



Processing Academic Language Through Four Corners Vocabulary Chart Applications

4 Corners Vocabulary Charts (FCVCs) are explored as a multipurpose vehicle for processing academic language in a 5th-grade classroom. FCVCs typically display a vocabulary word, an illustration of the word, synonyms associated with the word, a sentence using a given vocabulary word, and a definition of the term in students' words. The use of personal dictionary entries in the form of FCVCs created on 3-by-5-inch index cards allowed for the implementation of 4 key classroom activities—namely, a “fill in the square” review activity and 3 games: Heads Up, a modified version of Connect 4, and Bingo. FCVCs are identified as optimal tools for the instruction of English learners because of the high level of vocabulary processing required for their creation and their functionality as key elements of engaging vocabulary games.

“These words are tough!” exclaimed Richard, an English-speaking student finishing a science crossword puzzle at his desk as I (Sarah Smith) entered his classroom on my first day of practicum. As an English as a second language (ESL) intern at a public school, I assisted in a fifth-grade classroom comprising a majority of native speakers of English and Victoria and Katrina (pseudonyms), two students whose native languages were Vietnamese and Spanish, respectively. Soon after the start of my practicum, it became evident that Richard was not the only student who thought science vocabulary was challenging. In fact, Victoria and Katrina struggled so much with science vocabulary that they often had a hard time getting halfway through their science crossword puzzles and other in-class review activities. As an intern in their classroom, my job would be to create additional opportunities for Victoria and Katrina to process science-related vocabulary.

Academic vocabulary is critical and students' lack of familiarity with the academic vocabulary in test passages and questions often affects their academic performance negatively (Manyak & Bauer, 2009). The use of Four Corners Vocabulary Charts (FCVCs) is a powerful strategy to help English learners (ELs) master academic vocabulary (Echevarria, Vogt, & Short, 2013; Short, Vogt, & Echevarria, 2011; Vogt, Echevarria, & Short, 2010). FCVCs have been used across subject areas and grade levels to illustrate new vocabulary terms, develop personal dictionaries, and create print-rich classroom environments that display students' work. Students enjoy creating FCVCs, especially because the process of charting vocabulary words encourages them to make their own choices as they process such words.

From Traditional Dictionaries to FCVCs on Index Cards

Traditional dictionaries require the user's ability to handle substantial lexical information (Lew & Adamska-Salaciak, 2015) that English learners do not often possess. Traditional dictionaries are difficult for ELs because the wording of definitions often leaves students confused as they look up more and more words from such definitions. The lack of comprehensible context clues for understanding definitions and the absence of visuals contribute to ELs' frustration with traditional dictionaries.

Flip books with students' personal definitions of new terms help students glean meaning from the terms they write down (Vogt, Echevarria, & Short, 2010). For my work with Victoria and Katrina during science, I shared with them a small blank-paper book to create a personal dictionary of science-related terms. In hopes that the structure of my students' dictionaries would parallel that of a traditional dictionary, I originally suggested that Victoria and Katrina organize their dictionaries alphabetically. However, because my students were constantly adding new entries to their dictionaries, it became increasingly difficult for them to reference and incorporate new terms from the topics we covered. For example, life science terms such as *ecosystems*, *food webs and chains*, *photosynthesis*, and *adaptation* would ordinarily be organized in different sections of a dictionary, yet they were grouped together for instructional purposes. Clearly, we needed an approach that differed from the creation of a traditional dictionary. This approach would support the easy handling of the terms or entries and would also let us include new vocabulary words in an effortless fashion. Because FCVCs allow for easy access and organization of vocabulary words, they were deemed a better approach than traditional dictionaries for ELs because they also provide more context clues than a traditional dictionary entry by incorporating illustrations and origi-

nal use of the word to supplement the definition of the terms (Echevarria, Vogt, & Short, 2013). FCVCs would also allow us to organize our vocabulary words by topic for some activities and alphabetically for other activities.

