Abstract

This study compares the effectiveness of context clue strategy instruction to wide reading practices in terms of their impact on the vocabulary knowledge of students who read at frustration level. The participants were 44 sixth-grade students from a middle grades school. Students were randomly assigned to experimental and control conditions. The experimental condition students were trained to use context clues to infer meaning from context using a direct instruction method. A contextual vocabulary test consisting of 30 multiple-choice items was used to assess the students’ understanding of the word meanings in context. The results indicated that the experimental condition demonstrated higher levels of improvement in the vocabulary knowledge than the control condition (which practiced a wide reading strategy). The findings suggest that a reading intervention focused on using context clues can have a worthwhile effect on the ways in which students who experience difficulties with comprehension increase their proficiency in learning from context and hence build their vocabularies.

Keywords: vocabulary knowledge, context clues instruction, direct instruction, middle grades, wide reading, frustration-level comprehension

Vocabulary is defined as the breadth, depth, and variety of all the words, concepts or specific terms we know: the words we use, recognize, and respond to in acts of communication, speaking, and listening (Vacca et al., 2008). Vocabulary knowledge closely reflects the breadth of a person’s real-world and vicarious experiences in learning from context (Harmon, 2002; cited Lewis, 2009; Neuman & Dwyer, 2009). Because people’s vocabulary knowledge is dependent on their own experiences, it is best for the content of a curriculum to reflect these experiences (Rupley & Nichols, 2005). Vocabulary knowledge contributes to phonological awareness, which in turn contributes to word identification skills and the ability to understand the meaning of a broad
range of words presented in a variety of textual contexts (Goswami, 2001 cited Graves, 2006; Nagy, 2005). Furthermore, having a broad vocabulary not only helps us understand what we have read but it also has an important role in terms of long-term academic success in overall education (Kuhn & Stahl, 1998; National Reading Panel, 2000; Walters, 2004). For instance, students who have large vocabularies have a better understanding of what they read than students with smaller vocabularies (Minskoff, 2005).

Reading comprehension becomes increasingly crucial as students make improvements and rise through the grades, with knowledge inferred from content increasingly becoming a major source of conceptual knowledge (Smagorinsky, 2001). Researchers have acknowledged the importance of vocabulary knowledge as a critical component of connecting to a text and of the resulting comprehension of what was read (Beck, McKeown, & Kucan, 2002; Silva & Cain, 2015; Paris, Carpenter, Paris, & Hamilton, 2005; Wright, & Cervetti, 2017). Increases in the depth and breadth of one’s vocabulary are an excellent indicator of how well one understands what he or she is reading (Akyol, 2011; Rupley, Logan, & Nichols, 1999). In other words, the richer and more developed a student’s vocabulary, the better he or she is able to analyze text for meaning and to comprehend text. Moreover, the better a student is at understanding what he or she is reading, the more likely that student is to continue reading, thus increasing his or her exposure to a new and enriched vocabulary (Lewis, 2009, p. 179). In contrast, a lack of word knowledge or knowledge of the word meanings reflected in the text may explain difficulties in reading comprehension (Leslie & Caldwell, 2011, p. 48). It is clear that vocabulary growth requires the learning of a number of words and is recognized as a predictor of the student comprehending the text being read (Graves, 2006; Graves, Schneider, & Ringstaff, 2018; RAND Reading Study Group, 2002).

Vocabulary Knowledge in Middle Grades Education

As vocabulary knowledge influences both word recognition and reading comprehension (Language and Reading Research Consortium, 2015), vocabulary instruction is an essential component of a cross-curricular middle grades education because it provides a foundation in the form of background knowledge (Bintz, 2011; Kamil et al., 2008). As a continual process of coming across new words, word-learning strategies are a crucial part of all content-area curricula to the extent that a strong vocabulary improves comprehension and the learning of content-area materials. The expansion and extension of vocabulary is centered on literacy development. Vocabulary learning is a central learning need of all students in content-area classrooms in which each student is expected to read and inquire—whether as a historian, author, scientist, or mathematician (Bintz, 2011; Harmon, Wood, & Hedrick, 2008a; Harmon, Wood, & Kiser, 2009; Lapp, Flood, & Farnan, 2005; Manzo, Manzo, & Thomas, 2006; Robb, 2009). Yet many students in middle grades schools experience difficulties learning from texts for many reasons. Some reading problems are attributable primarily to the students themselves. For example, common sources of difficulty for middle grades students include a lack of knowledge of content words, a lack of appropriate background knowledge to learn from content, and a lack of effective reading strategies to assist them in efficiently comprehending texts for their grade level (Lapp et al., 2005, p. 49; National Assessment of Educational Progress, 2003). There is increasing evidence that a lack of vocabulary is a key factor underlying the failure of students to achieve their reading goals (Biemiller, 2004; Chall, Jacobs, & Baldwin, 1990; Hart & Risley, 1995). In addition, many middle grades students can read words, but they do not know or cannot use or identify the contextual information in or around the recognized words to infer or derive the meaning of any unknown words they encounter while reading the content-area textbooks. Finally, many content-area textbooks include content-specific words that may be unfamiliar to students or take on new meanings within a particular subject area (Beck, McKeown, Sinatra, & Loxterman, 1991; Fukkink & de Glopper, 1998; Hall, 2005; Kamil et al., 2008). This might result in students struggling with comprehension and encountering major problems in gaining knowledge from a text or in effectively understanding what they have read (Hall, 2005).

