Educational Strategies to Guide English Language Learners

in Reading and Mathematics

Julia Knudsen

A Senior Thesis submitted in partial fulfillment
of the requirements for graduation
in the Honors Program
Liberty University
Fall 2018

Acceptance of Senior Honors Thesis

This Senior Honors Thesis is accepted in partial
fulfillment of the requirements for graduation from the
Honors Program of Liberty University.

_____
Esther Alcindor, Ph.D.
Thesis Chair

_____
Stacey Bose, Ed.D.
Committee Member

_____
Timothy Van Voorhis, Ph.D.
Committee Member

_____
James H. Nutter, D.A.
Honors Director

_____
Date

Abstract

This Senior Honors Thesis covers effective strategies that educators can use with English

Language Learners (ELLs) in the subjects of reading and mathematics. Reading

strategies contained within the thesis include comprehension strategies as well as analytic

and reflective reading strategies. Mathematics strategies will focus on building a

foundation of basic skills at an early age and developing those foundational skills and

concepts throughout the grades. These reading and mathematics strategies will be for

students at various levels of English proficiency and at various levels of reading/math

abilities in grades K-8. The thesis also addresses heterogeneous whole-group and

homogeneous ELL-specific group strategies in order to show the effectiveness, usability,

and efficiency of both broad types of approaches. Additionally, the thesis describes the

differences between strategies in elementary and middle school in both reading and math.

Overall, the thesis provides a guide to effective strategies for educators of ELL students

at various levels of education.

Educational Strategies to Guide English Language Learners

in Reading and Mathematics

The task of teaching students who are learning English is a daunting one. English

Language Learners (ELLs) make up a significant and growing portion of American

students, yet schools often do not meet their academic needs (López, Scanlan, & Gorman,

2015). Teachers need to learn effective, researched-based instructional strategies that can

guide ELL students toward learning. They also need innovative strategies that take into

account the needs of current ELL students. Because the field of education is constantly

changing, reliable, recent research on the topic is essential. The author has therefore used

research only from peer-reviewed journal articles published between 2014 and the

present.

Reading and math, universally recognized as two of the most crucial subjects in

school, are important for success later in life. According to Schoffner and Oliveira

(2017), "for ELL students, literacy is a crucial component in solidifying their place in the

world around them—teachers without the understanding or ability to teach ELLs deny

these students that place" (p. 44).   Reading, an essential component of literacy, is thus

crucial to ELLs growing up in this society. Mathematics, too, is an important part of

fitting in to the world, but ELL students are struggling with this subject, even as the

standards for mathematics achievement become more difficult to reach (Doabler et al.,

2016). Therefore, in teaching these subjects especially, teachers should seek to help their

ELL students grow in the most efficient way possible. The most important thing to

remember when teaching ELL students is that these students, like all others, are

individuals. Teachers need to instruct them in the way that will most benefit them. The

wise teacher will review these strategies and models to determine which ones are best for

their individual students.

<div align="center">**Strategies for Reading Instruction**</div>

Reading instruction varies greatly between the elementary and middle grades. In

elementary, teachers focus more on phonetic principles, fluency, and comprehension. In

middle school, however, the focus shifts to a deeper understanding, including reflection

upon and application of texts to the lives of students. Teachers of ELL students in the

elementary grades should especially consider strategies related to growth in reading

ability, and teachers of ELLs in the middle grades should especially look for strategies

that integrate understanding and application with a growing reading ability.

Grades K-5 Strategies

Researchers have developed several strategies and models to help teachers better

instruct ELL students in reading. These include heterogeneous whole-group strategies,

like vocabulary instruction, language modeling, and instructional conversations, to

stimulate learning, and homogeneous ELL-specific group strategies, such as using

translation to aid comprehension and using poetry to encourage growth in reading. A

discussion of whole-class and ELL-specific strategies, which are both valid instructional

approaches, and the benefits of each follows below.

Whole-group strategies. Whole-group instructional strategies are strategies that

teachers can use in classrooms where ELLs make up a portion of a heterogeneous class.

A heterogeneous group is one that includes both ELL and non-ELL students. Whole-

group strategies, as opposed to ELL-specific strategies, are usually easier to implement in a classroom since they do not involve specific separate instruction for ELL students. These strategies involve teaching to all the students, but in such a way that the ELL students specifically benefit and grow from the instructional approach. They may, however, be less effective in reaching ELL students because of the whole class format and the resulting decline of individualization that occurs. Teachers need to balance the various formats of instruction to make sure that they differentiate their teaching to reach all students.

Martínez, Harris, and McClain (2014) have identified a focus on academic English as a key instructional practice for teachers of ELLs in a heterogeneous whole group setting. Academic English is the language used in subjects at school. It differs from everyday English in its vocabulary and reading strategies. In instruction with academic language, teachers should emphasize "explicitly teaching vocabulary, emphasizing cross-linguistic transfer strategies, and supporting ongoing oral language development" (Martínez et al., 2014, p. 133). This will help ELL students grow from using only everyday English to using the more challenging academic English.

Vocabulary instruction. Vocabulary instruction is one way for teachers to model academic language for ELL students. According to Sylvester, Kragler, and Liontas (2014), there are several important steps that teachers can follow in vocabulary instruction. First, teachers should carefully select several words to teach. These words should come from a book the class will read, so that ELL students will have the opportunity to experience the words in their proper contexts.

Next, teachers should filter the selected vocabulary words by using a check for understanding. A simple conversation with students about whether they have heard the words before and in what contexts they have heard them can help teachers decide the words on which they should especially focus. If students show a very complete understanding of a word, then teachers may choose to focus on other words. If, on the other hand, students have no context from which to view a word, it may be difficult for them to fully understand the meaning of the word throughout the lesson. It is important for teachers to teach words with which students are somewhat, but not fully, familiar. This ensures that instruction is efficient and effective for students (Sylvester et al., 2014).

Following a check for understanding, teachers should introduce and expand upon the selected words. The use of text talk, or talk that includes both everyday and academic English, is well suited to the direct instruction of vocabulary (Sylvester et al., 2014). In teaching vocabulary through text talk, the teacher instructs on the specific words, but students also converse about the words in ways that will deepen their understanding of the words. The first step in directly teaching the words is contextualization, using the book in which the words appear. Next, the students say the word with the teacher, "to create a phonological representation" (Sylvester et al., 2014, p. 439). They repeat the word several times, and then the teacher gives a definition of the word at the students' level of understanding. This definition uses words and ideas with which students are familiar to create a bridge between the familiar and the unfamiliar. The teacher also provides additional contexts for the word, to prevent the students from only recognizing

one use of the word (Sylvester et al., 2014). The final step for teachers in the direct

instruction portion is to repeat the word again with the students.

After the direct instruction, teachers can extend ELL students' understanding by

leading a discussion around the vocabulary words. This conversation allows for further

"explanation, discrimination, or analysis" and "promotes opportunities for students to

think more deeply about target words" (Sylvester et al., 2014, p. 440). When students

can differentiate between the words and explain similarities and differences between

them, they show their understanding of the meaning and use of the vocabulary words

presented. The discussion ends by relating the vocabulary words together in different

contexts, which brings the conversation to a complete conclusion.

