n* = 40). The next largest group of students that received intervention were 3rd grade students representing 30% of students (*n* = 35), followed by 4th grade students with 21% (*n* = 24) of students receiving intervention, 6th grade students with 9% (*n* = 10), 7th grade students with 4% (*n* = 5), and 1% of the participants were in 8th grade students (*n* = 1).

Students represented a diverse population, including students with disabilities, students at-risk, multilingual students, and neurotypical students. Over half of the studies (64%; *n* = 7) included

students with disabilities (which represented 27% of the total students that received intervention; *n* = 31). Multilingual students represented 7% (*n* = 8) of the students across one study (9%). Lastly, 27% (*n* = 3) of the studies included students who were identified as at risk, representing 47% (*n* = 54) students.

We recorded the persons responsible for implementation of the intervention in each study, identifying them as teacher, researcher, hired professional, technology, or parent implemented. A few of the studies used a combination of implementers (e.g., researcher and technology, teacher and technology, researcher and teacher; *n* = 3; 27%.). Almost half of the studies used researchers as the interventionists (46%; *n* = 5). Technology was used alone in one of the studies (*n* = 1), hired professionals were used in 9% of the studies (*n* = 1), and parents were used in 9% of the studies (*n* = 1).

In addition to recording who implemented the intervention, we also recorded the dosage of the intervention. This included the duration of each session, frequency of sessions, and the total number of weeks the intervention was implemented. The majority of the 11 studies, 54% of studies (*n* = 6), included the dosage of minutes, day of the week, and number of weeks the intervention occurred. The remaining articles (46%; *n* = 5) reported a combination of minutes, days, or weeks. The average duration of intervention for the studies reported dosage was around 18 minutes per session, 3.3 days a week, over 8.2 weeks. The reported range of interventions was wide (range = 4-30 min; 2 weeks - 4.5 months).

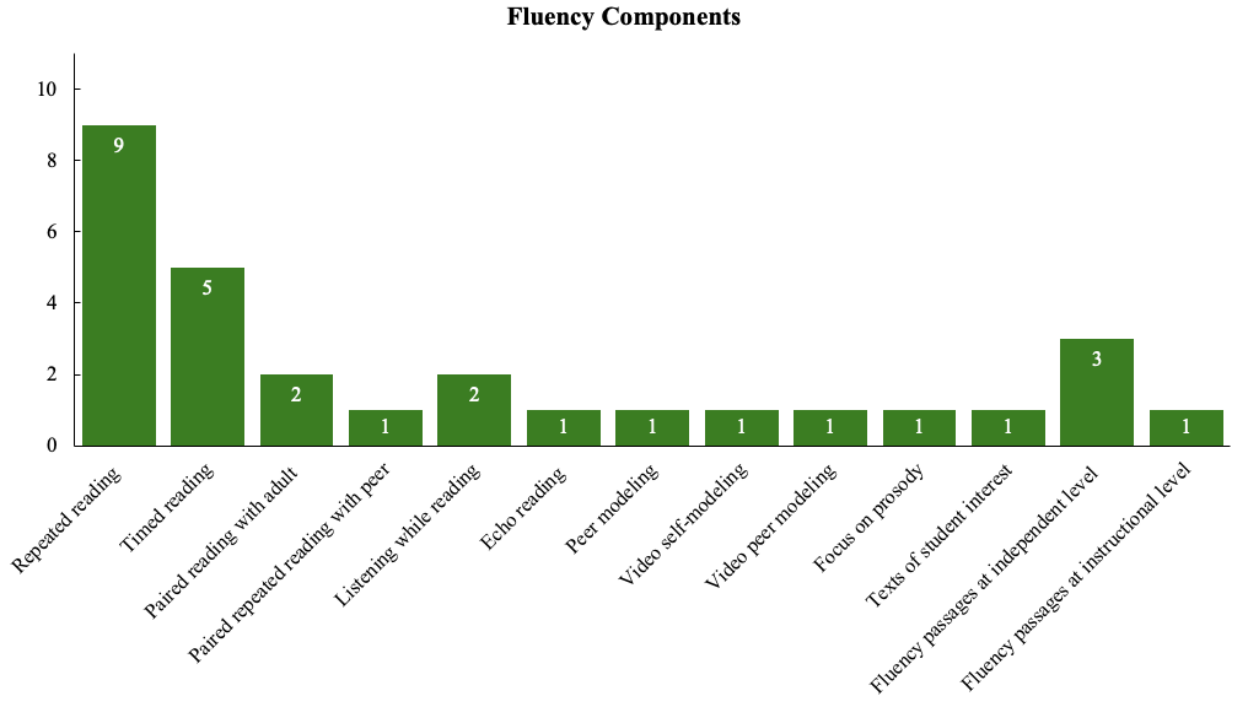
Of the 11 studies, 36% (*n* =4) evaluated different curricula (i.e., Great Leaps Reading Program, Reading Together, K12 Timed Reading Practice, Howie Finding Vowel, ABC Phonics Word Family Writing, and Digital Fluency-Based Reading Program and Digital Great Leaps Reading Program). The majority of studies used researcher-created intervention programs (64%, *n* = 7).