Many students have weaknesses or deficits in their ability to learn from texts, so that engaging with grade-level materials will cause frustration and anxiety (Carnine, Silbert, Kamieniui, & Tarver, 2010); hence, they have difficulty inferring the meaning of unknown words using context clues such as examples, comparisons, definitions, synonym, contrast or visual image. These are descriptive clues to a word’s meaning in the text, which can include sentences, passages, discussions, or illustrations, the meaning of which they do know, that can assist them in understanding new or unknown words they come across.
during reading (Mason, Reid, & Hagaman, 2012). This inability interferes with the comprehension of the text to be read (Biancarosa & Snow, 2004; Lewis, 2009; Rupley et al., 1999). According to Gunning (2002), if a student cannot understand at least 95% of the words, comprehension will be hampered. Their lack of vocabulary disrupts reading fluency and results in interferences with comprehension, because inferring or deriving word meanings from the context can make up as much as 70–80% of the comprehension of a text (Pressley, 2002).

Typically, content-area teachers expect their students to learn to read and write, with reading materials coming from the textbook and from classroom discussions. Students are expected to understand and discuss sophisticated readings from a range of materials across the various content-areas as they progress through the middle grades (Mastropieri & Scruggs, 1991; Minskoff, 2005). The middle level curriculum demands that students read from their content-area textbooks to learn content effectively. This demand likely comes with an expectation that those students have the ability to learn from context (Bulgren & Scanlon, 1998; Hall, 2005; Klingner, Vaughn, & Schumm, 1998). Researchers have acknowledged that the ability to use context clues is an effective independent word-learning strategy because it can enhance children’s comprehension (Blachowicz, Ogle, Fisher, & Taffe, 2013; Klingner, Vaughn, & Boardman, 2015; Lesaux, Kieffer, Faller, & Kelley, 2010; Minskoff, 2005). It has a sound and persuasive rationale relating it to students’ vocabulary growth as a critical component of comprehension (Paris et al., 2005). This rationale depends on the fact that students need a specific set of word-learning strategies that can help them when it comes to using and discussing the contextual key points, in order to unlock the meaning of unknown words (Fukkink & de Glopper, 1998). However, the essential nature of comprehension development involves inferring meaning from content (Norris & Phillips, 1994; Smagorinsky, 2001; Tierney & Pearson, 1981).

Getting students who are struggling with comprehension to read more will certainly help them learn from context; they need to master word-learning strategies—recognizing and using word parts and context clues to infer the meaning of unknown words (Graves, 2006; Harmon, 2002). Parel (2004) noted that the ability to use context to infer word meanings can compensate for learners’ lack of vocabulary knowledge. This is because contextual inferencing strategies are essential for read comprehension to repair the negative effects of insufficient vocabulary knowledge (Haastrup, 1991) In this respect, content-area teachers can demonstrate approaches to build a model of the meaning of a text as a way of supporting their students with their reading and vocabulary development (Graves, 2006; Tierney & Pearson, 1981). Such instruction should focus on the words necessary to understand the content being presented (Lapp et al., 2005). This will increase the amount of reading the students do and increase the number of words they learn (Graves, 2006). Previous research has confirmed that students could clarify and enrich their understanding of the meanings of known words if they are taught in a way that positively supports vocabulary growth and the comprehension of texts (Beck et al., 2002; Brett, Rothlein, & Hurley, 1996; Itler, 2017-2018; Lesaux et al., 2010; Nash & Snowling, 2006; Nelson & Stage, 2007; Tomensen & Aarnoutse, 1998).

