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Interactive Word Walls: More Than Just Reading the Writing on the Walls

Word walls can be effective literacy tools that hold the potential for enhancing vocabulary learning with older learners when used in conjunction with effective instructional practices.

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As educators, we know that environment influences learning and, in particular, that classroom environments influence literacy development (Wolfersberger, Reutzel, Sudweeks, & Fawson, 2004). Studies provide evidence of the importance of print-rich environments in primary and elementary classrooms (Neuman, 2004; Neuman & Celano, 2001), and other research-based studies connect print-rich environments to student achievement (McGill-Franzen, Allington, Yokoi, & Brooks, 1999). These classrooms contain a variety of artifacts associated with print-rich environments—artifacts such as books, computers, charts, labels, reference resources, bulletin boards, posters, displays of student work, and word walls.

Middle-level and secondary students also deserve print-rich classroom environments. Methodology textbooks for literacy learning in the upper grades typically discuss the importance of classroom libraries (Readence, Bean, & Baldwin, 2004; Vacca & Vacca, 2005) and offer guidelines for organizing for instruction (Cecil & Gipe, 2003). From our own experiences in middle and secondary classrooms, we have observed some of the artifacts mentioned above, especially books, computers, posters, reference texts, bulletin boards, and word walls. However, while the presence of these artifacts of literacy learning is important, what teachers and students do with them is even more important. Cambourne (2000) argued that the artifacts are only valuable when students are actively engaged in meaningful tasks with the artifacts.

With Cambourne's message in mind, we wondered about one particular artifact—the word wall. Elementary teachers use word walls for different purposes, such as to display basic words, to show related words such as word families (e.g., words that end in *-ack*), and to showcase interesting words related to a current topic of study. Obviously, this instructional tool is valued highly in these grades. Word walls are also used in the higher grades in a variety of ways. Language arts teachers may display words that are challenging to spell. Mathematics teachers may use word walls to illustrate mathematical symbols, and social studies teachers may categorize important historical terms

for students to remember. Given the usefulness of this instructional tool for supporting word learning, we wondered about middle school students' perceptions of word walls and the ways in which word walls could effectively support vocabulary learning of older students.

The goals for vocabulary acquisition in older learners involve broadening and deepening word knowledge as well as helping students develop and maintain an awareness, interest, and motivation for learning new words—that is, promoting word consciousness (Scott & Nagy, 2004). The use of interactive word walls holds instructional potential for enhancing vocabulary learning as students engage in activities centered around the word wall—activities in which students explore, evaluate, reflect, and apply word meanings in meaningful contexts. As visible and concrete tools to facilitate discussions and expand students' use of targeted words (Brabham & Villaume, 2001), word walls are potentially powerful tools for supporting specific word learning objectives of middle-level and secondary curricula—Greek and Latin roots, prefixes and suffixes, inflectional endings to words, domain- and topic-specific words found in content areas, and words associated with particular themes.

Spurred by the possibilities inherent in the use of word walls, we first investigated middle school students' perceptions and understandings about word walls. What did they know about this literacy tool? Would they value its use or think that it belonged only in primary classrooms? To find answers, we interviewed students individually. We then designed a series of interactive, instructional lessons around a word wall to support vocabulary learning in a reading class. We begin by reporting on the study and the initial findings about students' perceptions of word walls and then describe the vocabulary instructional intervention. We conclude with a description of how students' perceptions of word walls changed, of student achievement results, and of what we learned about using word walls as focal points for interactive vocabulary instruction.

The Study

Participants were 44 seventh graders (63% white, 30% Hispanic, 7% biracial and Asian) in two sections of reading at a suburban middle school in south central Texas. Both sections were heterogeneously mixed groups, each containing three special education students and overall representing a range of reading abilities. All participants had the same teacher for reading. Twenty-three students in one section self-selected the words while 21 students in the other section continued with the regular vocabulary program. Students who self-selected words engaged in specific word learning activities related to the word wall. They participated in small-group and whole-class activities, including research-based instructional practices that highlighted multiple exposures to meaningful contexts beyond word definitions. Students in the regular vocabulary instruction section engaged in word learning activities taken from a commercial vocabulary workbook.