Language modeling. One approach teachers can use to guide ELL students in

learning academic English is language modeling. Language modeling includes modeling

vocabulary, incorporating rich language in instruction, asking questions, and using

discussion on a topic (López et al., 2015).

Modeling vocabulary and incorporating rich language in instruction both involve

using and teaching difficult words to students. Modeling vocabulary means that teachers

use words in their proper context while they speak. When teachers place words in correct

context, it is easier for ELL students to learn and use the words too. This results in a

decrease in confusion surrounding difficult vocabulary words. Teachers should carefully

choose vocabulary words in instruction that will bring about the most understanding for

ELL students (i.e., rich language). This rich language means that students are getting the

greatest benefit possible from the chosen vocabulary words.

Questions and discussion in language modeling both lead to an increase in oral conversation. Open-ended questions especially allow students to answer in using their own thoughts and ideas. For ELL students, this means that they may not have to both think of a specific answer and think of how to say that answer in an unfamiliar language. Discussions allows ELL students to communicate their original ideas while also learning communication skills from the teacher and other students.

In a study on the relationship of language modeling to reading ability, "students gained almost 2 points on average for each unit increase in the language modeling measure across classrooms" (López et al., 2015, p. 17). This figure included ELL students and shows that language modeling is an effective approach to instruction for ELLs.

Instructional Conversations. Another instructional strategy that involves discussion is Instructional Conversations. Instructional Conversations (ICs) are "a regularly scheduled teacher-led event involving three to seven students, lasting about 20 minutes, with a clear instructional goal" (Portes, Canché, Boada, & Whatley, 2018, p. 491). In contrast to teacher-led class discussions, ICs are student led, with the teacher providing the topic and input when necessary. Teachers can use ICs in several content areas, including reading, to facilitate a deeper understanding of material through conversations that involve the cultural and life experiences of students. In reading specifically, ICs can introduce students to greater comprehension of passages, and they can also give ELL students a way to express relationships between the texts they read and their own personal thoughts and experiences.

For ELL students, ICs provide a low-structured time to use conversational English without pressure to perform. Teachers can and should model correct academic English during these conversations, but the focus for students should be on the topic at hand, not on conventions (Portes et al., 2018). During ICs, ELL students receive both the explicit benefits of learning more about the topic at hand and the implicit knowledge of English grammar and mechanics. Portes et al. (2018) found that ELL students taught by teachers using ICs in the classroom performed better than their controlled-classroom peers on content exams in not only English Language Arts (i.e., English acquisition), but also in content areas (e.g., reading). ICs give ELL students the opportunity to learn more English in a low-pressure situation and therefore improve their opportunities to succeed in reading as well.

Peer pairings. Teachers of heterogeneous classes can also use peer pairings so that students can help each other through difficult passages or reading strategies. Pairing strategies supported by research include dyad reading, in which a (usually non-ELL) reader with stronger reading skills reads in unison with an ELL reader who has weaker reading skills, and paired reading, in which a reader with stronger reading skills reads a passage first and then an ELL reader with weaker reading skills rereads the same passage immediately following (Martínez et al., 2014). These pairing strategies, while making ELL students feel comfortable in the classroom, also greatly improve their reading fluency, comprehension, and accuracy.

ELL-specific strategies. ELL-specific strategies are strategies used with small homogeneous student groups composed solely of ELL students. Teachers can use these

strategies to more easily focus on individual students' needs because of the small group setting. Although small group settings can be harder to implement in the classroom because of time, setup, or other issues, teachers should attempt to incorporate some kind of small-group instruction when teaching ELL students to read, as it can provide more intense and significant growth in reading ability among those students. All strategies in this section involve teaching either individual ELL students or homogeneous small groups; that is, groups composed only of ELLs.

 Shared-book reading. Shared-book reading is one ELL-specific strategy that teachers can use in the early elementary grades to increase comprehension. In their study on kindergarten students in homogeneous classes of ELLs, Gámez, González, and Urbin (2016) found that shared-book reading positively influenced ELL students in their understanding of story structure, their story comprehension, and their ability to retell a story. Teacher activities throughout the shared-book reading process brought about various results in the language skills of the students. For example, in classes where teachers used more gestures to communicate throughout the shared-book reading experience, students showed gains in comprehension. When teachers both read the story and talked to students about the story during the shared-book reading time, students improved in their understanding of story structure. ELL students also showed gains in their ability to retell stories using a larger vocabulary after the shared-book reading. Both gestures and extratextual talk produced specific but rather unexpected results in students. These results could indicate that specific actions indirectly influence many features of language, not just the ones that seem directly related (Gámez et al., 2016). These

findings should motivate teachers to be deliberate in their actions, choosing carefully how they speak and act so that students can best learn.

Because shared-book reading involves reading, extratextual speech, gestures, and more opportunities for language growth, it provides an environment in which students can not only learn to read better but also learn to speak English more fluently. Teachers, especially of younger grades such as kindergarten, should add shared-book reading to their repertoire of reading instructional strategies because it provides many benefits to the reading skills of ELL students and to the general language and speech skills of students.

Translating texts. While shared reading is a beneficial strategy for ELL students in lower grades, Goodwin and Jiménez (2015) suggest a different strategy for older elementary students who are at a higher level of English proficiency. This strategy is based upon students translating texts in order to get the most meaning possible from the texts. Goodwin and Jiménez (2015) give three components that should be present in this type of lesson: "modified guided reading, collaborative translation, and metacognitive reflection" (p. 622).

The first part of a typical lesson using the translate strategy is modified guided reading. During this portion of the lesson, the teacher introduces the text to a group of ELL students using known background information. Students then silently read a portion of text in English to themselves. They determine any important points or main themes and write these down to share with the group. Next, the students, with the teacher's assistance, choose a small passage (one or two sentences) to translate into their primary language. As they translate, the students discuss amongst themselves the best words and

phrases to convey the meaning of the passage. This builds comprehension since it not only reviews the material of the passage but also forces students to think about what the passage is actually saying and how it is saying it. Teachers can guide students in this process by instructing them in the use of translation devices, including negation, explanation, paraphrase, and simplification. These devices foster skills that also build reading comprehension, such as inferencing and paraphrasing (Goodwin & Jiménez, 2015). The lesson ends with students reflecting on their translations and on the translation's significance to the whole text. Students critique one another's word choice or order and think about the strategies they used to translate the smaller portion of text. They also think beyond the passage to their experiences in the activity and the benefits of using translation to aid comprehension. This reflection helps students to gain metalinguistic awareness; that is, it helps them understand both English and their primary language better as a whole. This strategy builds understanding by keeping the students engaged and interested and by allowing them to use their strengths (i.e. their first language) to guide their reading.

The translation strategy works both for bilingual teachers and for monolingual teachers who may not understand the translations of students. Bilingual teachers are able to recognize mistakes in students' translations, and while monolingual teachers may not be able to do this, they do gain the added benefits of students' explanations. When the language barrier between students and teachers requires students to explain their translations, they use more comprehension pathways and gain a greater awareness of the similarities and differences between their primary language and English (Goodwin &

Jiménez, 2015). Other "instructional moves" that monolingual teachers can make in

requesting student translations include selecting challenging text to translate, teaching

students strategies to use during translation, encouraging and instructing in collaboration,

explicitly teaching on English textual clues and vocabulary, and connecting figurative

language to student background knowledge. In analyzing translations, monolingual

teachers can compare student translations, ask students to explain problem words,

phrases, or ideas in translation, and summarize or revoice student insights (Goodwin &

Jimémez, 2015).

