International Journal of Language and Literary Studies
Volume 8, Issue 4, 2026
Homepage : http://ijlls.org/index.php/ijlls

MTSS-Based Reading Comprehension Interventions for Middle School ELLs: A Case Study

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DOI: https://doi.org/10.36892/ijlls.v8i4.2691

APA Citation: Cavagnaro, J. T. (2026). MTSS-based reading comprehension interventions for middle school ELLs: A case study. *International Journal of Language and Literary Studies*, *8*(4).97-115. https://doi.org/10.36892/ijlls.v8i4.2691

Received:
04/02/2026

Accepted:
13/04/2026

Keywords:
reading comprehension, English Language Learners (ELLs), Multi-Tiered Systems of Support (MTSS), intervention strategies, progress monitoring

Abstract

This study examined the effectiveness of a Multi-Tiered System of Supports (MTSS) intervention in improving reading comprehension among middle school English language learners (ELLs). Using a mixed-methods, retrospective case study design, data were collected from 38 Tier 3 ELL students across Grades 6–8, including pre- and post-intervention FAST scores and qualitative classroom observations. Results indicated non-significant improvements across grade levels (6th: +5.5, p = .250; 7th: +3.7, p = .541; 8th: +10.0, p = .102), suggesting insufficient evidence to reject the null hypothesis. Students' posttest scores remained 28–34 points below grade-level benchmarks. However, descriptive trends revealed a positive association between intervention frequency and reading gains, with higher session exposure corresponding to greater improvement. Qualitative findings highlighted the influence of engagement, attention, and classroom environment, as well as the importance of culturally responsive instruction and explicit vocabulary development. Overall, findings suggest that while MTSS interventions may yield limited gains, increased instructional intensity, duration, and alignment with student needs are critical to improving reading outcomes for ELLs.

1. Introduction

One of the most important abilities for academic success is reading comprehension. Yet issues such as limited vocabulary, unfamiliar cultural references, and poor English fluency affect English Language Learners (ELLs) who frequently struggle to understand written text. This severely affects their overall learning process and academic achievement. For all students, especially ELLs who primarily rely on text-based learning across a variety of academic subjects, strong reading comprehension is essential. Students who struggle with reading comprehension may find it more difficult to obtain information, engage in class discussions, and complete assignments in subjects like mathematics, science, or history. Poor reading comprehension can make learning difficult and prevent students from achieving their full academic potential.

ELLs may encounter unfamiliar words and find it difficult to understand the overall meaning of a text. Understanding may be further hindered when background knowledge or cultural references are unfamiliar. Fluency difficulties — including reading accuracy and speed — can impede comprehension by making it harder for students to decode words and focus on meaning.

1.1 The Importance of Reading Comprehension for ELLs

Textbooks and other written materials serve as the primary source of information in classrooms today. ELLs find it difficult to access content in subjects such as science, mathematics, and history if they lack strong reading comprehension skills (Colorado, 2018). This may eventually impede their overall academic success by causing frustration and a sense of falling behind.

Decoding words is only one aspect of reading comprehension (Long, 2024). It involves interpreting the text's meaning, drawing inferences from prior knowledge, and evaluating the information presented (Levin, Porath, Anderson, & Mackenzie, n.d.). Good comprehension enables ELLs to engage more deeply with the text, which develops their capacity for critical thought and makes for a richer educational experience. Understanding written materials also gives ELLs the confidence to pursue independent learning, engage in class discussions, and complete assignments with greater assurance, thereby encouraging continued language learning and creating a positive learning environment.

1.2 Challenges Faced by ELLs in Reading Comprehension

Limited vocabulary is one of the biggest obstacles ELLs face when trying to understand written text (Hezam, Ali, Imtiaz, Saifi, & Islam, 2022). ELLs may encounter many unfamiliar words, which makes it harder to grasp the overall meaning of a text. Written texts frequently contain cultural references or assume background knowledge that ELLs may not possess, causing confusion when the underlying cultural context of idioms, jokes, or historical allusions is unclear.

For developing ELLs, decoding unfamiliar words and attending to pronunciation can be exceedingly difficult, diverting their attention from understanding the text's main point. Understanding frequently depends on prior knowledge and experience, which ELLs from diverse educational or cultural backgrounds may not share. Furthermore, textbooks and other academic materials are often written at a higher level of complexity (IRIS Center, n.d.), with demanding sentence structures, sophisticated vocabulary, and a high volume of information that can overwhelm students who are still developing their English language skills.

1.3 The Need for an Effective Reading Intervention Strategy for Middle School ELLs

Students' development of strong reading comprehension skills is crucial during the middle school years (Staff, 2018). These competencies provide the groundwork for lifelong learning and are necessary for success across all academic areas (Bellett-Travers, 2024). Middle school materials frequently address more complex sentence structures, figurative language, and abstract concepts — content that can be overwhelming for ELLs just beginning to develop their English proficiency. Additionally, social studies and science grow in importance at the middle school level; ELLs may struggle to comprehend these subjects due to gaps in background knowledge or discipline-specific vocabulary (Haynes, n.d.). Middle school is also a period of social and emotional growth, and ELLs may be simultaneously navigating peer relationships and cultural adjustment, which can interfere with concentration on reading assignments.