**Teaching Frustrated Readers Word Meanings**

Students who read at a frustration level—those considered to be struggling readers—have a limited ability to learn new words, a limited knowledge of learning strategies, and an inadequate strategy use regarding reading as a way to enhance their understanding of texts (Harmon, 2002; Vacca, Vacca, & Mraz, 2011; Tomensen & Aarnoutse, 1998). For this reason, they are unable to master and retain the use of the strategy of using contextual information to recognize words when they are reading, as a way of building the meanings of words, and they are thus unable to do the amount of reading needed to improve their comprehension. They perform poorly on the reading comprehension tests for their grade levels, because they commit incorrect word meanings to memory (Grace, 1998). As a result, they become rightfully frustrated when they encounter more words that they do not know in a text (Blachowicz et al., 2013; Pressley, 2006). When students could not overcome the vocabulary problems during reading (e.g. unknown words in a text), then they have experience frustration and a decrease in contextual focus (Nation, 2008). The ability to infer word meanings from context can be a good solution to overcome frustrated readers vocabulary problems during reading (Parel, 2004).

“Frustration level” in comprehension is taken to be an indication of a student’s low-level of performance in making inferences to acquire information from the reading material (Vacca et al., 2008; Hurst, Franklin, & Scales, 2010). For instance, if a sixth-grade student is at a frustration-level reading, he will likely not have an adequate vocabulary or knowledge of concepts to be able to read or comprehend any of his content-area textbooks (Minskoff, 2005). Students reading at a high-risk level are
likely to have reached frustration level in their grade-level materials (Carnine et al., 2010, p. 202). Leslie and Caldwell (2011) state that a student who is at a frustration level for comprehension is unable to read the material with adequate word identification, or comprehend passages read orally or interactively. At this level, the accuracy of word identification is estimated to be less than 90%, and less than 70% of the higher-level comprehension questions based on the material read will be answered correctly. For this reason, teachers should avoid using materials containing these sorts of challenging words at this level.

Quick access on the part of students who read at a frustration level for their grade placement can be achieved through providing instructional scaffolding that encourages the development of contextual and conceptual knowledge of words so that students may comprehend fully what they read (Vacca et al., 2008; Nagy & Scott, 2000). One effective method to help struggling readers is strategy-based instruction, using a strategic instructional model such as direct instruction or explicit instruction (Armbruster, Lehr, & Osborn, 2003; Baumann, Edwards, Boland, & Font, 2012; Hagaman & Reid, 2008). Teaching students to derive word meanings through a contextual analysis strategy (i.e., analyzing the surrounding linguistic context) (Baumann, Edwards, Boland, Olejnik, & Kame‘enui, 2003) using direct instruction embedded within subject-matter lessons might take time. However, promoting the retention of correct word meanings in context is a worthwhile investment because it helps develop students’ vocabulary and comprehension skills and resulted in increased progress for students’ fluency (Grace, 1998) and because it is effective across academic domains and across grade levels (Baumann, Edwards, et al., 2003).

Struggling middle grades readers need to be learning to use context clues when encountering unknown words to infer those words’ meanings and to understand the content being presented more effectively (Harmon, 2000). These students might make better progress in their ability to learn from texts if placed under direct instruction (Carnine et al., 2010, p. 202). Direct instruction is a systematic teacher-centered activity aimed at teaching specific learning strategies; it usually includes a statement of the objective, modeling, guided practices, independent practices, a review of the knowledge gained, and instructional feedbacks (Klingner et al., 2015, p. 81).

Accordingly, direct instruction in the use of context clues to infer meaning from context might assist students who have difficulty building their vocabularies, understanding the meaning of words, and recognizing these words while reading (Baumann, Kame‘enui, & Ash, 2003; Graves, 2006). As these demonstrations make clear, all students in the middle grades need to become better skilled at using word-learning strategies effectively and efficiently, so they can read like “a scientist, historian, or mathematician” (Graves, 2008; Harmon et al., 2008a). This is because vocabulary demands are especially important across all content areas (Baumann, Ware, & Edwards, 2007; Fukkink & de Glopper, 1998).

This current study aims to compare the effects of the use of context clue strategy instruction with the effects of wide reading practices on the vocabulary knowledge of sixth-grade students who read at frustration level. The reason for choosing the wide reading strategy as a comparison with context clues strategy instruction in this study is that students acquire many of their new words from wide reading (Anderson & Nagy, 1993). Wide reading is one clear avenue for vocabulary knowledge and growth (Blachowicz et al., 2013), and it makes the single most substantial contribution to overall vocabulary development (Graves, 2006). However, researchers have noted that wide reading is also potentially useful as a way of assisting vocabulary learning from context and helping students to extend their vocabulary growth incidentally (Buikema & Graves, 1993; Gove et al., 2011; Lapp et al., 2005). The literature review also indicates that these two strategies are both effective ways to produce a marked improvement in readers’ vocabulary and comprehension (Graves, 2006; Walters, 2006). The research questions for this current study are as follows:

1. What are the effects of context clue strategy instruction interventions on the vocabulary acquisition of students who read at a frustration level?
2. What is the effect of a wide reading strategy on the vocabulary acquisition of students who read at a frustration level?
3. Which of these strategies is most effective and most likely to have a significant positive influence on students’ vocabulary knowledge?