  Poetry. One ELL-specific instructional strategy is unique in its content and

purpose. The use of poetry to aid ELLs in learning to read is unconventional, but it

produced significantly positive results in fluency and word recognition for a group of

ELL students. Many basal systems focused on comprehension strategies (like the

methods mentioned above) but did not emphasize word recognition or fluency, which are

both integral skills for the beginning reader. The implementation of a poetry program,

called The Poetry Academy, made the emphasis on word recognition and fluency

possible without sacrificing the comprehension strategies (Wilfong, 2015).

  The Poetry Academy, a strategy for teachers of ELLs in small, homogeneous

groups, aligned with six tenets of learning a second language and was a good fit for

helping ELL students learn to read. These six tenets are as follows: (a) language

acquisition is a conscious and subconscious process; (b) English grammatical structures

are usually learned in a particular order; (c) ELLs monitor their speech in their second

language (English); (d) teachers should focus on language for communication rather than

for grammatical structure; (e) ELLs' filter, or monitor, can be affected by their degree of

motivation and confidence in a situation; (f) students are successful in reading when they

can read assigned or chosen texts with ease (Wilfong, 2015). The Poetry Academy meets

these tenets in several ways. First, it offers an informal setting in which students read

passages that lack some grammar regularity. It also removes the necessity of having to

sound perfect all the time, and it provides specific poems to match student progress and

interests. This means that the Poetry Academy program meets students at their specific

level of ability. Finally, it encourages stimulating conversations that increase the use of

English without forcing students to use a filter or monitor.

The Poetry Academy method involved several steps. First, the researcher pre-

assessed students to determine their levels of fluency and word recognition. Specifically,

the researcher used the Names Test and the 3-Minute Reading Assessment to determine

the students' levels of reading ability (Wilfong, 2015). Over the next several weeks, the

tutoring sessions followed a set pattern. Students first followed this pattern in

homogeneous groups composed of ELLs and then in individual student sessions with the

instructor. First, the instructor read a poem to the students to model correct reading.

Then, the students read the poem with the instructor to build confidence in their ability.

Next, the students read the poem by themselves to the instructor. Following the session,

the students went home and read the poem to as many people as possible, gaining

signatures as proof that they read to several individuals. Finally, the students performed

the poem the following week. The tutor and students repeated this process over several

weeks of sessions (Wilfong, 2015). The program was set up in such a way that the

instructor could choose poems according to individual student interests and grammatical

learning needs. At the end of a 12-week period, the instructor assessed students again.

The ELL students showed improvement on both tests, with several students moving from

a frustration level to an instructional level of fluency in word recognition (Wilfong,

2015). In addition to improving their word recognition and fluency, students also

reported that poetry made their reading more fun and that they felt more comfortable

when reading using The Poetry Academy method. Their classroom teacher reported a

surge in the students' confidence in reading following the completion of the program.

The English tutor, who actually administered the program, commented that it was

difficult to choose specific poems for the individual students' abilities and interests, but it

was worth it. The students became more engaged and excited about reading as they got

to read about subjects that interested them. In addition, the tutor said that the routine of

The Poetry Academy helped the students stay focused and know what to expect

(Wilfong, 2015). Overall, the Poetry Academy not only helped students grow in reading

ability, but also in confidence and classroom participation. As such, it is one of the more

effective methods to use with ELL students.

Grades 6-8 Strategies

Middle school students face a unique struggle in reading. In late elementary and

into middle school, the focus in reading changes from basic comprehension and fluency

to analysis and reflection. As seen from curriculum and standards for the age group,

educators expect that students not only know what they are reading, but also that they

know how to think critically about the texts. Students must evaluate the ideas in the texts

and decide upon the validity of them. For ELL students, who may be at various levels of

reading fluency by the middle school grades, these additional language demands require

teachers to use specific strategies that will guide the ELL students in both fluency and the

higher-level thinking demands.

       Whole-group strategies. Whole-group teachers in the middle school face several

unique challenges. First, the makeup of whole groups in middle school is different from

that of elementary classrooms in that the groups are not always consistent throughout the

day; that is, students may not be with the same group of students in all of their classes.

Also, teachers in the middle school teach several different groups daily, so differentiation

of instruction must often take various forms throughout the day. Finally, content areas

besides language arts (such as social studies and science) require reading in middle

school. These unique challenges require unique instructional strategies in response.

       Linguistically responsive teaching. Shoffner and de Oliveira (2017) recommend

that teachers of ELL students include several key elements in their classroom. These

elements are part of linguistically responsive teaching, or, teaching that connects the

elements of language to culture and society. Of those elements, three specifically apply

to instruction. These three elements are that teachers should (a) identify language

demands, seeking to alleviate some of the burdens of learning English; (b) apply

principles of second language learning, which include emphasizing the differences

between academic and conversational English; and (c) scaffold instruction to promote

ELLs learning, utilizing various instructional materials and methods to give ELL students

the best chance to succeed (Shoffner & de Oliveira, 2017). Teachers who actively decide

to make these elements a part of their classroom can greatly benefit their ELL students

and the mainstream students in the class.

As an example of linguistically responsive teaching, Shoffner and de Oliveira

(2017) demonstrate the use of a text that could be relatable to the cultural and linguistic

situations of ELLs. They ask questions that require students to reflect on the meaning

and language use of the text while encouraging students to bring their own experiences

into the discussion. When teachers use texts that are relatable to students and ask

questions about both surface-level and deeper meanings of the texts, ELL students can

grow in reading fluency and in reflective, higher level thinking.

Content area reading. Content area reading is an additional concern in the

middle grades. According to Barber et al. (2015), "ELLs, especially in the upper grades,

confront the double challenge of having to learn and perform on grade-level curricula in a

language while simultaneously learning that language" (p. 33). The United States

History for Engaged Reading (USHER) curriculum encourages middle school students to

become involved with the content area texts that they are reading. Instruction in the

curriculum revolves around three key student strategies: activating background

knowledge, generating text-based questions, and organizing information graphically

(Barber et al., 2015).

When students activate background knowledge, they use text features to connect

the text to any prior understandings or experiences they have had. This means that

students look at the texts and find any information or extratextual evidence that connects

to something in their lives. Generating text-based questions involves asking about

specific aspects of the text that seem unclear to the student. Students have the

opportunity to ask about things that confuse them through the use of this strategy.

Organizing information graphically means using a physical model to pull information

from the text and structuring it in the model in a logical fashion. This structure can give

students a good visual understanding of the information and how it connects to other

important concepts. Some examples of graphic organization include Venn diagrams for

comparing and contrasting, and timelines to relate events to one another (Barber et al.,

2015).