After sharing my concerns about traditional dictionaries with my mentor teacher and ESL practicum supervisor, we looked for alternative strategies and decided that an approach using the Four Corners Vocabulary Chart would be a viable option for us. In essence, this approach would provide an opportunity for students to process new vocabulary words in multiple ways (through the writing of vocabulary terminology, illustrating vocabulary words, the writing of synonyms, the use of vocabulary words in sentences, and the writing of students' definitions). Charting vocabulary words allows for students' comprehension of word meanings as the words are categorized, illustrated, and connected to objects and context (Harrell & Jordan, 2012). We also decided to create our FCVCs on 3-by-5-inch index cards so our personal dictionaries would have multiple possibilities for practical use, organization, and review, as we describe in the following sections.

Implementing Four Corners Vocabulary Charts

Multipurpose Dictionaries

To create an FCVC, first the students wrote the vocabulary term on one side of an index card. Next, on the opposite side of the card, the students drew two lines dividing the index card into four squares or corners. In the top left, my students drew an illustration of the vocabulary term. In the top right they wrote one or more synonyms. In the bottom left, the students wrote a sentence incorporating the vocabulary word, and finally, in the bottom right, the students wrote a definition in the students' own words. Figures 1 and 2 show examples of FCVC cards.

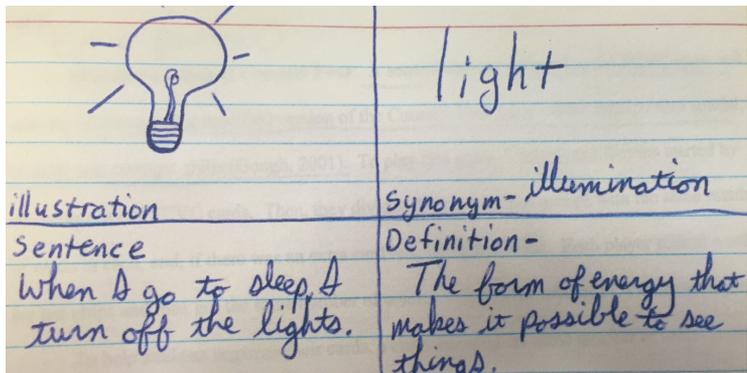


Figure 1. Light.

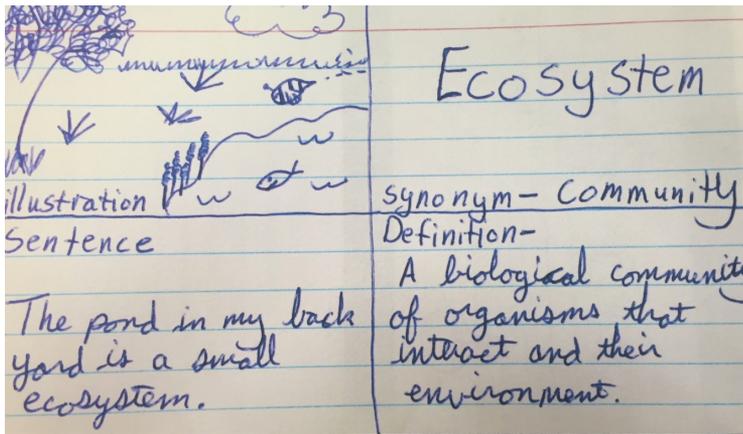


Figure 2. Ecosystem.

In developing FCVCs, students' levels of proficiency in the English language must be factored in. To modify the FCVC approach for students with beginning levels of English proficiency, students could use their native language to work on three corners of the FCVC, namely, the synonym corner, the sentence corner, and the definition corner. To facilitate students' work, dictionaries in the students' native languages could be provided. Beginner students, for instance, could write synonyms, sentences, and definitions in their native language, while high beginners and low-intermediate students could use their native language only for sentences and/or definitions.

Another differentiation for beginners, high beginners, and low-intermediate students could be the use of cognates in their native language for the synonym corner, in the cases that cognates apply. Cognates are words with shared meanings from common etymological roots (Goldenberg, 2008), for example, biology and *biología*. An available resource for the identification of Spanish and English cognates is the *Find-a-Cognate* online tool (Montelongo, 2010).

Processing Vocabulary Words

Because my students processed their vocabulary words by drawing illustrations, finding their corresponding synonyms, using the new vocabulary words in sentences, and writing down definitions in their own words, they were highly engaged in the activity. The FCVC approach allowed my students to reach a high level of familiarity with the academic vocabulary that they might not have achieved had they simply looked up words in a dictionary. As the follow-up activities

and games with FCVCs showed, my students were successful at internalizing the words they charted.