**Methods**

**Research Design and Participants**

In this study, a pretest–posttest quasi-experimental design was employed to evaluate the effectiveness of
context clue strategy instruction on vocabulary development. The participants consisted of 44 sixth-grade students from a suburban middle school in a city in Turkey who were reading at frustration-level comprehension for their grade level. Participant selection was based on a number of criteria. The first criterion was designed to determine the reading level of participants. Three similar intact classes of sixth-grade students were selected to participate. Originally, a total of 94 students were involved in the selection process. To identify the reading level of participants, the Qualitative Reading Inventory-5 (QRI-5) was used to determine student’s initial reading proficiency with regard to word identification and comprehension rate (Leslie & Caldwell, 2011).

The QRI-5 measures reading comprehension by requiring students to retell a read graded passage orally and answer various types of comprehension question based on passage content. It is used to estimate students’ reading levels—Independent, instructional, or frustration—for word identification in context and for comprehension and to determine if materials are appropriate for student use. Independent-level reading describes students who can read fluently with an excellent comprehension of what is read. Instructional level describes students who can make progress in reading with instructional guidance. Frustration level indicates that students struggle with word identification when they are reading or are unable to comprehend the material satisfactorily (Leslie & Caldwell, 2011).

In this study, the QRI-5 instrument consisted of ten multiple-choice comprehension and vocabulary questions relating to a 450-word social studies text containing a number of graded word lists and passages. There were two types of questions: explicit and implicit. Explicit questions have answers that are stated directly in the passage that assess the ability to understand and remember information stated directly by an author. Implicit questions require the reader to use context clues in the passage to infer meanings in order to answer correctly. These questions assess the reader’s inferring abilities in context (Leslie & Caldwell, 2011). Each of the participants was asked to read the content-area text silently and then answer the questions in the QRI-5 assessment. The investigator (as the author) identified all participants’ reading levels—Independent, instructional, or frustration. In the QRI-5, a 99% accuracy rate of word recognition represents independent level, 95–99% represents instructional level, and less than 90% represents frustration level. A comprehension rate of 90–100% represents independent level and 70–89% represents instructional level. Frustration level is identified as having an average comprehension rate of below 70% for comprehension (Leslie & Caldwell, 2011). For the assessment of a student’s ability to comprehend, the number of correct answers in the QRI-5 is counted and the student’s level is determined. Table 1 presents a summary of the demographics for the participants of the experiment.

Fifteen of the 95 students scored above 90% for comprehension and above 99% for the word recognition/word identification measures of the Qualitative Reading Inventory-5, frustration level for word recognition less than 90% accuracy and less than 70% for comprehension of the text.

| Treatment conditions | Gender | N  | Reading level | Comprehension (%) | Word recognition (%) |
|----------------------|--------|----|---------------|-------------------|---------------------|
| Experimental         | Boy    | 10 | Frustration   | 65 (range: 56–68%)| 84 (range 82–89%)   |
|                      | Girl   | 14 |               |                   |                     |
|                      | Total  | 24 |               |                   |                     |
| Control              | Boy    | 11 | Frustration   | 62 (range: 50–65%)| 86 (range 84–90%)   |
|                      | Girl   | 9  |               |                   |                     |
|                      | Total  | 20 |               |                   |                     |

Table 1. Participants demographic and reading levels in treatment conditions

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recognition, in the QRI-5, and were thus assigned to the independent level. Thirty-six students scored above 70% for comprehension (ranging from 75% to 84%) and above 95% for the word recognition, so they were placed at the instructional level. As a result, all the students who scored either instructional level or independent level results were excluded from this current study. This is because the instructional program in research questions is aimed at helping students who read at a frustration level for their grade level. Furthermore, five students did not complete the questions in the QRI-5, and were excluded from the study. The final sample used for this study was 44 sixth-grade students who were at frustration-level comprehension in reading and thus met the current study’s criteria for participating in the interventions. They scored at the frustration level for their grade level with a mean 63% (range 50–68%) for comprehension and a mean 85% (range 82–90%) for accuracy of word recognition in the QRI-5 assessment.

Afterward, these students were assigned to one of two conditions randomly: the experimental condition (context clue strategy instruction) (N = 24) or the control condition (wide reading strategy) (N = 20) as a comparison group. The percentage of questions answered correctly on the QRI-5 ranged from 56% to 68% for students in the experimental condition. The percentage of questions answered correctly for the control condition students ranged from 50% to 65%. Prior to the intervention, to compare changes between the two conditions, differences between the total comprehension and word recognition scores of the treatment conditions as measured by the QRI-5 were calculated. As a result, no statistically significant main effect for two conditions, t(42) = 1.77, p > .05. The third criterion for the study was to measure the participants’ initial vocabulary knowledge, assessing their knowledge of words and understanding of word meanings in context. All students were administered with a pretest. This involved a contextual vocabulary test (CVT) consisting of 30 multiple-choice items. This criterion was used in their pretest measures. The pretest scores were calculated based on the number of correct answers on the CVT items. The students were matched to make the treatment conditions comparable, and no significant differences were observed between the two treatment conditions’ pretest scores, p > .05 as measured by the CVT instrument.