        Teachers can instruct on these strategies by modeling the strategies (e.g., for

activating background knowledge, looking at a text feature and explaining a prior

experience that may help them better understand the passage) and then gradually moving

from a teacher-centered example to independent student practice (i.e., from a structured

student example in the whole class setting to guided practice in smaller groups to

independent practice with individual students) (Barber et al., 2015). A typical USHER

lesson includes instruction on one of the reading strategies and then application of that

strategy to a content area text. USHER lessons also include strategy, content, and

vocabulary scaffolds. Scaffolding means that the teacher gives the students stepping

stones to understanding. In USHER lessons, these stepping stones include references to

goals, leading questions about connections to previous materials, and discussions on

word meanings, if necessary (Barber et al., 2015).

        The implementation of the USHER curriculum brought about positive changes in

students' (both ELLs and non-ELLs) history comprehension. The strategies taught to the

students allowed them to build comprehension of the texts, because they had several new ways that they could think about the texts. The structure of the instruction, from teacher-centered to student-focused, encouraged self-efficacy in ELL students, a predictor of comprehension ability in ELLs (Barber et al., 2015). The use of the USHER curriculum shows a beneficial example of history scaffolded reading instruction that can and should be emulated in the classrooms of other content area teachers as well.

ELL-specific strategies. Many teachers in the middle grades encounter barriers against helping ELL students succeed in reading. One barrier, identified by Sedeghi and Izadpanah (2018), was the limited amount of time spent focused on reading in the classroom. Because classes in middle school are often separate and students are learning subjects independently of one another, the amount of time that teachers spend solely on reading decreases. Sedeghi and Izadpanah (2018) suggested that teachers spend a designated amount of time outside of the classroom teaching ELLs reading, or that teachers divide their classes into groups based on reading ability so that the teachers can best meet the students' needs. This kind of homogeneous grouping can give ELL students the specific, intense instruction that will help them to succeed.

ELL classroom. Smith and Salgado (2018) documented a case study in a sixth-grade ELL reading and language arts classroom. These authors observed the homogeneous ELL classroom of Mrs. Martinez (a pseudonym) and focused on her teaching practices as they related to her students. They found that Mrs. Martinez concentrated on English language differentiation, visualization and reading comprehension, and crossing boundaries with *cuentos*, or stories.

English language differentiation. To Mrs. Martinez, English language differentiation involved finding the words in English and Spanish (her students' primary language) that would bring the greatest amount of understanding of a particular passage. This could include finding cognates (i.e., words that look or sound similar in both English and Spanish and which have similar meanings) and giving instructions in the language with which students feel most comfortable. She also challenged students to think about language structure and about the meaning of the passages they read (Smith & Salgado, 2018).

Visualization. By having students visualize the text as they read it, Mrs. Martinez increased the possibility for comprehension. When students see what they are reading, it is easier for them to understand what is happening in a story. To teach students to visualize a text, Mrs. Martinez told them to make a picture or a movie of a scene in a story in their heads. She showed them her own example by drawing it on the board. Then, she asked students to verbalize what they saw. In this way, "students were able to imagine characters, setting, and events" (Smith & Salgado, 2018, p. 23). Visualization helps ELL students to come to a greater understanding of story elements.

Storytelling. Mrs. Martinez also used *cuentos*, or stories, to engage students and to raise their motivation levels. In class, the students read young adult literature books to which they could relate. Mrs. Martinez specifically chose stories that contained familiar elements to the lives of her students. She also used stories from her own life to help students make connections from the stories to experiences of their own (Smith & Salgado, 2018). In using *cuentos*, Mrs. Martinez modeled storytelling and connecting

good literature to her own life, and also encouraged storytelling in the conversations of students. Storytelling is one way for students to move beyond comprehension to connection, reflection, and analysis of literature in the middle grades.

Reading instruction for ELLs involves many moving parts. Word recognition, fluency, and basic comprehension are all important in the elementary grades. Teachers of ELL students in these classrooms, as well as in small groups, can use instructional strategies such as vocabulary building, instructional conversations, peer pairings, shared book reading, translation, and the Poetry Academy. Middle school teachers of ELL students face other challenges, including struggles in content area comprehension and in learning to connect, reflect upon, and analyze reading material. These teachers can ask questions about texts, model content-area reading strategies, teach visualization, and tell stories to instruct students in reading. These elementary and middle school strategies, while representing a small part of the range of ELL instructional strategies, have recently shown significantly positive results in common areas of difficulties for ELLs. Therefore, teachers should seek to apply these strategies to the instruction of their ELL students, so that their students can succeed in reading.

Strategies for Mathematics Instruction

Like reading, the subject of mathematics has a clear division in content between the elementary and middle school. In the elementary years, the focus in content is generally on building up basic methods to solve math problems. In middle school, this focus shifts to an emphasis on real-world application of these methods. This shift

provides a clear distinction between the types of strategies that should be used in the elementary and middle school grades.

Grades K-5 Strategies

Like the reading strategies, the two broad types of mathematics teaching strategies in the elementary grades, are whole-group and ELL-specific strategies. Miller and Warren (2014) suggest that teachers should focus on three key elements when working with both the whole group and with small groups in the mathematics classroom: representations, oral language, and engagement in mathematics. When teachers focus on these three elements, ESL students see great gains in mathematics achievement and even greater gains than those of their mainstream peers (Miller & Warren, 2014).

Representations. Representations are the varied types of images or depictions that the brain uses to comprehend mathematics. These can include both internal representations and external representations. Internal representations are inside of the learner and include mental models, visual images, and kinesthetic concepts. External representations are outside of the learner and can include graphs, number lines, geometric figures, and other standard illustrations (Miller & Warren, 2014). Teachers who use many different representations give students the opportunity to see a concept in more than one way. Doabler et al. (2016) advise supporting students in their understanding by offering many visual models and by explicitly explaining the relationships between the models and the key concepts they represent. The visual models provide a tangible way for students to understand the material, but if students do not understand the connection between the model and material, teachers lose the significant benefits of using models.

Thus, teachers should use models extensively but also must explain the model and the connection explicitly and thoroughly so that students fully comprehend the lesson material.

Oral language. The language of mathematics is often a barrier to student understanding. New and unfamiliar terms present difficulties to many students. Familiar vocabulary used in unfamiliar contexts can also be a barrier to learning (Miller & Warren, 2014). ELL students especially encounter these difficulties since the everyday English they learn is often very different from the language used in the mathematics classroom. Miller and Warren (2014), however, see mathematical language as a resource that supports "thinking, doing, learning, and teaching mathematics" (p. 794). When teachers learn and use the language of mathematics correctly, they present information that makes sense to students and thus help students learn.

Engagement. Shared experiences and background information are both important tools that teachers can use to promote engagement in mathematics. Engagement in mathematics is central to learning mathematics because it provides a motivation to learn mathematical concepts. Teachers can engage their students in the learning process by using relatable language and experiences, including students in the instructional process, and showing students how their knowledge is applicable to their lives (Miller & Warren, 2014). Teachers should always bear in mind the three important ideas of representations, oral language, and engagement in mathematics so that they can help their ESL students succeed, whether in a whole class or small group setting.