**Independent Variables: Components of Interventions Examined in Synthesis**

Across all included studies, the most common fluency instructional strategies were repeated readings (*n* = 9), timed readings (*n* =5), and fluency passages at students' independent reading level (*n* = 3). For most of those repeated readings, the students read the passage at least three times. Repeated reading practices were used in collaboration with other fluency strategies, such as explicit vocabulary instruction in four of the studies (Escarpio & Barbetta, 2016; Hawkins et al., 2015; Li et al., 2025; and Lingo, 2014), and timed readings in four studies (Bryant et al., 2015; Hawkins et al., 2015; Li et al., 2025, and Lingo, 2014). Other fluency instructional practices used in studies were paired reading with an adult (Pagan & Sénéchal, 2014 and Young et al., 2015), paired repeated reading with a peer (Bryant et al., 2015), listening while reading ( Hawkins et al., 2015 and Powell & Gadke, 2018), echo reading (Decker & Buggey, 2014), peer modeling (Hawkins et al., 2015), and video self-modeling and video peer-modeling (Decker & Buggey, 2014). When it came to selecting texts for students to read, three studies selected texts at the students' independent level (Hawkins et al., 2015; Pagan & Sénéchal,

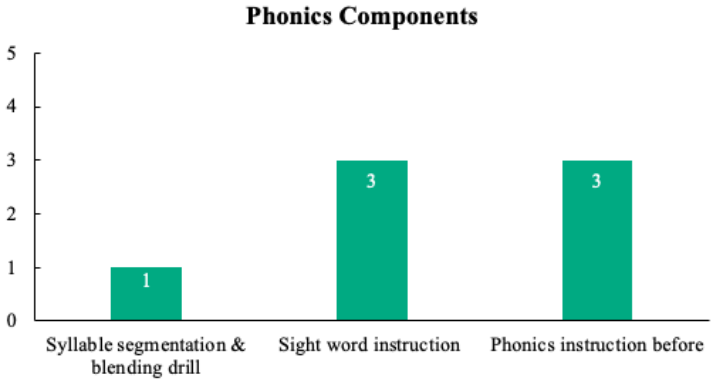
2014; and Young et al., 2015). Lingo (2014) used texts at the students' instructional level (see Figure 2). Most studies did not explicitly state how passages were selected.

**Figure 2**. *Fluency Components*



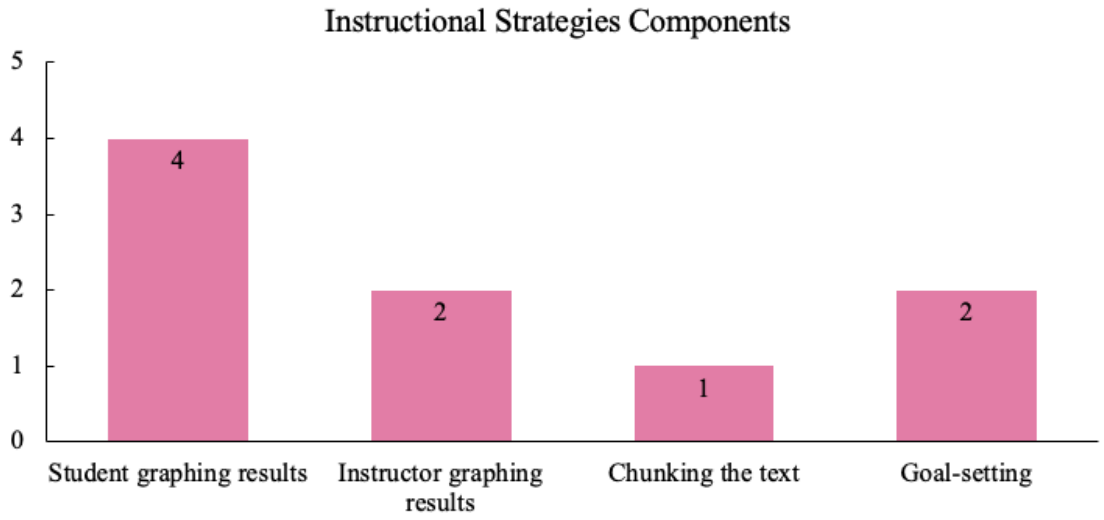

Four studies also included phonics instructional practices within their methods, including syllable segmentation and blending drills (Wu et al., 2020). Three studies utilized sight word instruction and phonics instruction prior to the fluency exercises (Bryant et al., 2015; Lingo, 2014; and Whitney & Ackerman, 2023; see figure 3). Only two studies had a comprehension component in their instructional practices including asking the students to re-tell the story after reading. Pagan and Sénéchal (2014) and Hawkins et al. (2015) measured students' comprehension utilizing a MAZE assessment.

**Figure 3.** *Phonics Components*



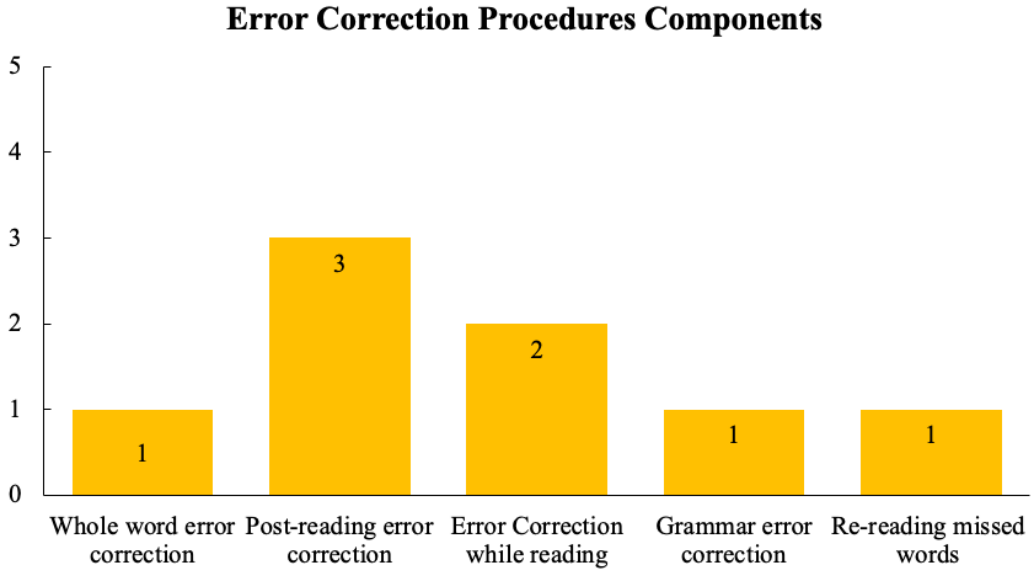
Other instructional strategies were used throughout the studies. This included students graphing their results in three studies (Bryant et al., 2015; Hawkins et al., 2015; Li et al., 2025) whereas two studies had the instructor graph the results (Lingo, 2014), and one study had both the student and the instructor graph the results (Whitney & Ackerman, 2023). Two studies utilized goal setting in their intervention (Bryant et al., 2015 and Li et al., 2025) and one study had students chunk the text (Young et al., 2015). See figure 4.