To analyze the scoring reliability of the QRI-5, the data were delivered to two raters who both had doctoral degrees in education and who independently scored 40% of the QRI-5 instrument by considering the answer keys of the QRI-5 questions and passages. The answer key was developed by the investigator. Inter-scorer reliability was calculated by dividing the total number of agreements by the total number of agreements and disagreements and then multiplying by 100 (Jitendra, Kay Hoppes, & Xin, 2000). Agreement was found to be 90% (range 88–94%). The intervention in both experimental and control conditions was delivered by the instructor who had experience with reading interventions in middle grades schools.

**Instructional Procedures in the Experimental Condition**

Students in the experimental condition received the context clue strategy instruction. They participated in the intervention program twice a week for 2 weeks. The program consisted of a series of lessons adapted from the components of the vocabulary instruction program recommended by Graves (2006). The components of Graves’s vocabulary program consisted of a four-step strategy that included direct instruction in using context clues to infer word meaning from context as a means to increase the vocabulary growth of readers. Each lesson had a duration of 30–40 min.

Lessons were arranged in such a way as to improve students’ ability to use context clues to infer word meaning from context. All of the lessons were introduced using the direct instruction approach that was associated with a modified version of the strategic instructional model (Prado & Plourde, 2011). The instructional program activities included (1) describing the context clue strategy to infer meanings, (2) modeling how to employ the strategy, (3) guided practice acquisition of the strategy, (4) independent practices for the strategy, and (5) reviewing the knowledge gained. Direct instruction using a strategic instructional model is the best approach to providing interventions for students struggling with reading comprehension (Klingner et al., 2015; Swanson, 2001).

**Step 1: Introduction of the strategy.** The instructor told the class that they will learn a powerful word-learning strategy, called “Inferring Word Meanings from Context” (Graves, 2006), for using context clues to infer the meaning of unknown words they come across as they are reading. The instructor presented a large and colorful sample poster with the name of the four-step strategy for inferring meaning from context using a computer. He briefly explained its benefits for becoming more proficient in understanding what one has read. He also stated that the lessons are well worth the students’ time because,
as a result, they will know what to do when they encounter unknown words while reading. Just before beginning to practice the four-step strategy, the instructor motivated the class by stating that they will become more successful by the end of the training and become good readers. The instructor asked the students to recognize the four-step strategy shown on the poster and gave a detailed description of how to use the strategy. Here is how each step of the strategy was described in detail by the instructor (Graves, 2006):

- I will teach you a good strategy for using contextual clues to infer something from what we read. The strategy focuses on the ability to infer word meanings from context. We will spend 2 weeks on it and together we will master this strategy. The first step in this strategy, as you can see from the poster, is “Play and Question.” “Play and Question” means that you must carefully read the text, asking yourself, “Does this make sense?” Then, when you come across a word you are unfamiliar with or do not know, you pass onto the second step of the strategy: “Slow Advance.”

- In the “Slow Advance” step, when you do not know a word’s meaning, slow down, read the sentence at least once more identifying important clues related to the word’s meaning, and see if you can infer its meaning from context. If you can infer the meaning of the word from just rereading the sentence or surrounding sentences, continue reading; however, if you can not infer the meaning of the word from reading the sentences in the text, then proceed on to the “Stop and Rewind” step, which is the third step of the strategy.

- In the “Stop and Rewind” step, you should stop, go back, and read the preceding sentence or two that comes before the one with the unknown word, again identifying contextual information that might help you infer what the word might mean. If you can infer its meaning, then you can pass on to the last step, which is called “Play and Question.”

- In the “Play and Question” step, once you have inferred a word’s meaning, then substitute your guess for the difficult word you did not know to see if it makes sense. If it does, continue reading. If it does not, go back to “Stop and Rewind” or continue to read, or look it up in a dictionary, comprehending the passage as well as you can without knowing the word’s meaning.

**Step 2: Modeling the use of the four-step strategy.** After describing how to use the four-step strategy, the instructor modeled each step of the strategy as described above, using a good expository text as an example, by prompting the students to use the strategy effectively. The instructor worked out how to infer the meaning of a difficult unknown word in the text. He performed the four-step process for students using a “thinking-aloud” method in which he overtly verbalized metacognitive statements (e.g., “Are there any difficult words in the paragraph? If so, what are they?”, “What is the word . . . describing? The word sounds like a . . .”). During this stage, the instructor verbally, meta-cognitively, and physically modeled the effective use of the strategy for the class.