For six weeks, we collected and analyzed both qualitative and quantitative data. Qualitative sources were (a) preinterviews with both classes about word walls using an adaptation of Hoffman and Sailors's (2004) TEXIN-3 assessment tool for evaluating classroom literacy environments and postinterviews with only the word wall group, (b) artifacts from activities, and (c) field notes and audiotaped interactions between teacher and students and among students in small groups. We systematically read and coded the data into agreed-upon categories. Quantitative data sources included the vocabulary portion of the Group Reading Assessment and Diagnostic Evaluation (GRADE; AGS Group Assessments, 2001) that was administered as a pretest to both groups and the assessment results from six teacher-developed weekly tests. The weekly assessments included writing word definitions and responding to sentence prompts. For example, one definition prompt was "Define *hospitable*" while the meaningful-use sentence prompt directed students to "List one thing that shows someone being *hospitable*." During this six-week time period, each group worked with different sets of words except for the last set. To compare the different instructional frameworks, for the last round both groups worked with words selected by the teacher from the vocabulary workbook. Two weeks after the six-week intervention ended, the teacher gave both classes a delayed test over the last set of words studied by both groups. The test was in the same format as previous tests—writing definitions and responding to sentence prompts. The teacher did

not warn the students about the delayed test. We used the results of simple main effects analysis on the two delayed tests to determine if there were differences in what each group retained.

Findings About Students' Initial Perceptions of Word Walls

We first report the findings of students' perceptions of word walls using categories described by Hoffman and Sailors (2004). The interview categories contained questions about identifying the word wall and talking about its function, value, and usefulness. During the interviews, we showed each student a picture of a word wall (see Figure 1) while asking the interview questions.

Form and Function

When asked to identify the word wall, only 43.1% of students used the term *word wall* and approximately 12% could not identify the word wall. Other descriptors used by students were variations, such as pictures on the wall. Nonetheless, almost 60% of the students had a general understanding that word walls were for learning new vocabulary. Some students offered specific uses, such as to learn and remember words, to aid with spelling, to help with writing, and to review for a test. One particularly difficult question we asked was "How does the word wall help you with word meanings?" Apparently, this question surprised the students since over 50% were unable to articulate any response or felt that the word wall was not helpful in learning word meanings. Only 16% of the students

Figure 1 Word Wall Picture Used in the Interview

Note. Photo by Janis M. Harmon

stated that the word wall was only beneficial when they already knew the word meanings. Some even commented that the word wall helped to trigger their memory when they could not remember exactly how the word was spelled.

Use and Value

When asked who used word walls, the seventh graders readily responded that both students and teachers used word walls. Students used word walls for learning and teachers used them as teaching devices. In particular, students used word walls for studying, remembering, writing, and completing classroom assignments. The students felt that certain teachers, like reading teachers and social studies teachers, used word walls for presenting new terms and for helping students review previously discussed words. In regard to valuing word walls, we found that 80% of the students felt that they were an important classroom tool. One student stated that the word wall was particularly useful as a reference for words to use in discussion and conversations. The remaining 20% were either unsure of the importance of the word wall or did not value it, especially if they did not know the word meanings.

We were surprised that many students were not familiar with the term *word wall*, a lack of familiarity that may reflect the level of occurrence of this tool in upper grades. Nonetheless, most students responded positively about the importance of word walls and could envision how they might use them for reviewing and studying vocabulary, spelling words, and completing class assignments. Of particular note was the inability of students to respond to the prompt about how the word wall helps with word meanings. The students who did respond were quick to notice that the word wall in the picture was not all that helpful since there were no clues on the wall about the meanings. Some students felt that word walls were simply a display of words they were about to learn. These responses prompted us to consider how word walls could be used more effectively in middle-level classrooms. As a result, we developed a sequence of vocabulary lessons with the word wall as an instructional focal point. In the next sections, we provide the knowledge base for the instruction, a description of the instructional sequence, and the findings of the postinterviews and student achievement results on the teacher-developed tests.

Knowledge Base for the Instructional Design

The word wall instructional design is grounded in current theoretical and research-based knowledge about effective vocabulary instruction. Other critical components undergirding these instructional lessons include student engagement, social interaction, and motivational factors, such as choice and ownership (Gambrell & Marinak, 1997).

Effective Vocabulary Instruction

Over the past 25 years, research has broadened and deepened our understanding of vocabulary learning and teaching, some of which is particularly critical for the word wall instructional design. One aspect is what it means to know a word (Beck, McCaslin, & McKeown, 1980; Stahl & Fairbanks, 1986). Our knowledge of particular words can fall on a continuum: no knowledge, some knowledge, thorough knowledge. While having full, conceptual knowledge of a word is ideal for comprehension, sometimes even a general understanding of a term can keep comprehension intact. With this in mind, we approached this intervention with the realization that students participating in the word wall instruction would obtain different degrees of knowledge about targeted words.