**Figure 4.** *Instructional Components*




A variety of error correction practices were used across the studies. One study used whole word error correction (Escarpio & Barbetta, 2016). Others applied post-reading error correction, which included the tutor providing the correct pronunciation of words (Lingo, 2014; Whitney & Ackerman, 2023) and instructing students to practice missed words in flashcards (Li et al., 2025). Two studies practiced error correction during reading (Hawkins et al., 2015; Powell & Gadke, 2018) and Wu et al. (2020) focused error correction on grammatical error correction. (See figure 5).

**Figure 5.** *Error Correction Procedures Components*




**Dependent Variables and Effects**

The most common dependent variable used across studies was words correct per minute (WCPM) or oral reading fluency (ORF). These measures are the most effective method for measuring students' fluency; therefore, it was not surprising that every included study incorporated a word reading fluency measure. While fluency measures were the focus for this review, we also included other dependent measures from studies.

All studies demonstrated gains with students across most, if not all, of their participants. Specifically, studies that used repeated reading strategies demonstrated positive outcomes across nearly all participants. Bryant et al. (2015) compared the use of a technology-based app vs. teacher-directed instruction. They found that, despite having higher engagement in the technology-assisted interventions, students performed better in the teacher-directed instruction phase in both word reading fluency and passage reading fluency measures. Further, all students (4$^{th}$, 5$^{th}$, and 6$^{th}$ grade students with disabilities) maintained their gains in the maintenance phase when the intervention was removed.

Two studies evaluated the effectiveness of the Great Leaps curriculum, and both studies demonstrated increased WCPM fluency measures as a result of the curriculum (Lingo, 2014; Whitney & Ackerman, 2023). These results show that using a program with systematic fluency instruction that includes student graphing results and repeated reading can demonstrate improved fluency in students. Li et al. (2025) used Repeated Reading (RR) package in small groups that included vocabulary review, error correction with reinforcement, and self-monitoring through graphing. This approach demonstrated immediate improvement in reading fluency.

Several studies compared the use of two or more different fluency interventions. For example, Escarpio and Barbetta (2016) compared the use of a RR intervention with a non-repeated

reading (non-RR) intervention in which students read longer passages to match the length of words read with RR. Results indicated that students in the RR had higher WCPM scores, fewer errors, and answered more literal comprehension questions compared to the non-RR condition. Powell and Gadke (2018) compared the effects of three different fluency interventions: a control where no intervention was implemented, a repeated reading intervention in which students read a passage twice, and a listening before reading intervention in which students listened to the passage before reading it. All students demonstrated large improvement in RR intervention and a small effect in the listening before reading condition.

Wu et al. (2020) evaluated the effects of reading fluency after a RR fluency package that included error correction, feedback on specific errors, syllable segmentation drills, and instruction of prosody. Results indicated that students' WCPM improved as a result of the intervention; however, once the intervention was withdrawn, students' WCPM scores dropped, indicating the need for consistent practice.

Young et al., (2015) evaluated fluency using a program called Reading Together. In this intervention, students were paired with a tutor. The student and the tutor read the passage together; however, the tutor read slightly ahead of the student to model fluency reading with good prosody. This intervention saw improvement in students' oral reading fluency measures, prosody, and scores on their school's reading benchmark assessment.

Conversely, Hawkins et al. (2015) compared listening while reading intervention and RR. They found that students had the most positive outcomes in ORF under the listening while reading condition compared to the repeated reading condition.

There were two studies that did not use a repeated reading intervention. Pagan and Sénéchal (2014) evaluated a summer reading program with 3$^{rd}$ and 5$^{th}$ grade at-risk students. In this summer reading program, students were mailed books of their interest weekly. Parents were provided with comprehension and vocabulary resources and were asked to partner-read with their child. Results indicated that students who participated in the summer reading program performed better on a fluency assessment upon returning to school in the fall compared to students who did not participate. This indicates the importance of summer reading for students.

Finally, Decker and Buggey (2014) compared the use of peer video-modeling and video self-modeling on 3$^{rd}$, 4$^{th}$, and 5$^{th}$ grade students with disabilities. Results indicated that students had improved ORF in both conditions. Two students who received the video self-modeling more than doubled their fluency rate during intervention compared to the students who did not use either type of video modeling.