Perhaps one of the most important steps in the processing of new vocabulary is having students write their own definitions for vocabulary words. I believe Victoria and Katrina benefited from our FCVC dictionaries especially because they decided how to word their own definitions. Many of the official definitions in dictionaries were usually complicated to understand because such definitions often included unfamiliar words to explain vocabulary words. This does not always help ELs but hinders them further because they need to learn the definition of the words within the definition of the original word they looked up in the first place. By writing a definition using words they understood, Victoria and Katrina were able to comprehend the meaning of the academic terms in their dictionaries. As my students wrote their own definitions, a very helpful tool we used from time to time were the definitions for English-language learners from the online *Merriam-Webster's* dictionary. These definitions are written in simple language and often are shown right before the list of examples using the term in question for a given entry.

Organizing FCVCs

FCVCs lent themselves to multiple possibilities for organization of the vocabulary (alphabetically, by easier/more difficult terms, by content words [nouns, verbs, adjectives], by type of science, etc.). If my students had used a personal dictionary book, they would have been limited to organizing the words only alphabetically within the book.

Science vocabulary can be organized by the specific type of science, life or earth; alphabetically; or chronologically depending on what time during the school year the terms are learned. With the index cards, my students had the freedom to write down new words as they thought of them and then they could reorganize them as needed while studying. For example, if Victoria and Katrina wanted to study just life science, they would pull out all the life science vocabulary cards based on their knowledge of the terms. I was impressed by the way Victoria and Katrina would classify their vocabulary words by areas of science without the need of codes on the index cards. In other classroom scenarios, however, students could color code their index cards to categorize the vocabulary words for study. For example, a color dot could be placed both in the top right-hand square next to the synonym(s) and in the top right corner of the opposite side of the index card so the code shows on both sides of the index card, making

it easily identifiable. In language arts, for instance, green dots could be used for verbs, red dots for nouns, and blue dots for adjectives or adverbs.

The use of FCVC dictionaries on index cards rather than a personal dictionary book gives students flexibility in how they handle their cards. Students can keep their cards in an index card box or they can secure the cards with rings into a small dictionary or flip book for studying. Victoria and Katrina enjoyed punching two holes into the top of each card and securing all the cards together alphabetically. When we added more words to the stack, they simply had to pull out some cards to slide in the new words and then secured them all with the rings. The rings also held the cards together for transportation so that my students did not lose any in their backpacks or at home when they reviewed vocabulary.

Applications of the FCVC Personal Dictionaries on Index Cards

The FCVC personal dictionaries on index cards that Victoria, Katrina, and I used proved to be a versatile tool for teaching vocabulary because of this approach's potential for multiple applications. The next sections describe four applications I derived from the use of our multipurpose Four Corners Vocabulary Chart personal dictionaries.

Fill in the Square

Along with the sorting activities such as the one described earlier, I helped Victoria and Katrina review vocabulary by using a corner of a blank index card to cover up one of the four sections of a given Four Corners Vocabulary Chart. Then, I encouraged my students to "fill in" the covered space with a description of the corresponding illustration, a synonym, a sentence including the vocabulary word, or a definition in students' own words. Next, we provided feedback on one another's accuracy in our responses. This "fill-in-the-square" activity allowed me to assess which vocabulary words my students had mastered and which vocabulary words we needed to process further. Figures 3 and 4 show two examples of the fill-in-the-square activity for the same vocabulary term.

Vocabulary Games

Other FCVC personal dictionary applications I implemented with Victoria and Katrina were the Heads Up Game, Connect Four Game, and Bingo. The primary goal of vocabulary game activities such as these is to encourage intrinsic motivation and language acquisition (Lucht & Heidig, 2013).