Whole-group strategies. Whole-group strategies in the math classroom are strategies that teacher can use with a heterogeneous group of students. It is crucial that teachers, and especially teachers of ELL students, use instructional practices that will best introduce and solidify new ideas for students. Merritt, Palacios, Banse, Rimm-Kaufman, and Leis (2017) found six instructional practices common to two grade 5 classrooms with a high percentage of ELL students and a high level of mathematical growth. These practices are as follows: multiple representations of mathematics concepts, mathematical discourse practices, vocabulary building, checks for understanding, error analysis, and explicit teaching of learning strategies.

Multiple representations. Using multiple representations of mathematics concepts involves using various forms of a concept to further understanding (Doabler et al., 2016; Merritt et al., 2017; Miller & Warren, 2014). For example, in a lesson about fractions, a teacher may use fractions strips, fraction circles, and the decimal representation of a fraction to illustrate the concept in multiple ways. By utilizing multiple representations, teachers are more likely to reach all their students. Since students all have different ways of understanding, using the different representations creates a greater likelihood for student understanding throughout the classroom. Doabler et al. (2016) suggest that explicit mathematical instruction, which focuses on overt models and demonstrations, is helpful to ELL students, especially those in kindergarten.

Mathematical discourse. Mathematical discourse practices in both successful classrooms involved questioning, which the teachers used to review concepts and create connections between prior knowledge and new knowledge (Merritt et al., 2017).

Questioning allowed students to reflect upon their understanding of the concept, even if

not all students answer a specific question aloud. For ELL students, questioning involved

another opportunity to hear and understand the mathematical language used throughout

the lesson. A teacher who "connects new content with students' background knowledge"

and "scaffolds instruction" employs additional beneficial mathematical discourse

practices (Doabler et al., 2016, p. 346).

> ***Vocabulary building.*** Building vocabulary is another important way to help ELL

students understand mathematical language. By using explicit instruction involving

vocabulary, the successful teachers in the study by Merritt et al. (2017) provided a

pathway to understanding potentially difficult words found only in the subject of

mathematics. These teachers used definitions, pictures, and hand motions to teach

vocabulary, and they also supported students' vocabulary understanding by explaining

non-mathematical words found in story problems (Merritt et al., 2017).

> ***Checks for understanding.*** Checks for understanding allow teachers to know

how much their students comprehend about a concept. They are important because

teachers can use this information to structure their next lessons and to guide students

toward a full understanding of concepts. The teachers in the study by Merritt et al.

(2017) used checks for understanding to focus on both the mathematical and the language

understanding of their students to make sure they understood all that a question asked.

> ***Error analysis.*** Teachers can use error analysis to help students know where they

went wrong in solving a problem and how they can do a problem correctly in the future.

When used correctly, error analysis should not discourage students but should help them

to realize that their mistakes help them to grow in their mathematical knowledge. With

ELL students, it is important for teachers to recognize errors in language and

mathematical concepts, not just one or the other. Teachers should not assume that

students do not understand a mathematical concept but should strive to find the root of a

misunderstanding, whether it involves language or mathematics usage. A common way

to use error analysis is to identify an error and then use guiding questions to bring full

understanding about the error and its solution to the student (Merritt et al., 2017).

   Learning strategies. Learning strategies can include organizational, procedural,

and problem-solving strategies. Organizational and procedural strategies help students to

follow an approach in order to solve a problem, while problem-solving strategies help

students to identify a way to solve a problem and use that way to find an answer. Both

types of strategies can benefit ELL students by giving them tools that they can use to

solve mathematics problems, and the successful teachers in the study by Merritt et al.

(2017) used and explicitly taught both types to their students. Learning strategies, along

with the other five previously mentioned teaching practices, can help teachers to better

reach their ELL students.

   Whole-class discussion. Another way that students can connect with one another

and with mathematical content is through whole-class discussion. In whole-class

discussion, the teacher facilitates a conversation, leading the students to make their own

correct conclusions about a topic or concept. In this way, students are more invested in

what they learn: "When students communicate during mathematics lessons, they offer

their understanding to the scrutiny of their teachers and peers so that their ideas can be

corrected, confirmed, or adapted" (Banse, Palacios, Merritt, & Rimm-Kaufmann, 2017, p. 200). Discussion provides a particularly beneficial environment in which students may share their understanding in order to further grow in their mathematical knowledge. It also provides additional opportunities for mathematical vocabulary building and for students to "verbalize their mathematical thinking" (Doabler et al., 2016, p. 346). When teachers use discussion in the classroom, students not only internally understand mathematical reasoning but externally communicate that reasoning during discussion.

However, challenges surface for students who do not share the same primary language as the teacher or the majority of the class. Several obstacles, such as content-specific vocabulary and conversational proficiency, arise when ELLs attempt to enter into whole-class discussion (Banse et al., 2017). Teachers can learn to scaffold students in several ways so that the students may come to an understanding of the content necessary to continue in mathematical development. Banse et al. (2017) suggest using questioning, revoicing, and clear teacher speech to guide all students, especially ELLs, toward understanding.

Questioning. Questioning, as mentioned above, is an important part of a whole-class discussion. It typically involves two types of inquiries: referential and display. Teachers more commonly use display questions, which elicit a single, procedure-based response. Referential questions, on the other hand, are more beneficial to discussion because they seek answers that are open-ended, with students providing answers based on their own reasoning and not a previously provided formula or process (Banse et al.,

2017). Once students have answered either type of question, teachers can use revoicing

to clarify and expand upon the answers.

Revoicing. Revoicing gives students another opportunity to hear and understand

what other students are saying. It also gives teachers the opportunity to clarify or correct

any misunderstandings that may have occurred in the original student's response. For

ELL students, revoicing allows the mathematical understanding that the students show to

come through, despite any language troubles the student may have had. Three key

components of revoicing include reformulation (using correct academic terms to describe

a student's answer), elaboration (extending or expanding upon a student's response), and

repetition (saying what the student previously said again); (Banse et al., 2017).

Teacher speech. Teacher speech is the third suggested tool that teachers can use

to scaffold students' understanding. The main two beneficial types of teacher speech are

think-alouds and self-talk. Think-alouds occur when teachers model how to solve a

problem by stating their thinking process aloud with the class. Self-talk involves

repeating steps or ideas in ways that will help more students understand what the teacher

is doing throughout the process of the problem. Both of these types of teacher speech

help ELL students by using clear language to solidify and expand understanding of the

concept. They give more opportunities for students to comprehend what is going on and

why mathematical processes and concepts work the way that they do (Banse et al., 2017).

Small groups. Although not an instructional strategy, putting students into small

groups is an important approach that teachers can use with ELL students in a

heterogeneous whole-group setting. The general benefits of group work include content

understanding, relational understanding, and the benefit of peers working together to fill

gaps in understanding. Individual students may not have a complete understanding of a

topic or concept, but groups as a whole are more likely to have a greater knowledge, so

individual group members can explain various parts of the topic to other group members

to bring each member to full comprehension (Takeuchi, 2016). Small groups also give

students more individual attention from the teacher, provide more time to practice a skill

than whole-group instruction provides, and, for ELL students, offer a structured

opportunity for conversation with other students and the teacher. In mathematics, small

groups can especially help students in working through problem solving and concept

learning (Garrett & Hong, 2015).