Without proficient reading comprehension, ELLs experience difficulty with homework, textbook comprehension, and class participation across all subject areas. This can result in low motivation, poor grades, and academic failure. If effective interventions are not implemented, ELLs may be disadvantaged when pursuing postsecondary education and workforce opportunities. Research has noted that current reading comprehension intervention techniques may not specifically address the difficulties experienced by ELLs; generic interventions that do not account for varied learning preferences and linguistic backgrounds may leave students behind.

Florida's MTSS framework emphasises that when students demonstrate gaps in foundational knowledge and skills, they must receive additional targeted instruction and intervention to address those learning needs (Florida Department of Education, n.d.). An

effective reading comprehension intervention strategy for middle school ELLs must be tailored to the unique needs of this population, considering language proficiency, prior knowledge, and content area requirements (Hicks, 2018). It should offer clear instruction on vocabulary development, reading comprehension strategies, and critical thinking skills, using a scaffolded approach with structures and support to help students comprehend complex texts while remaining culturally sensitive.

1.4 Response to Intervention (RTI) Reading Strategies for ELLs in Middle School

Powell and Doabler (2019) stated that many students in U.S. schools do not meet grade-level expectations, and these students require supplemental academic support. In response to the increasing number of students falling behind academically, the subject school adopted Response to Intervention (RTI), a multidisciplinary process designed to systematically improve instruction under the guidance of the Florida Department of Education. The programme aims to provide services to struggling students and identify students who may have a learning disability (RTI Part 5: A Closer Look at Tier 3, 2022).

The school adopted RTI's tiered system of support, which encompasses three levels. Tier 1 provides effective core instruction for all students, led by the classroom teacher. Tier 2 delivers supplemental interventions through small-group instruction for students who need additional time to learn. Tier 3 provides intensive, individualised intervention for students requiring the most support, facilitated by a specialist outside the classroom. Through the RTI process, students can receive early intervention before they fail (Rowden, 2020).

1.5 Practices and Intervention Tools

At the beginning of the academic year, the school conducts a thorough review of each enrolled student's academic performance. The administration and intervention coordinator create a monitoring list for students during the first few weeks. If a classroom teacher identifies performance concerns, they conduct small-group instruction with the identified student(s), monitoring and documenting progress to understand strengths and weaknesses. If little to no improvement is observed, the teacher refers the student to the intervention specialist.

To provide high-quality, intensive, and individualised reading instruction for Tier 3 students, the school uses two research-based intervention tools. The first is *SIPPS*® (Systematic Instruction in Phonological Awareness, Phonics, and Sight Words), a structured literacy intervention developed by Collaborative Classroom that uses explicit routines focused on phonological awareness, spelling–sound correspondences, and high-frequency words. SIPPS® includes four levels — Beginning, Extension, Plus, and Challenge — aligned to stages of reading development, with placement and mastery assessments to guide instructional decisions.

The second tool is *Imagine MyPath*, a supplemental programme designed to meet students at their level in reading and mathematics through an Individualised Learning Path (ILP). During the intervention period, the interventionist prepares lessons by printing resources from the programme, allowing students more time to engage with texts and questions. The specialist narrows down skills and texts using the programme's rich selection of activities to ensure lessons focus on students' specific needs.

As students receive intensive instruction, the interventionist ensures they learn evidence-based comprehension strategies including Activating and Connecting to Background Knowledge, Question–Answer Relationship, Monitor and Clarify, and Visualise and Summarise — drawn from the National Reading Panel's 2000 review.

1.6 Reading Comprehension Strategies in Comprehension-Focused Interventions

Duke, Ward, and Pearson (2021) explained that reading instruction practices can positively impact reading development. Providing foundational word-reading skills through the SIPPS programme — including letter recognition, phonological awareness, print awareness, phonics,

word recognition, and sight words — ensures Tier 3 learners are ready to read. Once students pass SIPPS, they can receive support in reading comprehension through the MyPath Reading programme.

Activating prior knowledge allows students to make connections to text, supporting their ability to construct meaning during reading (Anderson & Pearson, 1984; National Reading Panel, 2000). The Question–Answer Relationship strategy deepens students' thinking by prompting them to search for key details and answer open-ended questions, enhancing higher-order thinking and cognitive skills (Reading Rockets, n.d.). Monitoring comprehension involves noticing one's thinking while reading and using background knowledge to determine whether information is new, ask questions, and make inferences (Clemson University Early Literacy Center, n.d.), and clarifying involves identifying problem areas and employing strategies such as re-reading, consulting a dictionary, or reflecting on the text read so far (Prim-Ed Publishing, 2020).

Hanna (2020) defined visualising as the ability to create images in the mind based on what was read, enabling a more dynamic and transformative reading experience that activates prior knowledge and develops comprehension. Summarising is described as the most complex skill in reading comprehension, one that students develop over time through continuous practice (Lewis, 2024). Assignments on MyPath Reading provide guiding questions and prompts that help students summarise texts.

Each student or group receives 25–30 minutes of intervention time. Students are assessed to check understanding and progress is recorded in a data tracking log accessible to the intervention team, ELL and ESE coordinators, and the administration. Progress monitoring assists school leaders and educators in analysing data, making instructional decisions, and determining further support needed (Rowden, 2020).