## Discussion

The purpose of this review was to evaluate the existing research on fluency interventions in student's 4th grade through 9th grade. The results of this literature review align with recent literature reviews on effective literacy instructional strategies for improving adolescent literacy outcomes. In addition, findings from this systematic review extend from those reported in the Institute of Education Sciences (IES) Practice Guide for Providing Reading Interventions for Students in Grades 4-9 (Vaughn et al., 2022). The practice guide provides a recommendation to "provide purposeful fluency-building activities to help students read effortlessly" (p. 12; Vaughn et al., 2022). The IES Practice Guide provides three strategies to improve fluency in adolescent students, which include (a) providing a purpose for each repeated reading, (b) focusing instructional time on reading with prosody, and (c) regularly providing opportunities for students to read a wide range of texts. Findings from this review align with the findings and recommendations of the IES Practice Guide in several ways.

### Independent Variables

Overall, RR was the most commonly used fluency intervention; it appeared in 9 of the 11 included studies. The most common number of times students were instructed to re-read the passage in the RR interventions was 3 times, which aligns with the IES practice guides. In addition to RR, five studies utilized timed readings. Timed readings can be beneficial to build students' fluency; however, the use of timed and RR should be used with caution, as students can feel frustrated at the repetitive nature of these two instructional strategies. Students may lose motivation or engagement if asked to repeatedly read the same passage or feel the pressure of reading a passage within a specific time.

Another intervention that was used across three studies was paired-reading opportunities for students. Two studies paired adults with students to read a passage with the student (Pagan & Sénéchal, 2014; Young et al., 2015), and one study (Bryant et al., 2015) used a peer-paired reading intervention. In paired reading, an adult and child read a text aloud together, with the more advanced reader modeling fluency while the student follows along (Pagan & Sénéchal, 2014; Young et al., 2015). Students and partners may also take turns reading passages aloud, providing opportunities to model and practice fluent reading. Paired reading can be beneficial for students because it provides strong examples of expression and phrasing, supporting growth in prosody (Young et al., 2015). This intervention has been shown to increase reading fluency, comprehension, and receptive vocabulary across a wide range of students (Pagan & Sénéchal, 2014; Young et al., 2015). Therefore, teachers should consider using paired-reading practices in their classroom, specifically with students that struggle with fluency, comprehension, and receptive language usage.

Modeling reading is also beneficial for students who struggle with fluency. Echo reading was used in one study (Decker & Buggey, 2014), peer modeling was used in one study (Hawkins et al., 2015), listening while reading was used across two studies (Hawkins et al., 2015; Powell & Gadke, 2018), and video self-modeling and video peer-modeling were used in one study

(Decker & Buggey, 2014). Each of these practices provides a model for students of fluent reading to achieve appropriate accuracy and expression by imitating a fluent reader, providing support for students improving their fluency (Kuhn et al., 2006; Decker & Buggey, 2014). (One more sentence about the importance of modeling fluent reading).

The IES practice guide also recommends that students have access to a variety of texts. While most studies did not report the range of interests within the texts, three studies selected texts at the students' independent level (Hawkins et al., 2015; Pagan & Sénéchal, 2014; and Young et al., 2015) and one study used texts at the students' instructional level (Lingo, 2014). A few studies indicated that they selected texts based on students' interest levels; however, the included studies did not report on the effectiveness of student-selected texts.

Student motivation within fluency interventions, particularly for adolescents, can be a concern. Several included studies addressed student motivation by incorporating self-determination practices (Bryant et al., 2015; Li et al., 2025; Whitney & Ackerman, 2022). When students actively track their fluency data, they have the opportunity to engage in self-monitoring and goal setting. Graphing further enhances motivation and engagement, as students can visually see their improvement over time. By allowing students to graph their progress, interventions can create key aspects of self-determination, such as self-monitoring and motivation (Li et al., 2025).

## Discussion of Components Effectiveness

Most studies included in this review used more than one component during their intervention. For example, several studies used explicit phonics instruction prior to the fluency-based intervention. This instruction included sight word instruction, explicit vocabulary instruction such as pre-teaching words, and decoding skills. Two studies also explicitly focused on teaching comprehension. This aligns with the IES practice guide, which recommends building decoding skills, providing purposeful fluency-building activities, and routinely using comprehension-building practices to help student in grades four through nine strengthen both fluency and overall reading proficiency (Vaughn et al., 2022).

### *Students with Disabilities and Multilingual Learners across Tiers*

Nearly all studies provided intervention in Tier 3. Decker and Buggey (2014) was the only study that implemented the intervention in Tier 2, which consisted of using video self-modeling (VSM) and video peer-modeling (VPM) with 3$^{rd}$, 4$^{th}$, and 5$^{th}$ graders with disabilities. Findings indicated that students who received the VSM and VPM interventions performed better than the students in the control, indicating that the use of video-modeling may be an effective intervention for students with disabilities in the later elementary years.

Most included studies focused on students with disabilities in Tier 3 interventions (i.e., Bryant et al., 2015; Escarpio & Barbetta, 2016; Li et al., 2025; Lingo, 2014; Whitney & Ackerman, 2023; Wu et al., 2020). In all six studies that included students with disabilities, RR was the primary intervention. All students demonstrated improvement in their fluency after intervention. Students

included in these studies were in grades 4th through 8th grade. Some studies included additional instructional components such as graphing results (Lingo, 2014; Whitney & Ackerman, 2023), explicit vocabulary or sight word instruction (Escarpio & Barbetta, 2016; Li et al., 2025; Lingo, 2014 & Whitney & Ackerman, 2023), and phonics instruction (Bryant et al., 2015; Lingo, 2014; Whitney & Ackerman, 2023). These findings indicate that interventions that include RR when paired with explicit instruction in phonics and vocabulary are effective in improving the fluency of adolescent students with disabilities.