**Step 3: Guided practice.** The instructor and the students practiced the four-step strategy process together in pairs. The students in their pairs engaged in guided practice or practice acquisition of the strategy using an instructor-provided expository text. This enabled the students to acquire the skills to infer meanings from context. In pairs, students read the passages carefully and tried to understand the text completely. The instructor asked the pairs whether there were any difficult or unknown words in the paragraph. The instructor read the paragraph aloud to the whole class. After reading, the instructor asked the pairs to highlight the words that were likely to be new or unknown to the students, and to look for explicit clues to the meanings of unknown words in order to infer their meanings from reading the sentence(s). Afterward, the instructor and the student pairs came up with the four-step strategy together. Following the guided practice of instruction, the students rehearsed the four steps of the strategy until they could fluently recite all four steps with 100% accuracy. Students rehearsed this information and, in pairs, verbally elaborated the steps of the strategy with guidance from the instructor.

**Step 4: Independent practice.** The students in pairs continue to use the four-step strategy process, but with a more advanced expository text. The instructor gives the students a brief paragraph with some difficult words and asks them to read it several times and mark any words they do not know or whose meanings they are uncertain about. The instructor tells the students they will discuss using the context clue strategy with this paragraph. As the instruction continues, the independent practice becomes longer and more challenging and includes different texts, such as narrative texts. Increasingly, the students engage in dialogue with each other, and the instructor talks less. They do more trying out of the strategy.
in pairs and take more responsibility for the use of the strategy. The instructor provides encouragement, scaffolding in the use of the strategy, dialogic support/assistance, and feedback as needed.

Step 5: Review of instructional program. The instructor assessed what the students learned, primarily by calling on students to recap what they have learned using worksheets, including exercises to practice the four-step strategy process.

Procedures in the Control Condition
In the control condition, students practiced wide reading for 20–30 min, twice a week for 2 weeks. Students were required to read a different passage of text provided by the instructor each week for the duration of the treatment. The instructor asked these students to read the same texts as the students under the experimental condition so that the experimental treatment of this study would be consistent. Typically, this practice consists of students’ reading, underlining unknown words, summarizing the text, and using a dictionary to learn word meanings in pairs. The practice of wide reading includes a number of procedures recommended by Wexler, Vaughn, Roberts, and Denton (2010), as follows.

First, the instructor pairs the students based on who would work well together to accomplish the daily lesson focusing on the text passages they are required to read. Every lesson a new instructor-provided text passage is given to each pair of students. Each partner in each pair must read the same text passage twice while his/her partner follows along. Each partner has one opportunity to read the passage aloud and can listen to it (reading silently) a total of two times. Students in pairs have the opportunity to correct any reading errors during the second reading. After reading, if necessary, students can underline and use a dictionary to find the definition of any unknown words they have encountered during reading. For instance, a student might address his/her partner as follows: “Here are some unknown words that I underlined in the passage while you were reading. Let’s read those together and think about their meanings by reading sentences in the passage.” Students are also asked to use a pencil to follow along and underline any errors or miscues while they are reading. Each partner is asked to review all unknown words and their meanings in the text. Students then ask their partners to summarize what they have read to promote vocabulary growth. This summarization might include students’ paraphrasing for their partners what happened in the text after the last reading. After summarization, students are asked to discuss and clarify any word meanings that were unclear.

For instance, a student might say to his/her partner: “Are there any unclear or unknown words in this paragraph? Let’s identify their meaning from the text.” During the lessons, the instructor randomly monitors the pairs within the class by circling around the classroom to ensure they are completing their tasks on time (Wexler, 2007).

The Instrument
In this study, a “CVT” consisting of 30 multiple-choice items was used to collect data in the pre- and posttest measures. The CVT included short passages containing specific difficult words to assess knowledge of the meaning of these words and their understanding in context. Before developing the instrument, the investigator identified 60 word items selected from the sixth-grade social studies textbooks. Afterward, the Vocabulary Knowledge Scale (VKS) developed by Paribakht and Wesche (1997) was used to assess students’ levels of familiarity with the selected words for this current study. As a self-reporting instrument, the VKS represents an attempt to capture different levels of self-perceived knowledge of specific words. These levels range from unfamiliarity through recognition of the selected word and some idea of its meaning to the ability to use the word in a sentence (Paribakht & Wesche, 1993). The VKS includes a number of stages, which are described below.

Stage 1. I have never seen this word.

Stage 2. I have seen this word before, but I do not know what it means.

Stage 3. I have seen this word before, and I think it means______ (synonym or translation).