1.7 Research Gap

Studies identify significant gaps in understanding how MTSS affects reading comprehension in ELLs. Snyder (2023) found that a small proportion of students who struggle with English language arts receive Tier 2 or Tier 3 interventions regularly, indicating a service supply gap. According to Gillon (2023), ELLs may need more prolonged and intensive intervention periods to achieve results comparable to those of non-ELL peers. ELLs frequently have difficulty recognising main ideas due to restricted vocabulary and limited prior exposure to English, and effective comprehension strategies must be explicitly taught with emphasis on vocabulary development and metacognitive skills such as summarising (Project ELITE, Project ESTRE2LLA, & Project REME, 2015; Brown et al., 2024).

MTSS frameworks must incorporate culturally and linguistically responsive teaching practices, including engaging students in meaningful discussions and using texts that reflect their cultural and linguistic backgrounds (Napolitan, 2023). Additionally, educators frequently report feeling unprepared to make data-driven decisions about ELL instruction within an MTSS framework, underscoring the need for enhanced professional development (Snyder, 2023). Collaboration with literacy specialists and speech–language pathologists can further increase the efficacy of MTSS for ELLs by targeting both language acquisition and literacy skills (Gillon, 2023).

1.8 Statement of the Problem

This study sought to evaluate reading comprehension intervention strategies for ELLs in a middle school through a case study. Specifically, it aimed to address the following sub-problems:

(1) How does the implementation of the Multi-Tiered System of Support (MTSS) impact the reading comprehension skills of participating ELLs?
(2) How does the Multi-Tiered System of Supports (MTSS) affect the reading test scores of English Language Learners?

(3) How do the frequency and duration of intervention sessions affect the reading comprehension outcomes of the ELLs?
(4) Based on the results, what specific reading intervention plan aligned with the MTSS framework can be developed to effectively enhance the reading comprehension skills of middle school ELLs participating in the study? How can enhanced, research-based MTSS strategies be developed to address the unique needs of these ELLs and improve their reading outcomes?

1.9 Theoretical Framework

The foundation of this research is the Response to Intervention (RTI) theory. According to Mellard, McKnight, and Jordan (2010), RTI is based on a public health prevention model incorporated into school psychology literature. This theory focuses on providing a systematic approach to identify and address learning difficulties early. Its four key principles are universal screening, tiered interventions, progress monitoring, and data-driven decision-making. This theory emerged from the work of Samuel Kirk, who advocated for the early identification of students needing extra support (Samuel Kirk – Illinois Distributed Museum, n.d.).

The RTI framework uses three tiers of instruction delivery. Tier 1 consists of superior core education for all students. Tier 2 provides targeted small-group instruction for students requiring additional support. Tier 3 offers intensive, tailored interventions for students who need more support than Tiers 1 and 2 can provide. The Interactive Model of Reading also informs this study, strongly emphasising reading comprehension achieved through the simultaneous use of top-down (prior knowledge) and bottom-up (text decoding) processes — a particularly relevant paradigm for the MTSS framework as it facilitates individualised instruction based on the unique needs of ELLs.

1.10 Hypotheses of the Study

The following hypotheses guided the study:

H_1: Impact of MTSS on Reading Comprehension

Null Hypothesis ($\mathbf{H_{01}}$): The implementation of MTSS does not significantly impact the reading comprehension skills of participating ELLs.

Alternative Hypothesis ($\mathbf{H_{01}}$): The implementation of MTSS significantly improves the reading comprehension skills of participating ELLs.

H_2: Effect of MTSS on Reading Test Scores

Null Hypothesis ($\mathbf{H_{02}}$): MTSS does not significantly affect the reading test scores of English Language Learners.

Alternative Hypothesis ($\mathbf{H_{02}}$): MTSS significantly affects the reading test scores of English Language Learners.

H_3: Influence of Frequency and Duration of Intervention

Null Hypothesis ($\mathbf{H_{03}}$): The frequency and duration of intervention sessions do not significantly influence the reading comprehension outcomes of ELLs.

Alternative Hypothesis ($\mathbf{H_{03}}$): The frequency and duration of intervention sessions significantly influence the reading comprehension outcomes of ELLs.

H_4: Student Engagement and Reading Outcomes

Null Hypothesis ($\mathbf{H_4}$): Student engagement, attention, and classroom behaviour do not have a statistically significant influence on reading comprehension outcomes among participating ELLs.

Alternative Hypothesis ($\mathbf{H_4}$): Student engagement, attention, and classroom behaviour have a statistically significant influence on reading comprehension outcomes among participating ELLs.

1.11 Significance of the Study

This study is significant as it directly contributes to the quest for improved reading comprehension intervention methods for middle school ELLs within an MTSS framework. Its findings offer actionable evidence addressing both early reading skill development and the linguistic and cultural challenges that characterise this population.

For Students: The study provides evidence-based recommendations for direct reading comprehension interventions tailored to the needs of middle school ELLs, identifying essential strategies such as explicit vocabulary instruction, culturally responsive materials, and increased session frequency to help address comprehension barriers and support higher academic achievement.

For Teachers and Specialists: The research guides classroom teachers, interventionists, and specialists in designing, adapting, and implementing differentiated reading intervention programmes like SIPPS and Imagine MyPath, highlighting the importance of professional development, monitoring, and collaboration.