Heads Up. To play this game, Victoria and Katrina took turns

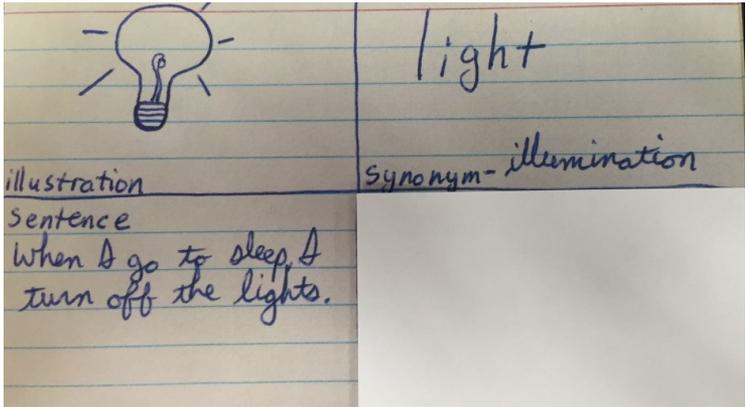


Figure 3. Fill in the definition.

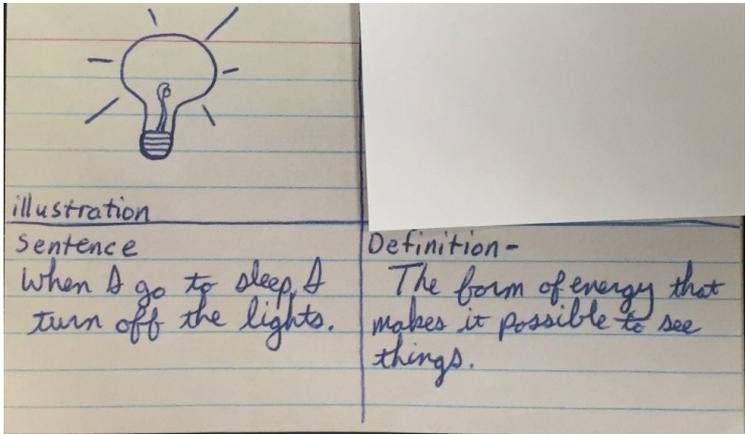


Figure 4. Fill in the synonym.

asking and answering questions until the student answering questions guessed a given vocabulary word. To prepare for the game, we used blank index cards and paper clips to cover the vocabulary words showing on one side of the FCVCs. Next, we piled up all FCVCs in a stack with blank sides up and we had Victoria pick an FCVC from the stack. She would hold up the FCVC with the blank side facing her while the other side showing the four corners (i.e., illustration, synonym, sentence, and definition) faced Katrina and me. While Victoria held up the FCVC to her head, Katrina and I gave Victoria clues about the “mystery” vocabulary word. For example, we would describe the illustration, name the corresponding synonym, say a sentence by replacing the vocabulary word with the word *blank*, or say the word’s

definition until Victoria finally guessed the vocabulary word in question. Victoria then kept all the vocabulary words she guessed. When she failed to guess the word, it was Katrina's turn to guess, so Victoria and Katrina would switch roles. In the end, the winner would be the student with the largest number of vocabulary word cards.

Modified Version of Connect Four. A second activity integrating the FCVC approach with my students was a modified version of the Connect Four game, which has been used in the elementary mathematics classroom and incorporates spatial, logical, and strategic skills (Gough, 2001). To play this game, Victoria and Katrina started by counting a set of FCVC cards. Then they divided the cards in two groups with the same number of cards in each, and, if there were an extra card left, they put it aside. Each player picked a color for her chips and got the same number of colored chips as the total of FCVC cards she had. To help students organize their cards during the game, a chart showing the same number of columns and rows was drawn on a large sheet of paper and then was placed on a table or the floor. This chart was used as a template for students to place their cards. While drawing the chart, it was critical to make each cell the size of an index card so the chart could be functional. Next, the "name of the card" (vocabulary word) was written on the back of each card and the cards were placed face down on the template sheet with the "name of the card" face up. Depending on our focus for the review, the students would describe the illustration they drew for that vocabulary word or describe a different illustration that would make sense, provide at least one synonym, say how they used or would use the vocabulary word in a sentence, or define the vocabulary word in question. Victoria and Katrina would often flip a coin to decide who would go first. Then, if Katrina went first, she would select a card, provide her answer, and if the answer was correct, she would flip over the card she had selected and would place her colored chip on it. Next, it would be Victoria's turn to select a card, provide the correct answer, flip the card over, and place her colored chip on it. If any student failed to provide the correct answer, the card in question would not be flipped over and no colored chip would be placed upon it.