Homogeneous versus heterogeneous ability grouping. There are essentially two

ways that a teacher can use grouping in the classroom: homogeneous ability grouping and

heterogeneous ability grouping. Homogeneous ability grouping means that the teacher

groups students of similar abilities together (Garrett & Hong, 2015). With this type of

grouping, the teacher can address the needs of students who are struggling or challenge

those whose achievement is above average depending on the ability level of the group. In

heterogeneous ability grouping, teachers group students of various abilities together

(Garrett & Hong, 2015). This kind of grouping allows for more conversation among

students, with higher-achieving students able to help lower-achieving students by giving

them additional information about potential gaps in understanding.

In their study in which they analyzed grouping in kindergarten classrooms,

Garrett and Hong (2015) found that there was a significant negative impact for ELL

students in classrooms using only homogeneous grouping compared to no grouping,

heterogeneous grouping, and a combination of heterogeneous and homogeneous

grouping. In the specific case of Hispanic ELL students, Garrett and Hong (2015) found

that no grouping was also likely unhelpful. A possible reason for the negative impacts of

homogeneous grouping on ELL students could be teacher perception of a student's ability

level. Teachers who misjudge students' abilities may give them instruction in a

homogeneous group that does not cater to the students' needs (Garrett and Hong, 2015).

Heterogeneous grouping usually involves a more balanced approach to instruction, so

students may receive the benefits of group work better in this type of grouping.

    Student-chosen groups. Another grouping strategy that teachers can use is

grouping ELL students with their friends rather than in teacher-assigned groups. This

idea is based on a "sociocultural theory of learning," which says that education is a social

exercise, and thus social groupings (i.e., friend groups) are the most beneficial place in

which to learn (Takeuchi, 2016, p. 412). Friends who discuss with one another the

concepts or processes learned can, according to this theory, come more easily and

completely to an understanding of those concepts or processes. The basis of friendship

allows for ease in conversation and thus a quicker path to talking about the ideas

presented by the teacher.

    ELL students in teacher-assigned groups often assume the role of the novice and

do not contribute to group discussion. However, when allowed to choose their groups

and work with their friends, ELL students do not automatically become novices and are

more able to participate in the dynamics of their groups (Takeuchi, 2016). Although the

consensus on working on group work with friends in the general classroom has been
murky, it has clear benefits for ELLs.

Takeuchi's (2016) study of student interactions within groups that included ELLs
showed that groups consisting of friends devoted significantly more time to collaborative
activities than their teacher-assigned counterpart groups did. Friends groups also gave
more opportunities for ELL students to become "experts" in the group, helping or
teaching the other members of the group rather than being taught by them (Takeuchi,
2016, p. 422).

Grouping with other ELL students. Students may also see additional benefits if
they choose partners or groups that include other ELL students (even if the other ELL
students do not speak the same primary language). In Takeuchi's case study, a student
receiving ELL instruction chose to work with another student who did not receive ELL
instruction due to program requirements, but whose primary language was not English
nor the primary language of the first student. In this student-selected partnership, the
learners communicated their understandings and misunderstandings with more
confidence and helped each other work through difficulties that arose rather than simply
telling each other what to write or do to solve the problem (Takeuchi, 2016). This
showed another benefit of student-selected groups: the ability to connect with each other,
which led to giving and receiving help more graciously.

ELL-specific strategies. ELL-specific strategies give ELL students specialized
attention designed to meet their set of needs. For example, Driver and Powell (2016)
investigated the effectiveness of culturally and linguistically responsive teaching on the

mathematics achievement of nine ELL students at risk for mathematics difficulty. Culturally and linguistically responsive teaching in mathematics seeks to use prior knowledge and experiences of students to provide a relevant context in which students may complete problems. Driver and Powell (2016) define students with mathematics difficulty as those below the 25th percentile in mathematics performance. Researchers chose students who were both ELL students and who displayed mathematics difficulty for this study.

In their study, the researchers used several tutoring sessions that incorporated information from the students' lives into the word problems given to the students. Tutors also encouraged students to use their native languages during tutoring sessions. Tutors gave the students a pretest and a posttest to gauge their understanding of word problems, and the results of these tests showed growth in the students' ability to comprehend and complete word problems correctly (Driver & Powell, 2016). Researchers also found that students previously in the 3rd to 18th percentiles of one specific type of word problem at the beginning of the study progressed to the 33rd to 59th percentile range by the end of the study, a range that is above the previously mentioned metric of the 25th percentile that researchers used to choose participants in the study (Driver & Powell, 2016).

Though the sample size of this study was small, the results provide important insight for educators looking to provide specialized instruction for ELL students in mathematics. The results indicate that teachers who focus on prior knowledge and who encourage use of ELL students' primary language(s) can help students grow in their understanding of word problems. An emphasis on the culture and language unique to the

ELL students in the classroom can give the ELL students more motivation to complete

the problems teachers give them.

     Primary language instruction. In the small group setting, teachers may want to

not only allow and encourage ELL students to speak their primary language(s) but, if

possible, may want to speak that language during instruction themselves. Orosco (2014)

examined the effects of using students' primary language during tutoring sessions for

Spanish-speaking ELL students at risk for math disabilities. He found that teaching in

the students' primary language combined with teaching concepts in three phases brought

about positive changes in students' mathematical development. These three phases are

preteaching content, teaching strategies, and cooperative learning in a group or pairing. It

is important to note that many teachers speak only English, and therefore it is not possible

for them to teach in the students' primary language(s). These teachers can, first of all,

still focus on the three phases of instruction in English. Additionally, these teachers can

seek out tutors who speak the primary language(s) of students and train them in the three

phases of instruction. Although these teachers may not be able to directly communicate

these concepts with their students, they can still attempt to implement them in these ways.

     The first phase of instruction with small groups of ELLs was preteaching content.

When the instructors pretaught content, they explicitly defined vocabulary and applied

new words in the correct mathematical concept (Orosco, 2014).   All instruction in the

small group of ELL students was in their primary language of Spanish. The second

phase, teaching strategies, involved five steps that the students could use to solve a word

problem. During this phase, the teacher modeled the steps with the students to lead them

through a problem. The five steps used were (in English): know it (brainstorm and

predict how to solve the problem), find it (look for key terms and information), set it up

(use relevant information to create a way to solve the problem), solve it (complete the

problem), and check it (use traditional algorithms to check the problem); (Orosco, 2014).

After working through a problem with the instructor, the students took on the instructor's

role. To show that they understood how to use the strategy, the students explained each

part of the strategy to the instructor. They worked through a problem from the

perspective of a teacher, presenting the information in a way similar to how a teacher

would do so. This not only gave the students an additional opportunity to express

comprehension of the strategy but also gave the teacher an opportunity to correct any

misunderstandings that may be present in the students' knowledge of the strategy and

how to use it.