For School Administrators and Policy Makers: This case study informs administrative decision-making regarding intervention planning and resource distribution, clarifying which elements of MTSS and RTI are most beneficial for struggling ELLs and supporting systemic improvements to close persistent achievement gaps in literacy.

For Researchers and Curriculum Developers: The research provides valuable empirical evidence for further developing literacy intervention models and curriculum resources by closely examining intervention strength, instructional fidelity, and cultural negotiation in authentic classroom settings.

2. Methodology

This chapter outlines the methodological framework that guided the research. It details the research design, the sources and nature of data collected, the locale, the target population, sampling techniques, and the instruments used. It also explains procedures for data collection, processing, and analysis, and addresses ethical considerations.

2.1 Research Design

This mixed-method case study investigated the effectiveness of specific intervention strategies aimed at improving reading comprehension among ELLs in a middle school in Florida. The research employs a retrospective (ex post facto) design, analysing existing data to identify potential cause-and-effect relationships (Salkind, 2010). A case study approach was used to provide an in-depth understanding of the implementation and outcomes of the reading interventions, following McCombes' (2019) description of case study research. Quantitative methods were applied to systematically measure the impact of these interventions through statistical analyses (Research Guides, 2024).

2.2 Population and Sampling

This study focused on reading comprehension intervention strategies for ELLs enrolled in Grades 6, 7, and 8 at a specific middle school in Florida, USA. The researcher utilised purposive sampling — also referred to as judgmental or selective sampling — to select a manageable sample of 38 participants that reflected the target population. All Tier 3 middle school students were included, as this group represented the full population of interest meeting the established criteria for intensive intervention. Participants had to meet three criteria: they must be enrolled at the chosen middle school; they must be under the researcher's supervision or enrolled in her classes; and they must be classified as needing Tier 3 interventions based on their academic progress reports.

Table 1

Total Population (N) of Respondents

Grade Level	Male	Female	Total
6th Grade	62	52	114
7th Grade	53	60	113
8th Grade	66	38	104
Total (N)	181	150	331
Percentage (%)	54.68%	45.31%	100%

Note. The table indicates a total of 331 students, with more males (181 or 54.68%) than females (150 or 45.31%). The distribution across grades is relatively even, with 7th grade having the most students (113), followed by 6th grade (114) and 8th grade (104).

Table 2

Total Sample (n) of Respondents / Sample Size

Grade Level	Male	Female	Total
6th Grade	8	8	16
7th Grade	6	4	10
8th Grade	8	4	12
Sample Size	22	16	38
Percentage (%)	58%	42%	100%

Note. The majority of participants — 22 out of 38 — are male (58%), while 16 (42%) are female. Sixteen participants were in 6th grade, ten in 7th grade, and twelve in 8th grade.

2.3 Research Instruments

The researcher utilised a six-part standardised and structured set of research instruments:

(5) **Pre-test and Post-test:** State Test – Florida Assessment of Student Thinking (FAST) Test and School Test – Northwest Evaluation Association Assessment (NWEA).
(6) **Students' Progress:** Intervention data logs maintained by the interventionist.
(7) **Intervention Tools:** SIPPS® (Systematic Instruction in Phonological Awareness, Phonics, and Sight Words) and Imagine MyPath.
(8) **Observation Checklist.**
(9) **Anecdotal Notes.**
(10) **Intervention Monitoring Sheets.**

The FAST is a coordinated screening and progress monitoring system aligned to state standards, used to assess student performance in English Language Arts and mathematics from pre-kindergarten through Grade 10 (Florida Department of Education, n.d.). It is computer-adaptive, meaning question difficulty adjusts based on student responses. The NWEA Measures of Academic Progress (MAP) is a suite of computer-adaptive tests administered throughout the school year in Grades Pre-K through 12 that tracks student growth by adjusting question difficulty to ensure students are appropriately challenged. Both tests were administered at pre-test (August), mid-year, and post-test (April) to identify students scoring below grade-level benchmarks as candidates for tiered intervention.

Intervention data logs provide valuable insights into student progress throughout the intervention. Observation checklists — conducted for Tier 3 ELL students showing little to no improvement — were used to gather data on student behaviours and learning environments. Anecdotal notes are brief, objective observations of student behaviour, skills, or performance at a specific moment (Bates et al., 2019), recorded when students showed disengagement or misbehaviour to highlight causes of slow progress. Intervention monitoring sheets, updated by the intervention specialist after every session, include the date, skills taught, and student scores, and are reviewed every six weeks to determine whether reteaching is necessary or if an 80% mastery benchmark has been met.

2.4 Description of the Intervention

Intervention targets were selected based on FAST assessment data, which identified specific deficits aligned with Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards. For 6th-grade students, those demonstrating difficulty with ELA.6.R.1.1 (character

analysis and plot development) received explicit instruction focused on character analysis, text-based evidence, and plot development. For 7th-grade students, those struggling with ELA.7.R.2.2 (theme or central idea development) received targeted instruction emphasising identifying central ideas, connecting themes to supporting details, and analysing how story elements interact to build meaning. For 8th-grade students, those demonstrating challenges with ELA.8.R.1.2 (text organisational structure) were provided instruction focused on recognising text structures, analysing how ideas are organised, and explaining how structure supports comprehension of complex texts. This alignment ensured intervention content was directly connected to grade-level expectations and addressed specific learning gaps identified through assessment data.