Another aspect of word learning is the need for multiple exposures to words in a variety of contexts (McKeown, Beck, Omanson, & Pople, 1985; Stahl & Fairbanks, 1986). We embedded this facet in the lessons by having students engage in a variety of activities. In addition, students need to understand how and why some words are used in particular contexts and some are not. For example, contexts for the word *ravage* (defined as "to destroy, waste, ruin") might include villages being ravaged by an invading army or coastal areas ravaged by devastating hurricanes. If students believe that the meaning of this word applies to any situation, then we set them up for misusing *ravage* in contexts such as "ravaging a drawing by spilling a drink on it." Therefore, we were mindful of students' interpretations of word meanings and directed their

efforts toward appropriate contexts for the words they were addressing.

Still another facet of vocabulary instruction underlying the word wall lessons is associative learning—the notion of acquiring knowledge in varying degrees through associations made with our own existing knowledge and experiences. These associations are reinforced when we use visual images to represent new ideas (Sadoski & Paivio, 2004). The well-researched keyword method helps students remember word meanings by attaching a visual image to a word or word part (Pressley, Levin, & McDaniel, 1987). In our instructional design, we directed students to create associations in three ways—through color, symbols, and situations.

Vocabulary research has also shown the ineffectiveness of the ubiquitous practice of having students define words and then write sentences using the words. Studies clearly point to the limitations of using dictionary definitions as primary instructional tools for word learning (Miller & Gildea, 1987; Scott & Nagy, 1997). Students need to see how new words are used in rich, comprehensible contexts before generating their own contexts for the words. Furthermore, as Baumann, Kame'enui, and Ash (2003) asserted, using dictionary definitions alone will have minimal impact on students' reading comprehension.

Nonetheless, defining a word in ways understood by students and illustrating its use in a context are important first steps in instruction. But instruction must not stop there. Students must move beyond a superficial, definitional level of word learning to internalize new word meanings (Graves, 2006). To accomplish this, students must engage in higher levels of cognitive processing, such as critically analyzing, evaluating, and applying word meanings in meaningful contexts. Moreover, they need to have multiple opportunities to use new words in different contexts.

Active Engagement and Social Interactions With Word Meanings

The extensive research of Beck, McKeown, and their colleagues (Beck, Perfetti, & McKeown, 1982; McKeown, Beck, Omanson, & Perfetti, 1983; McKeown, Beck, Omanson, & Pople, 1985) provides important evidence for active engagement in learning new words. In what they called "rich" instruction, these researchers developed an instructional program in which students worked with words in semantic categories, studied meaningful sentence contexts, and applied words to new and different contexts—all of which exposed students to multiple, varied, and meaningful encounters with words. These efforts required students to think critically and deeply about word meanings and resulted in increased word learning and comprehension.

For the word wall instructional design, we developed a sequence of lessons modeled after the work of Beck and her associates to include students' active engagement with word meanings. The instructional design provided students with opportunities to actively manipulate and apply word meanings in various language modes, including illustrating, writing, presenting, viewing, and talking. Furthermore, keeping in mind the social inclinations of young adolescents and the well-documented research on the effectiveness of cooperative learning groups (National Institute of Child Health and Human Development, 2000), we organized the word wall instruction so that students worked in groups.

Student Choice

A final feature of the word wall instructional design is student choice—a powerful construct tied closely with intrinsic motivation (Cordova & Lepper, 1996; Reynolds & Symons, 2001). We included student self-selection of words in this project based upon the success of the well-known Vocabulary Self-Collection Strategy (Ruddell & Shearer, 2002), a teaching strategy that directs students to find words for the class to study and learn. Students then engage in teacher-facilitated activities that clarify, extend, and reinforce word meanings.

Word Wall Instructional Design

The instructional sequence included building background information about selecting words, introducing words, making connections with words, applying words to real situations, and presenting the words to the class.

Building Background Knowledge About Selecting Words

To prepare students, the teacher discussed how to select a word. She began by having students think about four levels of word knowledge (Baumann et al., 2003):

- Level 1: I have never seen this word.
- Level 2: I think I have seen this word, but I don't know what it means.
- Level 3: I have seen this word, and it has something to do with....
- Level 4: I know this word. I can use it in my speaking, reading, writing, and listening.

This discussion helped students think more metacognitively about their own vocabulary and the depth of their understanding about particular words. The teacher then presented the following guiding questions (Beck, McKeown, & Kucan, 2002; Graves, 2006) to help students make word selections:

- How useful is the word? Can you use the word in different situations or contexts?
- Is the word used frequently? Do you think the word can appear in different texts?
- Is the word's meaning easy to explain in everyday language?
- Does the word refer to something concrete or abstract?
- Does the word have multiple meanings?
- Does the word have a prefix, suffix, or identifiable root?