Stage 4. I have the meaning of the word, and I can use this word in a sentence context: _______ (write a completed sentence).

During the administration of the instrument, students are asked to indicate on the VKS their degree of knowledge of each selected wordlist. On the VKS wordlists, the results showed that the majority of students (88%) found the selected words totally unfamiliar and their correct meanings were not known (i.e., Stage 1 and Stage 2). Some of the students (i.e., Stage 3)—and in other cases, a few students (i.e., Stage 4)—found words familiar, identifying one or more correct meanings and correctly using 15 out of 60 words. These words were excluded from the study. A final 45-item vocabulary list was found to fit Stages 1 and 2 of the VKS. After the identification of the targeted words, a CVT that consisted of 45 multiple-choice items was generated using the selected targeted words from this study embedded within the context of
short expository passages. The passages for this study were written in a variety of styles and taken from social studies textbooks at fifth- and sixth-grade levels (Binbaşaran, 2002; Can, 2017; Heper, 2017; Meredith, 2012; Svişoçu, 2014; Zülal, 2010). The text passages were expository in nature and approximately 135–300 words in length. The passages had a consistent number of words whose meaning had to be inferred from the context. The CVT was rated by two raters with doctoral degrees in education, according to a rubric that included various standards in relation to test development. Cohen’s (1988) kappa—a statistical measure of agreement coefficient—was calculated by the raters. The Cohen’s kappa coefficient ranged from .82 to .90 for the 45 items in the CVT. The test was administered to 130 middle grades students for item-test analysis of the CVT instrument. After this process, 15 items were excluded from the test. Finally, 30 multiple-choice items across the expository texts were designed to be use for the pre- and posttest measures. The internal reliability of the CVT was .88. In this task, students were required to read the passages and to infer the meaning of words from their context as they read.

**Treatment Fidelity**

The instructional lessons in this study were observed by two master’s students using a checklist of instructional steps to determine the fidelity of the treatment implementation. The checklist included the direct instruction features, such as verbal explanation, modeling, guided practice, independent practice, and presenting corrective feedback. The two master’s students observed teaching for 30% of the instructional lessons. The checklist included the use of responses “yes,” “no,” or “not applicable” to score the observations (Jitendra et al., 2000). Treatment fidelity, which was computed as the percentage of steps correctly completed by the instructor, was found to be 91%.

**Results**

In this study, descriptive statistics were used for the pre- and post- measures for the treatment conditions. The pre- and posttest standard score means and standard deviations are reported in Table 2 for the two conditions for the CVT.

Results were analyzed for the combined overall score using a 2 × 2 one-way analysis of variance (ANOVA). Pre- and posttest scores of students were represented by proportions of correctly answered items on the CVT instrument. As seen in Table 2, the results showed that the scores for the control condition increased from the pretest (M = .54, SD = .14) to the posttest (M = .64, SD = .18). On the other hand, the scores for the experimental condition also increased from the pretest (M = .56, SD = .16) to the posttest (M = .76, SD = .15) as measured by the CVT instrument. This finding indicates that the two conditions produced significant increases in their level of vocabulary knowledge, following the instruction. However, the scores for the experimental condition surpassed those of the comparison group for the posttest.

A one-way ANOVA was used on the students’ posttest scores with their pretest scores as a covariate to examine the effects of intervention on students’ vocabulary knowledge. As expected, after adjusting for the means of the pretest scores for all conditions, the ANOVA yielded a significant main effect for the conditions, F = 12.40, p < .001, indicating that the context clues strategy instruction affected students’ vocabulary knowledge scores at the posttest. Experimental condition’s performance on the posttest was significantly better than that of the control condition. However, both treatment conditions’ performance on the vocabulary knowledge increased from the pretest to the posttest. The effect sizes (ESs) for the two conditions were calculated for the CVT measure. According to Cohen’s (1992) guidelines for interpreting ESs, .29 and less being considered small, .30–.49 medium, and .50 and greater large. ESs for the experimental and the control conditions were .42 and .20, respectively. ES for the experimental condition indicates that the context clue strategy instruction was moderately effective in increasing students’ vocabulary knowledge.

### Table 2

| Treatment conditions | N  | Pretest score | Posttest score |
|----------------------|----|--------------|---------------|
|                      |    | M     | SD  | M   | SD  |
| Experimental         | 24 | .56   | .16 | .76 | .15 |
| Control              | 20 | .54   | .14 | .64 | .18 |

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scores. ES for the comparison group who practiced wide reading suggested a small effect on vocabulary scores.