2.5 Validation of the Instrument

The intervention monitoring tools, qualitative observation checklist, and anecdotal records were validated for content by a qualified expert in language education. The validator reviewed the instruments for clarity, relevance, and alignment with the study's objectives and MTSS framework, examining components for potential issues that could hinder understanding and identifying whether instruments accurately portrayed data related to frequency, consistency, and observed behaviours, as well as potential unintentional biases.

2.6 Data Gathering Procedure

The researcher collected data directly from students as one of the intervention specialists at the host school, with access to test scores, observations, anecdotal records, and student work. The procedure involved: (I) validation checking of research instruments by a qualified validator; (II) obtaining informed parental consent explaining the study's purpose, procedures, potential risks, and participants' right to withdraw, and student assent where appropriate; and (III) implementation of instruments, interventions, and data collection.

Pre-testing was conducted at the start of the school year in August using both the FAST and NWEA assessments. The intervention programme ran daily for 30 minutes during the school year from September through May, with assessments using SIPPS and Imagine MyPath administered every six weeks. Students' progress was tracked each quarter through examination of grades and records of support services received. Observation checklists were conducted once per quarter or more frequently if needed. Anecdotal notes were taken during daily interventions to document relevant observations. Intervention monitoring sheets were updated daily. Post-tests were administered after instruction concluded using both the FAST and NWEA assessments.

2.7 Data Analysis

Quantitative data were organised into tables and subjected to statistical analysis. One-sample and paired-samples t-tests were used to examine reading comprehension scores before, during, and after the MTSS programme, allowing for a comprehensive understanding of how the programme impacted reading comprehension over time. Qualitative data organisation followed Creswell's (2013) framework: preparing and organising data, coding to assign labels or categories to sections of text, and memoing to capture initial insights throughout analysis. Narrative analysis was employed to examine individual stories and experiences documented in anecdotal notes and observation checklists, providing context and enriching understanding of the programme's effectiveness for different learners. Once analysis was complete, findings were interpreted and compared with existing studies from the literature review.

3. Results

This section presents the key results of the study, organised according to the research objectives and variables examined. It offers a comprehensive summary and interpretation of

the data, integrating statistical outcomes with qualitative findings to provide meaningful insights.

3.1 Hypothesis 1 (H_1): Impact of MTSS on Reading Comprehension

H_1: There is a significant difference in reading comprehension scores of ELLs before and after MTSS intervention.

Table 3 presents the results of paired-samples t-tests comparing pretest and posttest FAST assessment scores across Grades 6, 7, and 8. The analysis of paired-samples t-tests revealed p-values of 0.250, 0.541, and 0.102, respectively, indicating insufficient evidence to reject the null hypothesis. Therefore, the MTSS intervention did not result in statistically significant improvements in reading comprehension scores for participating ELLs.

Table 3

Comparison of Pretest and Posttest Reading Comprehension Scores Among Middle School English Language Learners: Paired Samples T-Test Analysis

Grade Level	N	Mean Pretest	Mean Posttest	Mean Diff.	t	df	p-value
6th Grade	16	185.13	190.63	+5.50	1.20	15	0.250
7th Grade	10	197.20	200.90	+3.70	0.63	9	0.541
8th Grade	12	195.67	205.67	+10.00	1.78	11	0.102

Note. Paired-samples t-test results across grade levels. None of the improvements reached statistical significance ($p > .05$).

The data show that 6th graders' mean scores increased by 5.50 points, 7th graders demonstrated an increase of 3.70 points, and 8th graders exhibited the largest mean improvement of 10.00 points. These findings suggest that MTSS-based reading comprehension interventions produced low to moderate gains in test scores but did not achieve statistical significance, indicating a need for further evaluation and potential refinement of intervention methods.

These results are partially in contrast with current meta-analytic evidence indicating that targeted reading comprehension instruction has substantial potential to support struggling readers, including ELLs. Peng et al. (2023) found graphic organisers, inference training, and main idea instruction to be especially effective when delivered with high implementation fidelity. The absence of significant gains in the present study may reflect limitations in implementation fidelity, time, contextual matching with students' needs, or external factors such as behavioural challenges and classroom environment conditions. Cho, Kim, and Jeong (2021) highlighted that evidence-based reading interventions for ELLs generally exhibit moderate to strong effect sizes when differentiated by language proficiency and cultural background, suggesting that the interventions may not have been sufficiently differentiated and culturally responsive.

3.2 Hypothesis 2 (H_2): Effect of MTSS on Reading Test Scores

H_2: MTSS intervention significantly reduces achievement gaps between ELLs and grade-level benchmarks.

Table 4 presents the results of one-sample t-tests comparing post-intervention reading comprehension scores of ELLs to established grade-level standard scores. The data show that students in all three grade levels scored significantly below their respective benchmarks after participating in the intervention.