Grades 6-8 Strategies

Mathematics requires an understanding of not only mathematical notation and

processes but also the language specific to the discipline. Many mathematics curriculums

demonstrate a shift in language usage around the middle school grades, from more

everyday language to the discipline-specific vocabulary necessary to understand higher-

level mathematics concepts (Adoniou & Qing, 2014). This shift is difficult for most

students to grasp but can be especially challenging for ELL students. Additionally, a

change has come about in recent mathematics regarding the beliefs about the way that

teachers teach concepts. Standards and curricula encourage teaching concepts and

processes in the context of real-world application. While the additional information and

practicality inherent in this context may help native English speakers better understand mathematical ideas, for ELL students, the language usage demands can prevent them from reaching a proficient level of understanding (Adoniou & Qing, 2014).

ELL students may find difficulty with three levels of mathematics language: text, sentence, and word. Text context can bring about confusion through the additional information given in a word problem. ELL students may struggle to understand information that is ultimately unnecessary in the working out of the mathematical problem (Adoniou & Qing, 2014). Sentence context confusions include order, inflection, and tense use, all of which include facets that are original to English and difficult to perceive from a different language perspective. Word context problems arise when a word has different meanings in an everyday language usage context and a subject-specific (e.g., mathematical) context. For example, words such as *find* and *table* have different definitions in mathematics than in regular usage and so may present extra difficulties to students who are ELLs (Adoniou & Qing, 2014). In light of these difficulties, middle school mathematics teachers should attempt to understand the difficulties that may arise from the language of mathematics and then seek ways to guide ELL students toward comprehension of and success with the new mathematical language. Through scaffolding, discussion, the use of manipulatives, and a focus on vocabulary, teachers can overcome these obstacles and lead students to learning.

Whole-group strategies. Teachers can use various strategies to mitigate the effects of the difficulties that ELLs experience with language in the mathematics classroom. Scaffolding is an important part of learning in any context. In the learning of

mathematical concepts, this can include defining potentially unfamiliar words and situations. It can also mean clarifying the uses of words in correct contexts and explicitly connecting various words that mean the same thing. Discussion is as important in the middle school classroom as it is in the elementary one, especially when guided by the teacher. Manipulatives and pictures can be non-language-based concrete representations of a concept or process besides the word problems often used to communicate ideas (Adoniou & Qing, 2014). All of these strategies help teachers to communicate with ELL students using the language of mathematics.

>>>> *Dual-language classroom.* Another way that teachers can assist students in using the language of mathematics is through a dual-language (DL) classroom. This biliterate environment gives students the opportunity to express themselves and their ideas in the language that is easiest for them while still encouraging growth in the language they do not know as well (Rubinstein-Ávila, Sox, Kaplan, & McGraw, 2014). The use of the primary language takes away the barrier of another language and gives students immediate access to content knowledge. Although this type of classroom is not always feasible in the middle school environment, teachers can try to implement some of the components of dual-lingualism, including learning common, helpful words and phrases in the students' primary language(s).

>>>> *Mainstream classrooms.* The success seen in dual-language classrooms should encourage teachers in mainstream schools to permit use of students' primary language(s): "mathematics teachers, even those who are English monolingual, should not fear the use of multi-lingualism in the mathematics classrooms" (Rubinstein-Ávila et al., 2014, p.

922). Teachers who allow students to draw upon the resources of both of their languages open the door for greater understanding across the board. Students who use the language with which they are more comfortable to express their reasoning build "habits of mind", pathways to mathematical problem solving that they can ultimately use in either language (Rubinstein-Ávila et al., 2014, p. 923).

Besides the benefit of creating these pathways, students communicating in their primary language see another benefit: easier discussion and defense of mathematical ideas and problem-solving processes. Students who can defend their own processes in solving a problem show that they understand the problem and how to solve it. However, this defense can be difficult for students in a classroom where the main language spoken is not their primary language. When students have the advantage of explaining their process in their own language, they are able to clearly communicate how they completed the problem and why they believe they completed it correctly (Rubinstein-Ávila et al., 2014). They are able to discuss with other students the many possible ways to solve a problem and thus continuously grow in understanding.

ELL-specific strategies. ELL-specific strategies in the middle school mathematics classroom should focus on the individual students' interests and needs. Teachers can use the strengths and weaknesses of ELL students to guide their decisions regarding instruction toward these students just as they would any other student. For example, Young, Hunt, and Lewis (2018) describe an ELL student with an interest in sports and an affinity for working in groups with other students. The teacher in this situation structured a word problem around the interest in sports and used cooperative

learning to help the student understand the process of solving the problem. This

differentiation helped ELL students to receive the information they needed to learn in a

way that motivated them and was understandable to them.

   Vocab Grid. One area in which ELL students often struggle is vocabulary. As

mentioned above, the shifting language of mathematics in the middle grades makes ELL

students especially vulnerable to misunderstandings, which, in turn, lead to gaps in

comprehension. The use of similar words in conversational English also leads to

confusion. A Vocab Grid is a way that teachers can combat these gaps in understanding

by introducing and using new vocabulary correctly in a mathematical context (Marin,

2018). This strategy utilizes a grid designed to highlight important terms and incorporate

the important contexts of the terms through discussion of the words' definitions, their

synonyms, example uses of the words, and sample problems involving the words. Terms

chosen can include both new vocabulary and review words, of which students may have

heard but may not yet understand fully. Students begin by rating each word on a scale of

one to three, with one meaning they know how to use the word completely, and three

meaning they have never heard the word before. The student ratings guide the emphasis

that the teacher needs to place on each word throughout the learning period (usually a

week for 5-10 words). A discussion follows, with students giving their input regarding

how they would fill out the rest of the chart. Throughout the discussion, the teacher

corrects any misconceptions and expands upon student understanding. After the students

fill out the chart, they may study it, look back upon it, and use it to expand their

vocabulary in mathematical discussions. The weekly grids that students create form a

"math dictionary" that students can use to remember the definitions of previous words.

Students can also use the math dictionary to compare and contrast previous words with

new ones (Marin, 2018, p. 398). When teachers explicitly introduce new terms through

Vocab Grids, they give ELL students the chance to encounter those words in their proper

mathematical context.

Conclusion

Both whole-group and ELL-specific strategies are useful when teaching ELL

students reading and mathematics. Whole-group strategies provide teachers with

methods that benefit all students in a heterogeneous group but that specifically aid ELLs,

while ELL-specific strategies give focused instruction to homogeneous groups of ELL

students and meets their unique needs. Teachers should tailor their instruction according

to the grades that they are teaching, and they should bear in mind the curricular changes

that mark the transition between the elementary and middle grades as they choose

instructional strategies. In the elementary grades, vocabulary building, language

modeling, instructional conversations, and peer pairings provide benefits in reading to

ELL students in a whole class setting, while shared-book reading, translating, and using

poetry in small groups give comprehension help, specific word recognition skills, and

fluency to elementary students where they need them. Linguistically responsive

teaching, content area reading, English language differentiation, visualization, and

storytelling are all effective reading instructional strategies in the middle grades for

ELLs. In the elementary mathematics classroom, teachers should focus on multiple

representations, vocabulary building, mathematical discourse, checks for understanding,

error analysis, learning strategies, and discussion to build ELL students' understanding in

mathematics. They can also utilize small groups, especially student-chosen groups, and

primary language instruction to facilitate learning for ELL students. In the middle

grades, teachers can use principles of a dual-language classroom to guide their

instruction, even if they are not able to fully implement the model in their classroom.