Discussion

This study was conducted to compare the effects of direct instruction in the use of the context clue strategy to infer meaning from context versus wide reading practices on the vocabulary knowledge of sixth-grade students identified as frustrated readers. The results showed that the proportion of correct answers on the CVT for students under both treatment conditions increased from the pre- to the posttest. As expected, the results indicated that the wide reading practices employed in the control condition made a significant contribution to students’ vocabulary. This finding is consistent with previous studies suggesting that wide reading promotes vocabulary growth and encourages students’ readings (Bamford, & Day, 2004; Brown, 2009; Chen, Chen, Chen, & Wey, 2013; Hedrick & Cunningham, 2002; Pikulski & Chard, 2005).

The current study does support the practice of providing a wide reading strategy to increase vocabulary among students who read at frustration level in middle grades schools. On the other hand, students in the experimental condition—who received an intervention focusing on context clue strategy taught using a direct instruction approach—showed significant gains in their vocabulary knowledge as measured by the posttest, following the instructional program. A follow-up ANOVA showed that the experimental condition outscored the control condition on the posttest scores. Students in the experimental condition demonstrated significantly higher outcomes in vocabulary knowledge on the posttest scores than the students in the control condition. The magnitude of the improvements in the experimental and the control conditions found $d = .42$ (indicating a medium effect) and $d = .20$ (indicating a small effect), respectively. A possible explanation for this finding may be the fact that the students participating in the experimental condition enhanced their ability to infer the meaning of unknown words from context, so that they likely had this ability when they encountered unknown words in context as they were reading. The findings of this study are consistent with those reported for context clues instruction interventions with students struggling with reading comprehension, which have yielded positive outcomes (Daalen-Kapteijns, Schouten-Van Parreren, & Glopper, 1993; Dole, Sloan, & Truhen, 1995; Goerss, Beck, & McKeown, 1999; Kermani & Seyedrezaei, 2015; Nash & Snowling, 2006; Nelson & Stage, 2007; Rinaldi, Sells, & McLaughlin, 1997; Soureshjani, 2011; Tomensen & Aarnoutse, 1998). All the results support that teaching students to use context clues to infer meanings from context is a powerful word-learning strategy that ensures a significant improvement in vocabulary development (Graves, 2006; Nation, 2008; Walters, 2004).

Implications for Research and Practice

Findings of this study suggest that instructional mediation focusing on using context clues can have a profound effect on increasing the ability to learn new words and to understand word meanings in context (Fukkink & de Glopper, 1998). The results indicate that the students receiving the context clue strategy instruction demonstrated significantly higher gains than the comparison group, which practiced a wide reading strategy with the same texts, in terms of knowledge of the words and understanding word meanings. The strategy instruction, taught using a strategy instructional model, helped students increase their proficiency in learning from context in a relatively short amount of time. The instructional program achieved acceptable or desired levels of success in ensuring a marked improvement in the vocabulary of students in the experimental condition (Walters, 2006). Students’ levels of word knowledge improved immediately following the instructional program. Providing such instruction has the potential to help students make gains in the vocabulary knowledge that accompanies subject-matter reading (Hall, 2005).

Given the huge number of words students need to learn from content-area textbooks in the middle grades, students need to learn word-learning strategies and use them independently during reading (Graves, Ringstaff, Li, & Flynn, 2018). The ability to infer meaning from context is arguably one of the most powerful strategies to teach word meanings for reading success in middle grades education (Graves, 2006). The findings from the instructional intervention described in this study lend support for teaching the use of context clues to infer meanings and thus to improve vocabulary knowledge to students with frustration-level comprehension in middle grades education. One challenge for teachers who attempt to use the context clues strategy in their own classrooms is the selection of reading materials that include natural or instructional contexts for difficult words, in order to encourage students to infer their meanings from this contextual information. This is because the use of context clues by itself is not always a reliable aid to word comprehension of the text. The context might not be pointed enough to
allow the precise meaning of a word to be predicted (Beck, McKeown, & McCaslin, 1983; Schatz & Baldwin, 1986).

To underscore the benefit of using the context clues strategy, content-area teachers may wish to vary the text materials they use to teach their students. Gains in mastering word-learning strategies have the potential to actively encourage greater growth in vocabulary, supporting the comprehension of reading materials (Graves, 2006). The study results were promising in terms of contributing to students’ ability to learn new word meanings from context. The results also confirmed that a small development in their ability to infer the meaning of unknown words can result in a sizable number of words being learned from context (Dole et al., 1995; Graves et al., 2018).

Results of this study suggest the effectiveness of context clues strategy-focused interventions that direct students to improve their ability to infer meaning from context as they are reading. Teachers can use direct instructional methods to help students acquire this strategy, which they can use to learn words they come across in texts they are reading, to support vocabulary development (Bintz, 2011; Dixon-Krauss, 2001; Graves, 2006; Greenwood, 2004; Harmon, Wood, Hedrick, & Gress, 2008).

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