Table 4

Post-Test Reading Comprehension Performance of Middle School English Language Learners Compared to Standard Scores: One-Sample T-Test Results

Grade	N	Mean Post-Test	Median	SD	SE	Standard Score	Mean Diff.	t	df	p-value
6th	16	190.63	193.50	18.21	4.55	225	−34.38	−7.55	15	<0.001

7th	10	203.82	206.00	14.88	4.49	232	−28.18	−6.28	10	<0.001
8th	12	205.92	209.00	16.66	4.62	238	−32.08	−6.94	12	<0.001

Note. All grade levels scored significantly below grade-level standard scores, with mean differences ranging from 28 to 34 points. df values reflect sample size minus one per group.

These results indicate that the null hypothesis cannot be rejected, as MTSS intervention did not significantly reduce the achievement gap. The statistically significant deficits of 28 to 34 points across grade levels indicate that the interventions were inadequate in bridging the gap between ELLs and expected academic standards. These findings are consistent with recent criticisms of prescriptive, one-size-fits-all reading programmes that do not account for the linguistic and cultural heterogeneity of ELL populations (Kim & Liu, 2022). Santiago and Reyes (2023) argue that ELLs need extended, scaffolded teaching rather than brief interventions to close achievement gaps.

3.3 Hypothesis 3 (H_3): Influence of Frequency and Duration of Intervention

H_3: Increased frequency and duration of MTSS intervention sessions significantly improve reading comprehension outcomes.

Table 5

Frequency, Duration, and Reading Comprehension Mean Pretest and Posttest Scores of Intervention Sessions for Middle School English Language Learners

Grade Level	Intervention Period	No. of Sessions	Mean Pretest	Mean Posttest	Mean Gain	Duration (min/session)
6th Grade	6 weeks	17	185.13	190.63	+5.50	25–30
7th Grade	6 weeks	5	197.20	200.90	+3.70	25–30
8th Grade	6 weeks	12	195.67	205.67	+10.00	25–30

Note. Session frequency varied across grade levels due to scheduling constraints, attendance patterns, and availability of intervention personnel. All groups experienced some improvement; 8th graders showed the largest gain.

The substantial variation in intervention sessions across grade levels (17 sessions for 6th grade, 5 for 7th grade, and 12 for 8th grade) reflects differences in scheduling constraints, student attendance patterns, and availability of intervention personnel during the implementation period. This inconsistency complicates interpretation of the potential dose–response relationship, as it remains unclear whether observed gains were influenced primarily by the number of sessions, differences in instructional delivery, or unmeasured student characteristics.

The data suggest a positive correlation between session frequency and reading comprehension development. Sixth-grade students increased their mean scores from 185.13 to 190.63 after 17 sessions; 7th graders, with the fewest sessions, demonstrated the smallest increase; and 8th graders, with 12 sessions, exhibited the most notable improvement. These outcomes suggest a possible correlation between the number of intervention sessions and the extent of reading comprehension development, consistent with research highlighting dosage and extended instructional exposure as critical aspects of literacy interventions (Lee & González, 2021). These findings suggest a positive trend; however, statistical significance was not established, and therefore H_3 is not fully supported.

3.4 Hypothesis 4 (H_4): Student Engagement and Reading Outcomes

H_4: Student engagement, attention, and classroom behaviour significantly influence reading comprehension outcomes.

Table 6

Summary of Anecdotal and Classroom Observation Records of English Language Learners' Reading Comprehension Behaviour in Middle School

Grade Level	Anecdotal Records	Classroom Observation Records	Description	Interpretation
6th Grade	Students need to focus on their studies and listen attentively to the teacher.	Leaning back in chair, playing with items on desk, off task (not on correct page/activity).	Students show signs of distraction and lack of engagement during class activities.	Indicates difficulties sustaining attention and self-regulation, which may hinder reading comprehension progress.
7th Grade	Students working independently on tasks, maintaining focus despite distractions from neighbouring students.	Presence of distracting neighbours, but students have a full view of the board.	Students exhibit strong concentration and the ability to focus amid distractions; classrooms have some disruptions.	Demonstrates potential for independent work and focus, but classroom distractions might affect overall learning.
8th Grade	Students talk to neighbours and do not work; not paying attention when the teacher gives instructions; playing games on iPad.	Presence of distracting neighbours, full view of board, cluttered space with many materials; access to the inside of the desk.	Students show little interest in the activity, lose focus, fidget with pencils, and lean back in their chairs.	May suggest lack of understanding of assignments, easy distractibility, and low engagement.

6th Grade: Signs of Distraction and Low Engagement

The sixth-grade group showed signs of distraction and low engagement, including leaning back, playing with desk materials, and being off-task during reading tasks. These tendencies are indicative of shallow cognitive investment and support Guthrie et al.'s (2004) contention that engagement is a strong predictor of reading competence. Cruz and Santiago (2021) reported that low task-engaged early adolescents tend to have difficulty engaging comprehension strategies, especially when texts are not personally relevant. The demonstrated absence of self-regulation aligns with Zimmerman's (2002) model, wherein academic achievement relates to attention control and persistence, which is particularly critical for multilingual learners reading in a second language (Kim & Reyes, 2023).