Three studies included students at risk in grades 4th through 7th grade (Hawkins et al., 2015; Pagan & Sénéchal, 2014; & Powell & Gadke, 2018). In these studies, students were either paired with an adult to complete a reading (Pagan & Sénéchal, 2014) or participated in RR and a listening while reading intervention (LWR; Hawkins et al., 2015; Powell & Gadke, 2018). In Hawkins et al. (2015), researchers compared a RR intervention with a LWR intervention and found that LWR led to greater ORF in less time than RR did for at-risk 4th grade students. However, when measuring for comprehension through a MAZE assessment, students' performance had slightly higher scores in the RR condition. Pagan and Sénéchal (2014) evaluated the effectiveness of a summer reading at home program in which students read with an adult. Results indicated that the summer reading program enhanced children's reading. It should also be noted that Pagan and Sénéchal (2014) was the only study that reported multilingual learners in their student demographic reporting. Results were not aggregated for that specific population of students. Finally, Powell and Gadke (2018) evaluated the use of a RR intervention on middle school students that were at-risk. They examined RR intervention paired with a listening passage preview (LPP) intervention in which students were instructed to follow along in the passage while the researcher modeled the reading. Their findings indicated that students performed better in the RR condition compared to the control and LPP condition.

## Implications for Practice

The findings of this review highlight several key implications for classroom teachers, interventionists, and school leaders who design and implement fluency interventions for upper elementary and secondary students.

### *General Recommendations*

RR remains the most frequently used and effective intervention for building fluency in grades 4-9; however, its use should be balanced with motivational supports, as students may become disengaged if asked to read the same passage multiple times. To address this, educators should integrate progress monitoring tools such as graphing results, incorporate student interests when selecting texts, and embed explicit vocabulary and phonics instruction alongside fluency practice. Additionally, providing access to diverse text genres at both independent and instructional levels supports students' engagement and literacy growth.

### *Students with Disabilities and Multilingual Learners*

Evidence from the included studies suggests that RR combined with explicit instruction in phonics, vocabulary, and self-monitoring practices (e.g., graphing) is particularly effective for

students with disabilities. Moreover, interventions such as video self-modeling and video peer-modeling demonstrate promise as accessible and motivating strategies that improve fluency outcomes for students receiving Tier 2 and Tier 3 supports. For multilingual learners, findings are limited. Only one study reported their inclusion, without disaggregated outcomes. Nevertheless, paired reading with adults or peers, LWR, and modeling-based interventions may provide additional scaffolding by combining oral language support with exposure to fluent reading. School leaders and educators should prioritize flexible, multi-component interventions that are responsive to the diverse linguistic and learning needs of these student populations.

### Limitations

Several limitations should be noted in interpreting these findings. First, the majority of studies focused on Tier 3 interventions, limiting the generalizability of results to Tier 1 and Tier 2 settings where many students initially require support. Second, while RR was consistently effective, overreliance on a single approach restricts knowledge of how other fluency-building strategies might contribute to long-term literacy outcomes. Third, very few studies reported student demographics in detail, particularly with respect to multilingual learners, which limits understanding of how fluency interventions meet the needs of culturally and linguistically diverse students. Finally, motivation and engagement were inconsistently addressed across studies, making it difficult to determine how best to sustain adolescent participation in fluency interventions.

### Future Research

Future studies should address these limitations in several ways. First, researchers should broaden intervention contexts. For example, researchers should consider investigating fluency-building strategies in Tier 1 and Tier 2 contexts to determine their preventive and early intervention effectiveness. Also, researchers should explore combinations of RR, vocabulary, phonics, comprehension, and self-determination practices to identify optimal multi-component approaches. Another consideration for future research should be examining diverse populations. For example, several studies focused only on students with disabilities; however, the few studies that included different groups of students (i.e., students with disabilities, students without disabilities, and multilingual learners) did not have the results disaggregated. Next, motivation is a concern with fluency interventions with older students. Future researchers should systematically study the role of self-determination practices, interest-based text selection, and progress-monitoring tools in sustaining engagement for older students. Finally, the use of technology was limited in the included studies. Future research on adolescent fluency interventions should include technology and evaluate the effectiveness of video modeling, digital reading platforms, and adaptive fluency programs as scalable solutions for secondary settings.

By expanding the scope of research and ensuring diverse student populations are represented, future studies can provide stronger evidence to guide practice and policy in adolescent literacy instruction.

## Conclusion

This review demonstrates that fluency interventions, particularly RR, paired reading, and modeling-based practices, are effective tools for improving reading outcomes in students from grades 4-9. The findings extend prior recommendations by highlighting the importance of integrating motivational supports, explicit instruction in vocabulary and phonics, and opportunities for students to engage with diverse texts. While evidence is strongest for Tier 3 interventions and students with disabilities, more research is needed to determine effectiveness in Tier 1 and Tier 2 settings and for multilingual learners. Taken together, these results underscore the need for multi-component, systematic fluency interventions that can address both the academic and motivational needs of adolescent readers.