The teacher continued to reinforce the idea that targeted words needed to be useful words. The students also brainstormed where to look for interesting and unfamiliar words—books, magazines, the Internet, other sources of print, and television programs. As homework, the students found 3 words each and completed a chart with information about where they found the word, the context in which it was used, and the word's meaning in everyday language. During the next class session, the teacher placed the students in heterogeneous groups of four students each. The students discussed their selected words and decided on the top 5 words every student should learn. The 5 words from each group were written on the board while a group spokesperson supported the word choices. The students then voted on the top 10 words to study in depth. The teacher selected 2 words from the list to make a total of 12 words for the word study. The teacher divided the words so that each group worked with 2 words. For each of the following steps, the teacher modeled with the words displayed in Table 1 and then facilitated and supported students as they completed all tasks.

To introduce the words to the class, each student group selected a color to represent the word and defined the word in at least three different ways.

Introducing Words

To introduce the words to the class, each student group selected a color to represent the word and defined the word in at least three different ways. Students wrote the word on a flashcard and then colored the card with the color. For example, for the word *futile*, the group colored the card gray because they associated gray with moodiness or mourning. Another group chose the color green for the word *lair* because a *lair* is part of the environment. Using table-sized poster charts, the groups wrote the word, the color, and then three ways to define the term. This included brief definitions, examples, synonyms, and antonyms. For the word *futile*, one student group defined the word in terms of actions that were hopeless and not useful and then supplied appropriate synonyms and antonyms. For the word *lair*, another group connected their definition of the word to a wild animal's home, provided acceptable synonyms, and even used examples of different wild animals' lairs.

Making Connections With the Words

For the next round of tasks, student groups created symbols to represent their words and wrote sentence completions. The teacher explained that the symbol could be a simple drawing of an object or idea related

Table 1 Examples Used for Teacher Modeling

Instruction	Materials	Example
Introduce	■ Flashcard ■ Crayons ■ Poster chart	■ Word: adage ■ Color: brown ■ Rationale: Brown represents dependability. I can depend on an adage to help me through life. ■ Definitions: a saying about a general truth motto; maxim; proverb
Connect	■ Index card ■ Poster chart	■ Symbol: apple ■ Rationale: "An apple a day keeps the doctor away." ■ Sentence completions: My mother always quotes some adage about saving money every time I go to the mall and spend my allowance. The teacher told the students the adage, "Waste not, want not" because they were wasting class time and would have less recess time.
Apply	■ Index card ■ Poster chart	■ Situation: Applying for college admission (egg in basket) Accidentally letting go of a helium-filled balloon outside (spilled milk) ■ Sentences: Mark's teacher told him to remember the old adage about not putting all your eggs in one basket when he decided to only apply for admission into University of Texas in Austin. When Sonya's helium balloon blew away with the wind, her mother told her the adage, "Don't cry over spilled milk."

to the word. The purpose of the symbol was to help students remember the word's meaning. The groups drew the symbol on an index card to use on the word wall. The students then wrote a sentence completion on their poster chart. For the word *futile*, the group connected the symbol with their sentence completion. Their symbol was a math test with all the answers marked wrong with a big red X. Their sentence completion dealt with the futility of last-minute studying before a test because it would not result in permanent learning of a word. The group working on the word *lair* used a cave entrance as their symbol and wrote a sentence completion about a bear taking its prey to the lair to avoid sharing with other animals.

Applying the Word to Real Situations

For this task, the students had to think of a situation or context for using the word. They illustrated the situation on an index card to pin on the word wall and also wrote a sentence about the situation. For example, for the word *futile*, the group drew a picture of a person jumping out of an airplane without a parachute. Their accompanying sentence pointed out the futility of such actions. The situation for the word *lair* was Batman's cave with a sentence that noted how Batman could evade enemies because of his lair.

Presenting Words to the Class

Once the groups had completed all tasks, they presented the information to the class. They began by pinning the word on the word wall, explaining their color choice, and displaying their definitions on the poster chart. The group then showed the class their symbol, explained the meaning, and pinned it to the left of the word. For the next step, the group displayed their sentence completion and asked students in the class to offer suggestions of how to complete the sentence. They also shared their applications of the words in real-life situations. The student groups spent subsequent class sessions using the word wall to review and reinforce word meanings. (See Figure 2 for a snapshot of the completed word wall.)

Impact of Word Wall Interactive Instruction

To measure the impact of the instruction, we interviewed students in the word wall class using similar questions from the initial interviews. We also

Figure 2 Picture of a Section of the Completed Interactive Word Wall

Note. Photo by Janis M. Harmon

collected measures of student achievement from the weekly tests and the delayed test.