They can also use Vocab Grids to help students learn new and challenging words.

Teachers who utilize these strategies give English language learners the opportunity to

grow. These teachers are well-equipped to instruct ELL students and therefore are

prepared to bring these students to their full potential. By thoughtfully using these

strategies to instruct ELLs in reading and mathematics, teachers help English language

learners to not only succeed in the classroom but in life.

References

Adoniou, M., & Qing, Y. (2014). Language, mathematics, and English language learners.

The Australian Mathematics Teacher, 70(3), 3-13. Retrieved from

http://search.informit.com.au/documentSummary;dn=661238067645609;res=IEL

HSS

Banse, H. W., Palacios, N. A., Merritt, E. G., & Rimm-Kaufman, S. E. (2017).

Scaffolding English language learners' mathematical talk in the context of

Calendar Math. *The Journal of Educational Research, 110*(2), 199-208.

http://dx.doi.org/10.1080/00220671.2015.1075187

Barber, A. T., Buehl, M. M., Kidd, J. K., Sturtevant, E. G., Nuland, L. R., & Beck, J.

(2015). Reading engagement in social studies: Exploring the role of a social

studies literacy intervention on reading comprehension, reading self-efficacy, and

engagement in middle school students with different language backgrounds.

Reading Psychology, 36(1), 31-85. doi: 10.1080/02702711.2013.815140

Doabler, C. T., Clarke, B., Kosty, D. B., Baker, S. K., Smolkowski, K., & Fien, H.

(2016). Effects of a core kindergarten mathematics curriculum on the

mathematics achievement of Spanish-speaking English learners. *School*

Psychology Review, 45(3), 343-361. Retrieved from

http://ezproxy.liberty.edu/login?url=http://go.galegroup.com/ps/i.do?p=AONE&s

w=w&u=vic_liberty&v=2.1&it=r&id=GALE%7CA480489805&sid=summon&a

sid=b643ff4ddf7d90e64b1dafd3b71658e3

Driver, M. K., & Powell, S. R. (2016). Culturally and linguistically responsive schema

     intervention: Improving word problem solving for English language learners with

     mathematics difficulty. *Learning Disability Quarterly, 40*(1), 41-53.

     https://doi.org/10.1177/0731948716646730

Gámez, P. B., González, D., & Urbin, L. M. (2016). Shared book reading and English

     learners' narrative production and comprehension. *Reading Research Quarterly,*

     52(3), 275-290. doi: 10.1002/rrq.174

Garrett, R., & Hong, G. (2016). Impacts of grouping and time on the math learning of

     language minority kindergarteners. *Educational Evaluation and Policy Analysis,*

     38(2), 222-244. https://doi.org//10.3102/0162373715611484

Goodwin, A. P. & Jiménez, R. (2015). Translate: New strategic approaches for English

     learners. *The Reading Teacher, 69*(6), 621-625. doi: 10.1002/trtr.1400

López, F., Scanlan, M. & Gorman, B. K. (2015). Language modeling and reading

     achievement: Variations across different types of language instruction programs.

     Reading and Writing Quarterly, 31(1), 1-29.

     http://dx.doi.org/10.1080/10573569.2013.819187

Lynch, S. D., Hunt, J. H., & Lewis, K. E. (2018). Productive struggle for all:

     Differentiated instruction. *Mathematics Teaching in the Middle School, 23*(4),

     194-201. Retrieved from

     https://www.jstor.org/stable/10.5951/mathteacmiddscho.23.4.0194

Marin, K. A. (2018). Routinizing mathematics vocabulary: The vocab grid. *Mathematics*

  Teaching in the Middle School, 23(7), 395-398. Retrieved from

  https://www.jstor.org/stable/10.5951/mathteacmiddscho.23.7.0395

Martínez, R. S., Harris, B., & McClain, M. B. (2014). Practices that promote English

  reading for English learners (ELs). *Journal of Educational and Psychological*

  Consultation, 24, 128-148. doi: 10.1080/10474412.2014.903192

Merritt, E. G., Palacios, N., Banse, H., Rimm-Kaufman, S. E., & Leis, M. (2017).

  Teaching practices in grade 5 mathematics classrooms with high-achieving

  English learner students. *The Journal of Educational Research, 110*(1), 17-31.

  http://dx.doi.org/10.1080/00220671.2015.1034352

Miller, J., & Warren, E. (2014). Exploring ESL students' understanding of mathematics

  in the early years: Factors that make a difference. *Mathematics Education*

  Research Journal, 26(4), 791-810. http://dx.doi.org/10.1007/s13394-014-0121-z

Orosco, M. J. (2014). A math intervention for third grade Latino English language

  learners at risk for math disabilities. *Exceptionality, 22*(4), 205-225.

  http://dx.doi.org/10.1080/09362835.2013.865535

Portes, P. R., Canché, M. G., Boada, D., & Whatley, M. E. (2018). Early evaluation

  findings from the Instructional Conversation study: Culturally responsive teaching

  outcomes for diverse learners in elementary school. *American Educational*

  Research Journal, 55(3), 488-531. doi: 10.3102/0002831217741089

Rubinstein-Ávila, E., Sox, A. S., Kaplan, S., & McGraw, R. (2014). Does biliteracy +

  mathematical discourse = binumerate development? Language use in a middle

school dual-language mathematics classroom. *Urban Education, 50*(8), 899-937.

https://doi.org/10.1177/0042085914536997

Sedeghi, M., & Izadpanah, S. (2018). Barriers in teaching reading to ELLs and ways of

overcoming those obstacles. *Journal of Language Teaching and Research, 9*(2),

295-301. http://dx.doi.org/10.17507/jltr.0902.10

Shoffner, M., & de Oliveira, L. C. (2017). Courageous literacy: Linguistically responsive

teaching with English language learners. *Voices from the Middle, 24*(3), 44-47.

Retrieved from

http://ezproxy.liberty.edu/login?url=https://search.proquest.com/docview/187646

5345?acaccount=12085

Smith, A. M., & Salgado, Y. (2018). Teaching literacy to English language learners in the

borderlands: A case study of a sixth grade language arts and reading teacher.

Reading Improvement, 55(1), 15-31. Retrieved from

http://link.galegroup.com/apps/doc/A532387980/GRGM?u=vic_liberty&sid=GR

GM&xid=92eecbbf

Sylvester, R., Kragler, S., & Liontas, J. (2014). Vocabulary instruction for young, diverse

learners. *Childhood Education, 90*(6), 434-445. Retrieved from

http://link.galegroup.com/apps/doc/A393988536/AONE?u=vic_liberty&sid=AO

NE&xid=b099d3ae

Takeuchi, M. A. (2016). Friendships and group work in linguistically diverse

mathematics classrooms: Opportunities to learn for English language learners.

Journal of the Learning Sciences, 25(3), 411-437.

http://dx.doi.org/10.1080/10508406.2016.1169422

Wilfong, L. G. (2015). ¡Puedo hacerlo! – "I can do it!" Using poetry to improve fluency,

comprehension, word recognition and attitude toward reading in struggling

English language learners. *The NERA Journal, 51*(1), 41-49.