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## Appendix

**Table 2.** Description of Adolescent Fluency Studies in Tiers 2 and 3

| Study and design | Participants | Intervention conditions as implemented in the study | Comparison condition as implemented in the study | Summary of Reported Findings (phonics only) | Dosage |
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| Decker & Buggey (2014) | 3 3rd graders, 3 4th graders, and 3 5th graders All had disabilities | "Students were individually assessed to determine their instructional reading levels, and three students per grade were randomly assigned to either the VSM, VPM, or comparison group. VSM students were filmed echo reading with the researcher; errors and adult voices were edited out, and personalized introductions and applause endings were added. Intervention began with fifth-grade students, followed by fourth and third grade at two-week intervals. During their two-week intervention, students watched either their own video (VSM) or a peer's fluent reading video (VPM) once daily in a private room | No control group. | ORF/WCPM-Results of the study showed that there was an increase in reading fluency between baseline and intervention in both video self-modeling intervention and video peer modeling intervention and gains continued or were maintained throughout the maintenance phases. The comparison group made slow, continuous gains, but there was no apparent spike appearing for any of the probes. As the data indicate, two students who received VSM intervention, more than doubled their reading fluency rate during intervention. | 8-13 sessions over 2 weeks |

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| | | using headphones. Peer models were matched for age, ability, and culture. After intervention, videos were given to VSM participants, and all students returned to baseline reading probes for a maintenance period that varied by group. Students were individually assessed to determine their instructional reading levels, and three students per grade were randomly assigned to either." | | | |
| Bryant et al. (2015) | 4 4th graders All had disabilities | Before beginning baseline data collection, students were administered a researcher created pseudoword test to identify phonics strengths and struggles and easyCBM PRF passages to determine their reading levels. Once instructional levels were identified baseline testing was conducted over 7 consecutive days using WRF and | No control group. | "Overall WRF and PRF- To examine effect size, we used the NAP (Parker & Vannest, 2009) procedure. We computed percentages of nonoverlapping data for both interventions, TDI and AI, and in most cases TDI proved more effective than AI. WRF- Student 1: The average intervention score for teacher-directed | 30 min per day for 14 days over a 3-week period |

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| | PRF probes to measure WCPM for individual words ad connected text. Probes were double scored by researchers for accuracy, with discrepancies resolved through audio review. Interventions occurred in homogeneous pairs, divided into four waves. | instruction (TDI) exceeded I-pad assisted condition (AI) by 0.7 points. Student 2: Student 2's scores for both approaches exceeded the average baseline score on the implementation of the intervention (TDI = 35, AI = 36) and improved at moderate and increasing levels throughout the remainder of the intervention condition. The average intervention score for AI (41.4) exceeded TDI (39.7). Student 3: The average intervention score for TDI (33.0) substantially exceeded AI (26.6), while showing considerably larger gains over baseline. Student 4: Student 4's initial scores for TDI (30) and AI (34) both exceeded the average baseline score on the implementation of the intervention. |

The average intervention score for TDI (32.7) exceeded AI (31.5). All four participants either improved or remained stable in their WRF after intervention was removed in maintenance phase. Passage Reading Fluency (PRF)- Student 1: The average intervention score for TDI (87.3) exceeded AI (79.1), yet even with the steady decline across the intervention, both average scores exceeded the average baseline score by substantial margins. Student 2: The average intervention score for AI (81.7) exceeded TDI (77.6). Responding actually increased following the removal of the intervention during maintenance. Student 3: For both approaches, scores fluctuated throughout the remainder of the

intervention condition; but the average intervention score for TDI (58.1) substantially exceeded AI (47.6) and showed considerably larger gains than AI over baseline. Student 4: The average intervention score for TDI (66.0) exceeded AI (63.3), with neither approach showing gains over baseline. All four students demonstrated stable responding in PRF after intervention was removed in maintenance phase. Engagement: For WRF and PRF, visual inspection of the engagement data demonstrates a consistent preference in favor of AI over TDI. Across all students, engagement was consistently high for both instructional approaches for

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| | | | | both the WRF and PRF interventions, often approaching or reaching 100%. " | |
| Escarpio & Barbetta (2016) | 4 6th graders All had disabilities | The ARI was used to determine each participant's independent reading level, and 40 passages at that level were selected and verified for readability. Passages were retyped and randomly assigned to repeated reading, non-repeated readings, or equivalent non-repeating reading conditions. Each session began with 3 minutes of vocabulary instruction using flashcards with words from the reading program's glossary. Participants read passaged aloud using whole-word error correction during the first read, followed by two additional readings without correction in the repeated readings condition. In the non-repeated and equivalent non- | No control group. | "WCPM- All students performed better in the repeated reading condition versus the non-repeated reading condition. Number of errors per minute- All four participants had fewer errors in the repeated reading condition versus the non-repeated reading condition. Literal comprehension questions- Three of the 4 participants answered more correct comprehension questions in the repeated reading condition. " | 4 times a week |

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| | | repeated conditions, participants read a 100- to 450-word passage only once, depending on the phase. Sessions ended with two assessments, 5 oral comprehension questions and a 1-minute fluency reading. | | | |
| Hawkins et al. (2015) | "4 4th graders All at risk" | Students participated in a 20-minute training session before the experimental phase to learn the procedures for RR and LWR. The researcher explained the study, demonstrated each method with student models, and allowed time for questions. During the RR sessions, students read a passage aloud 3 times to a researcher, receiving immediate error correction when needed. The students then completed a Maze task and fluency assessment using the same passage. In the LWR | No control group. | "Oral Reading Fluency- The two intervention conditions had similar effects on reading fluency for three participants with higher mean ORF scores in the repeated reading (RR) condition for two students and a slightly higher mean ORF in the Listening while reading (LWR) condition for one student. LWR led to consistently higher efficiency estimates for three of the four participants. Controlling for time spent in the intervention session, LWR led to greater ORF in less time than did RR for these three students. Average | 12 weeks, 1-2 times a week, range of each session was 4 min-21 minutes |

sessions, students read aloud with an MP3 player 3 times while followed the printed passage, then completed the same Maze and fluency assessments as in RR.