Student Interviews

Function and Use. For the interview, the students compared two word wall pictures: a word wall containing only the words and a snapshot of the word wall that they had created. When asked which was more useful, all students stated that the word wall with colors and symbols was more useful because it helped them remember word meanings. They elaborated with explanations that their word wall provided more details that hinted about the meanings of the words. For example, one student talked about how the colors triggered his memory about the word meanings, such as associating the color black with something frightening and the color red with anger. The majority of students also stated that the pictures sparked their brains about word meanings, provided explanations, and even presented contexts in which the words could be used appropriately. For example, for the word *tantalizing*, one student talked about how candy can be tantalizing, and for the word *ruefully*, another student associated the action of crying over someone's grave with the word's meaning.

While we never prompted students to use the word wall, we found that many did use it on their own. Some pointed out that the word wall was especially useful in reviewing for a test. It "refreshed" their memories about word meanings. Others told

us that the word wall was helpful when completing classroom assignments, especially those activities that contained writing tasks. For them, the word wall served as a resource for finding appropriate words to use. One student even commented that she had used some of the words on the state writing assessment. She had remembered the terms since the word wall was covered up during the test.

Valuing. When asked how they liked learning vocabulary using the word wall instructional format, an overwhelming majority stated that they enjoyed participating in the activities. Some particularly liked having "control" over their own learning, especially in regard to selecting the words. Some felt that by selecting their own words they would be learning new vocabulary and not reviewing words they had already acquired. Others noted that they worked harder because they had more responsibility in completing the activities. Still others liked to have a voice in what they were learning.

Students also valued the active engagement aspect of the instruction, especially working collaboratively in groups. Some commented about how they learned from one another when someone else in the group knew the word meanings. Others liked listening to the ideas of their peers and comparing responses. In addition, some even enjoyed playing the role of teacher in their word presentations and felt that it was a good learning experience for them.

Although each aspect of the instructional activities aimed for higher level thinking—defining words in different ways, associating colors with word meanings, thinking of meaningful symbols, and writing meaningful sentences—probably the most challenging, and least appealing, task for the students was to contextualize word use in appropriate situations. Yet, when we asked them to comment about this, the majority of the students made positive remarks about how they could relate to situations in their own lives where the words could be used appropriately. They talked about how these connections served to reinforce the word meanings for them. Nonetheless, there were some students who frankly expressed their dislike for writing and felt that the contextualized situations were just not all that fun.

Student Achievement Results

At the beginning of the study, we administered the vocabulary section of the GRADE (AGS Group Assessments, 2001), a standardized reading assessment, to establish that there were no significant differences between both classes. We then collected the scores from the six weekly teacher-developed tests containing two parts: writing word definitions and responding to meaningful use sentence prompts. For the last round of words, both groups studied the same words taken from the vocabulary workbook and then took the same test. We found no significant differences in scores between the two groups of students. Two weeks after the end of this last lesson, we administered a delayed test of the last set of words without warning the students. When we examined the scores from the delayed tests, we found that students in the word wall class achieved higher scores on the application section of the test. While there were no main effects for group membership on the delayed definition measure, there was a main effect for the sentence completion measure, with the delayed test of sentence completion favoring the word wall instruction group. These students demonstrated a sustained higher level of understanding of the word meanings and were able to successfully apply them to the meaningful prompts. This more long-term, deeper level of understanding of vocabulary is the goal of vocabulary teaching and has the possibility of influencing reading comprehension.

Final Thoughts

The word wall itself does not teach vocabulary. However, as we have seen, this literacy tool holds potential for enhancing vocabulary learning with older learners when used in conjunction with effective instructional practices, such as visual coding, context applications, collaboration, and self-selection. Furthermore, encouraging the use of targeted words in a meaningful context—orally; graphically; and interactively, what Beck, McKeown, and Kucan (2002) called "rich" instruction—is a valuable instructional activity for use with word walls in all classrooms. It is critical that students encounter and use target words in multiple contexts to improve recall, understanding, and subsequent application. Finally, giving students a

choice in what words they will learn enables them to feel a sense of control over their learning and serves to motivate and sustain their interest in vocabulary-related tasks. While student self-selection of words is one way to generate words to study, we also recognize and support the use of teacher selection of words. Ultimately, all of these instructional elements lead to active engagement with the word wall, and it is through this active engagement that word knowledge is valued, increased, and deepened. The interactive word wall intervention illustrates the efficacy of word walls as a literacy tool for use with effective instructional practices to support vocabulary learning and teaching in middle and secondary school classrooms.

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