As Victoria and Katrina took turns providing their correct answers, they tried to connect their chips in a row of four, whether horizontally, vertically, or diagonally, while preventing their partner from connecting four of her chips in a row, as is the case with tic-tac-toe. The student who was first in connecting four consecutive cards in a row would win the game. Figure 5 shows an example of a template for the Connect Four activity. Figure 6 shows an example of FCVCs on a Connect Four template.

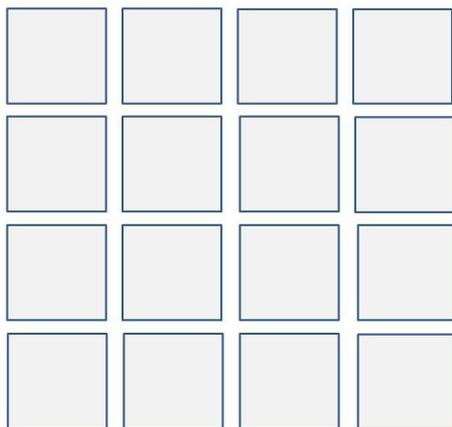


Figure 5. Connect Four template.

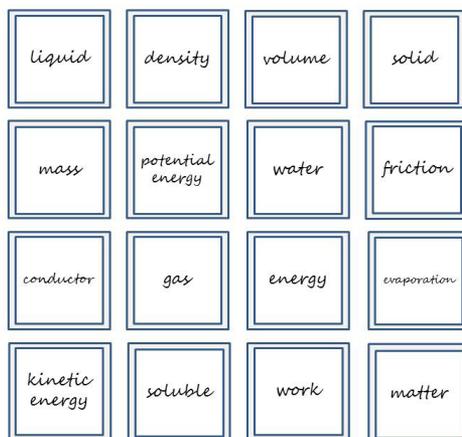


Figure 6. Connect Four activity.

Bingo. Bingo can be incorporated into practice activities for EL classroom instruction. Victoria and Katrina enjoyed playing Bingo. To play, they would each use a bingo chart with the word *BINGO* spelled out across the top and five to 10 numbers along the left side. The cells in the chart would need to be the same size as an individual FCVC card. Figure 7 shows an example of a bingo chart we used.

Victoria and Katrina would place their FCVC cards on their individual charts in no particular order and with the four corners facing up. If we wanted to make the game more challenging, we would cover one or more of the four corners on the FCVC cards using blank index cards cutouts and small paper clips so only one or two corners per

	B	I	N	G	O
1					
2					
3					
4					
5					

Figure 7. Bingo chart.

vocabulary word would show. Next, I would call a number followed by a letter (for example, “3B”) and my students would find the 3B spot on their bingo charts. One at a time, they would guess the vocabulary word on the back of the FCVC card in the 3B spot on their corresponding charts. The player who guessed her vocabulary word would flip the card over and put a chip on it. The winner would be the first player to have a full line of chips in a row horizontally, vertically, or diagonally.

Closing Remarks

Throughout my experience working with Victoria and Katrina during science, I discovered the flexibility that a Four Corners Vocabulary Chart (FCVC) on index cards can afford from an instructional standpoint. First, they allowed for the creation of personal dictionaries that students could use to process vocabulary words as they wrote the vocabulary terms in question, illustrated the meaning of terms, found synonymous expressions for the terms, used the key vocabulary terms in sentences, and used their own words to define the vocabulary terms. Second, Victoria and Katrina’s FCVCs on index cards helped us review different dimensions of our vocabulary words (illustrations, synonyms, use of the vocabulary words in sentences, and definitions) based on certain corners that we covered and by having my students “fill in” with missing pieces of information. Third, FCVCs on index cards inspired the use of three vocabulary games that Victoria and Katrina enjoyed: Heads Up, a modified version of Connect Four, and Bingo.

The repeated exposure to science vocabulary words through the multiple applications derived from FCVCs on index cards helped Victoria and Katrina develop a personal connection with the vocabulary words included in their personal dictionaries. FCVCs on index cards were helpful tools for the vocabulary instruction of the English learners in this scenario because the creation of FCVCs demanded a high

level of vocabulary processing and also because we used FCVCs in games that engaged students while they showed evidence of their familiarity with challenging academic vocabulary.

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