ORF efficiency data reported in table 2 indicate that, given one minute of intervention, two students nearly doubled the number of words read correctly in the LWR condition as compared to the RR condition. MAZE- Visual analysis of Maze data shows similar levels of correct word choices across intervention conditions for two students. The graph of one student's Maze data shows slightly higher performance in the RR condition, and one students' data shows a clear difference in performance across the two conditions, with the RR intervention resulting in consistently higher MAZE scores. Data from three participants also show a slight increasing trend across the intervention

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| | | | | phase. Based on condition means, the RR led to slightly higher MAZE performance for all participants. " | |
| Li et al. (2025) | 1 6th grader, 1 7th grader, 1 8th grader All had disabilities | The repeated reading intervention followed procedures similar to Vandenberg et al. (2008), incorporating vocabulary review, error correction with reinforcement, and self-monitoring through graphing. Students participated in small-group sessions two to four days per week, during which they read passages with the second author after whole-group reading instruction. If students did not meet their fluency goals (measured in WCPM), they reread the passage and graphed their results, while the second author created flashcards of misread or omitted words. These flashcards were used in a correction routine that involved verbal | No control group. | WCPM- All three participants did not demonstrate immediate improvement the first time they read a passage. However, after intervention was introduced, all participants showed immediate improvement in reading fluency. In addition, there seemed to be trivial variation of immediate treatment effect across participants for the first measure, while the immediate treatment effect after instructions looks more salient for Student 1 and Student 2. | 15 weeks |

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| | | identification, praise for correct responses, and modeling plus repetition for incorrect ones until all words were correctly identified. | | | |
| Lingo (2014) | 4 6th graders All had disabilities | During baseline, tutors assessed the student's oral reading fluency using equivalent level story passages, excluding phonics and sight phrase sections due to variability. Students read for 1 minutes while tutors recorded the number of words read and errors, which included substitutions, mispronunciations, omissions, and long pauses. At least 3 baseline sessions were conducted per participant, with periodic probed administered for students prior to intervention. During the intervention, each student received 1 daily tutoring session consisting of 3 timed readings, one from phonics, sight | No control group. | Words read per minute- All four participants made some fluency gains as a result of Great Leaps Reading. As seen on the summary graphs for passages, data for three of the four students displayed minimal overlap between baseline and intervention conditions, which suggests reading fluency gains. All four participants returned to baseline fluency levels with the presentation of a new story passage at some point during the intervention condition as expected for novel passages. A positive change in level from baseline to intervention can | Each tutoring session lasted between 10 and 15 minutes per student. |

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| | | phrases, and story sections. Tutors provided corrective feedback, tracked accuracy and fluency, and graphed progress. Generalization probes occurred every 3rd session. | | be seen for all participants. | |
| Pagan & Sénéchal (2014) | "23 3rd graders and 25 5th graders All at risk 8 multilingual" | Students in the intervention condition participated in a summer reading program where they were encouraged to read on book per week. Prior to the intervention, parents attended a 1.5 hour training session on paired reading strategies, received a reference booklet, and were provided support through periodic phone calls. Every week families received a book package by mail that included reading materials tailored to the child's interest and reading level, along with comprehension and vocabulary resources for parents. Parents were asked to | Students in the control condition did not receive any books or instructional materials during the intervention period. They were given 8 books after the study was concluded. At the end of the summer, parents of those in the control group participated in a telephone survey about their child's summer reading habits, including whether they read together and used any specific strategies. During post-testing, the control group | ORF from Rigby READS Teacher's Manual- children in the intervention condition (adjusted mean = 51.8% of words read correctly, 95% CI [48.2%, 55.4%]) read more fluency on post-test than the control-condition children (Adjusted = 45.6% of words read correctly, 95% CI [42.0%, 49.2%]), F(1, 45) = 4.11, MSE = 0.01, p = .05, partial η2 = 0.08. Hence, the summer reading program enhanced children's reading. | parents were asked to engage in paired reading with their child for five to 15 minutes each day for five days of the week, and to encourage their child to read independently after each session. |

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| | | engage in daily paired reading sessions with their child, followed by independent reading, vocabulary discussion, and comprehension questions. Questionnaires and checklists were used to track progress throughout the program. Book selection was based on children's genre preferences and reading levels determined by teachers using the Developmental Reading Assessment. | reported how many books they read over the summer. | | |
| Powell & Gadke (2018) | "1 6th grader and 2 7th graders 2 at risk " | A baseline and three reading conditions were used. In baseline and control, students read aloud once with no feedback. In repeated reading students read twice with corrects during the first reading, in the listening passage preview students listened to the passage before reading it aloud, and errors and reading time were | No control group. | "WCPM- Overall, all three participants had improved results in RR condition. Student 1: Non-overlapping percentage scores for repeated reading (RR) indicate a large effect which suggests that RR was effective. There was a moderate and gradual increase in WCPM in Listening passage preview (LPP) | 25 minutes, once a week for a total of 4 weeks |

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| | recorded in each condition. | from baseline and some convergence with control. Results indicate that there is a large effect for LPP relative to baseline, but small effect compared to control condition. Results indicate for Samuel that RR was likely most effective. Student 2: Scores for RR indicate a large effect and was an effective reading intervention compared to control. No change in LPP intervention relative to baseline and had much overlap with control. LPP had small effect size relative to baseline and control indicating LPP was not more effective than control. Student 3: RR does converge with control during intervention and eventually increase. NAP scores indicate a medium effect relative to |