7th Grade: Focus Amid Distractions

Seventh-grade ELLs showed an impressive capacity to sustain attention in the face of environmental distractions, including classroom noise and movement. This behavioural resilience is consistent with Vygotsky's (1978) sociocultural theory, which suggests that higher-order cognitive development results from interaction with the social world. Connor et al. (2010) highlighted that structured classroom design and differentiated instruction can buffer the impact of distractions, and Tan and Villanueva (2022) have shown that spatial organisation and visual accessibility strongly facilitate ELLs' performance in reading tasks.

8th Grade: Low Motivation and High Distractibility

Eighth-grade students showed the most problematic behavioural markers, including persistent peer conversation, disrespect for directions, and use of electronic devices for non-academic purposes. Such conduct implies low intrinsic motivation in accordance with Deci and Ryan's Self-Determination Theory (1985), which connects disengagement with insufficient autonomy, competence, and relatedness in learning environments. Environmental factors such as a cluttered classroom and access to distractions like iPads probably intensified disengagement. Zhang and Torres (2023) indicate that digital resources, if left unchecked, can impair concentration and decrease reading endurance among ELLs. The qualitative findings support H_4 by indicating that behavioural and engagement factors play a critical role in reading comprehension development.

4. Summary, Findings, Conclusions, and Recommendations

4.1 Summary

This section presents an integrated analysis of both quantitative and qualitative findings related to MTSS-based reading comprehension intervention strategies implemented for middle school ELLs. It examines the extent to which the MTSS framework impacted students' reading skills, reading test scores, and the influence of engagement frequency on outcomes.

With respect to Statement of the Problem 1 (impact of MTSS on reading comprehension skills), the paired-samples t-test analysis demonstrated mixed results. The study revealed no statistical significance in students' posttest scores compared to their grade-level benchmarks. Despite the lack of statistical significance, there were low to moderate gains in reading test scores across Grades 6, 7, and 8 when comparing pretest and posttest results. Qualitative data revealed that attention, engagement, self-regulation, and classroom organisation are critical factors in ELLs' reading comprehension progress.

With respect to Statement of the Problem 2 (effect of MTSS on reading test scores), the one-sample t-test in Table 4 reveals that ELLs' post-test FAST scores remain significantly below established grade-level standards following intervention. Sixth, seventh, and eighth graders scored, on average, 28 to 34 points lower than their grade-level benchmarks, indicating persistent achievement gaps despite low to moderate gains from pretest performance.

With respect to Statement of the Problem 3 (frequency and duration), the frequency and duration of intervention sessions appear to influence reading comprehension outcomes, although improvements were relatively modest. All three grade levels participated over a consistent six-week period, with session counts varying: 17 sessions for 6th grade, 5 for 7th grade, and 12 for 8th grade. The data suggest a positive association between session frequency and reading comprehension outcomes.

4.2 Findings

The key empirical findings derived from quantitative and qualitative data are as follows:

(11) Quantitative results indicated no statistically significant improvement in students' reading comprehension scores post-intervention across all grades. Paired-samples t-test analysis demonstrated no statistically significant improvements (6th: $p = 0.250$; 7th: $p = 0.541$; 8th: $p = 0.102$), suggesting that MTSS interventions during the six-week timeframe were insufficient in instructional intensity and duration to produce measurable outcomes.

(12) Post-test scores reflected a modest increase compared to pre-test scores. Despite non-significance, 6th graders increased from 185.13 to 190.63, 7th graders from 197.20 to 200.90, and 8th graders from 195.67 to 205.67, indicating emerging responsiveness to instruction.

(13) Diagnostic assessments showed that some students could decode words but struggled to derive meaning from text. The SIPPS diagnostic guided intervention planning, and some students who mastered foundational skills still had difficulty with reading comprehension, indicating that decoding proficiency alone does not support comprehension development.

(14) Intervention logs revealed that some students improved foundational linguistic skills, but these gains did not consistently transfer to comprehension tasks, indicating a disconnect between foundational skill acquisition and higher-order comprehension performance.

(15) Intervention monitoring sheets indicated growth when students were more engaged with texts that reflected familiar cultural contexts, supporting the role of culturally responsive instruction in enhancing engagement and reading development.

(16) Qualitative data from classroom observations and anecdotal records revealed behavioural concerns including distractions and disengagement, as well as aspects of the learning environment that negatively influenced some students' learning progress.

(17) Intervention frequency revealed a correlation with improved posttest scores. Students receiving more frequent and consistent sessions demonstrated relatively greater post-test score gains than peers with less consistent exposure.

4.3 Recommended MTSS-Aligned Reading Intervention Plan

Table 7

Summary Table for Recommended MTSS-Aligned Reading Intervention Plan for ELLs

Focus Area	Intervention Plan	Rationale / Supporting Data from Results	Expected Outcome	
Bridging Foundational Reading Skills to Comprehension	Strengthen and sustain SIPPS instruction to provide intensive, systematic instruction and guided practice in foundational reading skills.	ELLs showed below-grade-level reading scores post-intervention, indicating foundational skill gaps (Tables 3 and 4).	Improved decoding, word recognition, and foundational literacy skills leading to better reading comprehension.	
Consistency and Frequency of Intervention	Increase consistency and frequency of MTSS-aligned Tier 2 and Tier 3 interventions to provide sustained instructional support.	Higher frequency/duration correlates with better gains (Table 5); fluency improves comprehension through automaticity.	Enhanced oral reading fluency, expression, and accuracy to improve overall text comprehension.	
Vocabulary and Background Knowledge	Incorporate culturally relevant texts and explicit pre-teaching of key vocabulary to enhance engagement and support comprehension.	Vocabulary deficits impede comprehension; vocabulary instruction within MTSS supports gains.	Expanded vocabulary knowledge supporting deeper understanding and academic language proficiency.	
Culturally Responsive Instruction	Integrate culturally and linguistically responsive reading materials aligned with students' background experiences in Tier 3 interventions.	Interventions lacked explicit vocabulary instruction and culturally relevant texts needed for multilingual students.	Developed vocabulary and understanding of words when applied to context.	
Optimisation of Intervention Strategies	Refine and sustain MTSS-aligned instructional strategies through continued Tier 2 and 3 support.	Lack of significant gains indicates the need for continuous progress monitoring and responsive adjustments.	Timely adaptation of instruction ensuring effective, individualised support and improved outcomes.	
Reading Comprehension Strategy Development	Implement MTSS-based interventions with fidelity, providing Tier 1, Tier 2, and Tier 3 support with consistency across all levels.	Reinforces the necessity for all-encompassing support systems and responsive delivery models.	Established school-based MTSS interventions that directly address academic and behavioural needs of students.	
Classroom Management and Instructional Support	Provide classroom management and instructional support through collaborative planning and consistent strategies to reduce distractions and increase engagement.	Classroom behaviour records indicated distractibility affecting learning; behavioural supports facilitate readiness for instruction.	Improved attention, classroom participation, and learning readiness supporting academic growth.	

4.4 Conclusions

This study assessed the effectiveness of MTSS in improving reading comprehension skills and test performance among middle school ELLs. An integrated analysis indicated that, within the six-week intervention period per language skill and under the applied implementation conditions, MTSS showed mixed outcomes: quantitatively non-significant improvements, low to moderate learning gains, and qualitative evidence identifying behavioural and environmental factors influencing ELLs' reading comprehension development. The following conclusions are drawn:

(18) The six-week MTSS intervention, as currently implemented, did not result in statistically significant posttest gains sufficient to reach grade-level reading comprehension benchmarks among students in Grades 6 through 8.

(19) Low to moderate gains were observed in posttest scores compared to pretest scores, indicating emerging responsiveness to instruction.

(20) Despite some measurable improvement, post-intervention reading comprehension scores remained well below grade-level expectations, highlighting persistent achievement gaps.

(21) The effectiveness of MTSS is highly dependent on the fidelity of MTSS-aligned reading comprehension instruction, optimisation of intervention strategies, development of vocabulary and background knowledge, explicit bridging of foundational skills to comprehension, integration of culturally responsive practices, and provision of classroom management and instructional support for teachers.

(22) While higher intervention frequency correlated with improved reading outcomes, increasing session frequency alone is insufficient without corresponding enhancements in instructional quality, student engagement, and instructional support systems.

(23) Behavioural concerns related to student focus, engagement, and classroom distractions emphasise the importance of integrating behavioural and instructional supports within MTSS frameworks.

(24) Culturally responsive instructional practices across MTSS tiers are necessary to strengthen vocabulary development, comprehension engagement, and meaning-making for ELL students.

(25) The study acknowledges limitations including brief intervention duration, uneven session frequency across grade levels, small and varying sample sizes, limited implementation of culturally responsive practices, and gaps in systematically structured behavioural intervention data.

(26) Future research should explore extended intervention periods, increased participant samples, consistent monitoring of instructional fidelity, and comprehensive MTSS planning that integrates literacy, behavioural, and cultural responsiveness components.

4.5 Recommendations

(27) **Increase Intervention Frequency and Duration:** Lengthen the intervention duration beyond six weeks, with sessions held at a minimum of three to four times per week, incorporating small-group support on a daily or nearly daily basis. Findings showed that more frequent sessions correlated with improved reading progress.

(28) **Implement Targeted, Culturally Responsive Language and Comprehension Strategies:** Emphasise explicit vocabulary teaching, schema development, and inferencing skills while integrating cultural contexts familiar to ELL students, including techniques such as reciprocal teaching and close reading.

(29) **Incorporate Behavioural Engagement Supports:** Given recorded challenges with attentiveness, engagement, and classroom distractions, implement structured behaviour support through visual schedules, active engagement protocols, and classroom management training for educators.

(30) **Enhance Progress Monitoring and Use Data-Based Decision-Making:** Increase the frequency of formative assessments and interim checks. Use data to modify the level of intervention and tailor instruction to meet the changing needs of each student.

(31) **Provide Professional Development Focused on ELL-Specific and Culturally Responsive Instruction:** Provide specialised training on the MTSS framework for ELLs, covering culturally responsive teaching methods and proficient use of progress monitoring tools.

(32) **Promote Collaboration Among General Education and ESL Teachers:** Build stronger collaboration between general education teachers and ESL instructors to provide thorough support that meets the language and academic requirements of ELLs within the MTSS model.

(33) **Continuously Evaluate and Refine Intervention Approaches:** Prioritise continuous, data-based evaluation and regular refinement of intervention methods to effectively address the evolving and varied needs of ELL students.

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