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| | | | | baseline and large effect relative to control. There was no change in level for LPP relative to baseline which indicates LPP was not more effective than control. Overall, all three participants had improved results in RR condition. " | |
| Whitney & Ackerman (2023) | 2 4th graders and 2 5th graders All had disabilities | Each session of the intervention lasted about five to seven minutes and included one-minute timed readings in three areas: Phonics, Sight Phrases, and Stories. The special education teacher logged into the GLDRP website, linked teacher and student tablets using a code, and selected the appropriate reading probes. Students advanced to the next level called a “great leap” when they read a passage in one minute with no more than two errors, indicating 90-94% accuracy or higher. If the student did not meet the criterion, | No control group. | "CWPM- Visual analysis reveals that each participant’s reading rate increased as a result of the Great Leaps Digital Reading Program (GLDRP). Baseline data remained stable and reflected a decreasing trend before implementation of the intervention for each participant. Although there were instances of a reduction in CWPM on the next probe after a “great leap,” they were followed by an acceleration in performance to the criterion score. The percent of non-overlapping | 3 times a week, 7 minutes each session |

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| | the same probe was used in the next session, and the teacher provided specific feedback on errors. Sessions were conducted at least three times per week, and performance was automatically graphed, tracking words per minute and errors. Teachers corrected errors in real time and then implemented an error correction procedure where they modeled the correct reading and had students repeat it. | | data between the baseline and intervention points ranged from 84% to 93%, suggesting the intervention had medium to large effect. The aggregated Tau-U effect size for CWPM was 0.82, suggesting the intervention had a large effect. Grade level reading passage- Grade level reading passages were administered every 10th session to determine if reading fluency gains generalized to grade level passages. Baseline data for each participant remained stable and reflected a decreasing trend before implementation of the intervention for each participant and a minimal but therapeutic change in level was observed within the first intervention session for each participant. |

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| | | | | Additionally, the percent of nonoverlapping data between the baseline and intervention points was 100% and the aggregated Tau-U effect size was 1.00, suggesting the intervention had a very high effect. " | |
| Wu et al. (2020) | 1 5th grader and 2 7th graders All had disabilities | During the baseline and withdrawal phases, participants read instructional-level passages aloud for one minute without assistance or feedback, and WCPM were recorded. After baseline was established, students received a Repeated Reading intervention. Each session included a review of expected behaviors, four repeated readings of text, error correction procedures, and contingent rewards. After each of the first three readings, the researcher provided targeted corrective feedback based on specific errors including | No control group. | "WCPM- Overall, all participants had low rates during baseline, steady increase during intervention. During withdrawal, all participants dropped and then returned to intervention responding when intervention was reintroduced. Student 1: Overall, there was similarity across similar phases and no overlap of the data when comparing control to interventions phases. This is further evidenced by large effect sizes moving from baseline to intervention (NAP = 100%) and withdrawal to | 25-30 min sessions, 2-3 times a week, 3.5-4.5 months |

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| | | syllable segmentation drills, grammar clarification, prerequisite reading skills instruction, and phrase drills. The final reading served as the performance assessment. | | intervention (NAP=100%). Student 2: The data were similar across related phases and had little overlap. Effect sizes were large comparing baseline to the initial intervention (NAP = 97%) and withdrawal to the second implementation of the intervention (NAP=100%). Student 3: Overall, similar phases had similar patterns of data, and there was no overlap across the data, indicating strong effect sizes from baseline to intervention (NAP=100%) and withdrawal to intervention (NAP= 100%). " | |
| Young et al. (2015) | 9 3rd graders, 11 4th graders, and 9 5th graders | This Reading Together intervention combined both the Neurological Impress Method and repeated readings. Students and tutors read aloud together, with the tutor reading slightly ahead using | "Both the treatment and control groups continued to receive their regular reading instruction. There was no significant difference in words read | "DIBELS ORF- the results indicated that Reading Together had a large effect on students' increase in word recognition automaticity (words read correctly per minute). The first | 400 minutes over a month, 20 minutes a day |

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| | expressive prosody, followed by the student reading each section independently. The tutors adjusted text difficulty based on the student's fluency and recorded notes in an intervention log. The volunteers were trained in the method, including how to chunk text, determine when to change reading levels, and model fluent reading. | correctly per minute in the control group from pretest (M= 82.00, SD= 23.24) to posttest (M= 86.43, SD= 26.74). " | paired-samples t-test measured increase in oral reading fluency (words read correctly per minute/WCPM). In the treatment group, the pretest (M = 70.14, SD = 23.48) to posttest (M = 90.79, SD = 26.47) increase on words read correctly per minute was statistically significant. There was no significant difference in words read correctly per minute in the control group from pretest (M = 82.00, SD = 23.24) to posttest (M = 86.43, SD =26.74). The standard deviation scores are large because of the differing grade level norms for words read correctly per minute. Prosody- There was also a significant difference in the measure of prosody (Multidimensional Fluency Scale scores) for the |

treatment group from pretest (M = 8.59, SD = 2.57) to posttest (M =11.38, SD=1.78) and no significant results for the control group from pretest (M =9.48, SD = 2.59) to posttest (M = 9.70, SD = 2.65). iStation- The third paired-samples t-test measured the mean differences in overall reading score measured by iStation (Table 4). A statistically significant difference in mean scores was found for the treatment group from pretest (M = 1323.10, SD = 756.21) to posttest (M = 1361.48, SD =777.89). In the control group, there was no significance difference in overall reading score from pretest (M = 1097.87, SD = 778.23) to posttest (M = 1079.57, SD = 764.68) in one month. iStation is a benchmark assessment that has phonemic

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| | | | awareness, letter knowledge, alphabetic decoding, vocabulary, Spelling, and comprehension subtests. Overall, the Reading Together treatment successfully increased students' reading performance on all measures " |