

Using the Jigsaw Strategy in the English Language Learner Classroom to Teach Content-Specific Vocabulary

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Amy Beard

University of West Georgia

Abstract

Multilingual learners (ML) at the secondary level come to the classroom with a variety of learning experiences and language capabilities. An obstacle ML students could face is learning the everyday usage of an additional language while simultaneously learning the academic and content language, which can cause a potential challenge in the classroom. Thus, teachers must be able to adapt their teaching pedagogy to assist MLs, which can prove to be challenging. Academic vocabulary and conversational language are two different aspects of learning a new language, with academic being the more difficult to obtain since it is not as tangible as conversational language. This teaching techniques piece explains a modified jigsaw vocabulary activity that was used successfully in a sheltered ML secondary science class; additionally, this strategy can be modified and used across content disciplines and grade levels, and abilities. This activity utilizes cooperative learning, graphic organizers, and peer-to-peer engagement to create an optimal learning environment for ML students.

Keywords

jigsaw, ML, ESL, vocabulary, genetics, cooperative groups

Wilcox and Morrison (2013) outlined four guiding facets for teaching vocabulary: experience, environment, exposure, and engagement (p. 53). In a direct instruction lesson, the guiding principles of experience and environment are easily addressed. To meet the principles of exposure and engagement, a different strategy should be incorporated. Tabiolo and Rogayan (2019) point out that “innovative, student-centered, and engaging teaching strategies will increase students’ performance in science” (p. 30). The modified jigsaw activity described in this paper was created for this purpose.

Strategy Description

The modified jigsaw activity was developed for a sheltered 9th-grade biology class composed of Multilingual Learners (ML) at WIDA Level 3 or higher. The purpose was to enhance students’ vocabulary retention at the beginning of a unit on genetics and the activity consisted of establishing cooperative groups, utilizing graphic organizers, and incorporating jigsaw learning.

Group Selection and Cooperative Learning

Student groups were selected based on the following criteria: class performance, ability to work with certain individuals in a group setting, and ability to stay on task. The students in this particular class were at WIDA Level 3 or higher. The academic and content knowledge necessary to be able to participate in this specific activity, would not be suitable for a student at WIDA Level 1 or 2

because of the amount of prior English language needed. Within each group, there was an equitable distribution of learning levels based on current grades in the class. There were three groups of four students. For the remainder of this paper, these groups will be referred to as Group A, Group B, and Group C. Tjandrawati (2017) noted that “the core in cooperative learning is the existence of positive cooperation and mutual help between members of a group” (pp. 152–153). The teacher chose cooperative groups that would foster a positive learning environment for all members.

When this activity was first implemented, it was to a class of 12 ML students, all from different backgrounds of ethnicity, education, and WIDA-level of English. This activity has since been modified and used in classes of more than 30 students; the teacher has concluded that regardless of class size, for this strategy to work cooperative groups work best when group size is limited to four or less; smaller groups allow for less distractions and places the importance of work on all group members equally. Ultimately, to benefit from cooperative learning, the students within each group need to work with one another; for students to work well the teacher needs to appropriately select groups to limit distractions during cooperative learning (Talebi & Sobhani, 2012).

Graphic Organizers

Each group was provided a graphic organizer because the vocabulary being introduced included words that were antonyms or groups of words with similar meanings yet were different enough in definition based on their context. For example: heterozygous, homozygous, genotype, allele, phenotype, trait, dominant and recessive. Specifically, the T-chart was employed to help students visually manage the differences between the content vocabulary and concepts (Pang, 2013). T-charts were made as shown below in Figures 1–6. The last row of each Figure in the T-charts gives the words or symbols that must be put into the appropriate categories by the groups of students. Each group received one paper with two of the figures below. Figures 1 and 2 were completed by Group A at the beginning of the activity. Group B completed Figures 3 and 4 and Group C completed Figures 5 and 6.

Figure 1

Contrasting of Heterozygous and Homozygous Genotypes

Heterozygous				Homozygous			
AA	Aa	aa	BB	bb	Dd	dd	Ff
GG	Hh	hh	ee	TT	DD	gg	

Note. Pairs of letters the same size are homozygous and the different sized pairs are heterozygous.

Figure 2*Contrasting Genotypes and Alleles*

Genotype		Allele	
AA	a	pp	B
G	Hh	h	ff
		bb	Dd
			d
			H
			T
			DD
			gg

Note. Genotype is represented by a pair of letters. An allele is represented by one letter.

Figure 3*Contrasting Genotypes and Phenotype*

Genotype		Phenotype	
brown eyes	bb	A+ blood	checkered chicken
AB blood	RW	roan cattle	ii
			I ^A I ^B

Note. Genotype is written as a pair of letters. Phenotype is a physical description of the genotype.

Figure 4*Contrasting Phenotype and Trait*

Phenotype		Trait	
blood Type	black hair	attached ear lobes	A blood
hair color	eye color	tall	height

Note. Phenotype is the physical appearance. A trait is a broad category to describe phenotype.

Figure 5*Contrasting Dominant and Recessive Genotypes*

Dominant				Recessive			
AA	Aa	a	BB	bb	D	dd	Ff
G	Hh	h	ee	T	DD	gg	

Note. Dominant genotypes have at least 1 capital letter and recessive genotypes have two lower case letters.

Figure 6*Differentiating Between Genotype, Phenotype and Trait*

Genotype	Phenotype	Trait
hair color	blue eyes	red hair
brown eyes	eye color	skin color
bb	BB	curly hair
		straight hair

Note. Pairs of letters belong to the Genotype. Words that describe actual physical appearance belong in the Phenotype. General characteristics belong in the Traits category.

Rounds 1–3: Group Interactions

Round 1

The initial groups worked on their individual sheets. Round 1 took about 5–10 minutes. Each person had their own sheet to fill out. Before the group could check their answers with the teacher, they were told to work together to determine if all members had the same answers. Once all members had the same answers, the group then asked the teacher for the key to the assignment. The group checked their answers and corrected any mistakes on all the members' papers. This is very important as it sets the stage for the remaining rounds.

Rounds 2 and 3

The groups were then split up and half of each group went to the table of another group. This happened for all groups, so that after the first rotation, each group had two new members. Two members from Group A went to Group B; two members from Group B went to Group C and two members from Group C went to Group A. Round 2 began with members of the new groups giving each other their sheets to work on. For example, the original members of Group A, who did not

rotate, gave a blank version of their sheet to the members of Group C who rotated into their group. The Group C members gave a blank version of their sheet to the Group A members. Each person repeated the process and completed their new sheets; conferred with their partner from their original group and ensured that they had the same answers. Then, when all four members of a group completed their respective sheets, they graded each other's sheets by marking incorrect answers. Each pair within the groups then had time to correct their answers and to ask questions of their peers if something did not make sense. The third and final round repeated the same as Round 2.

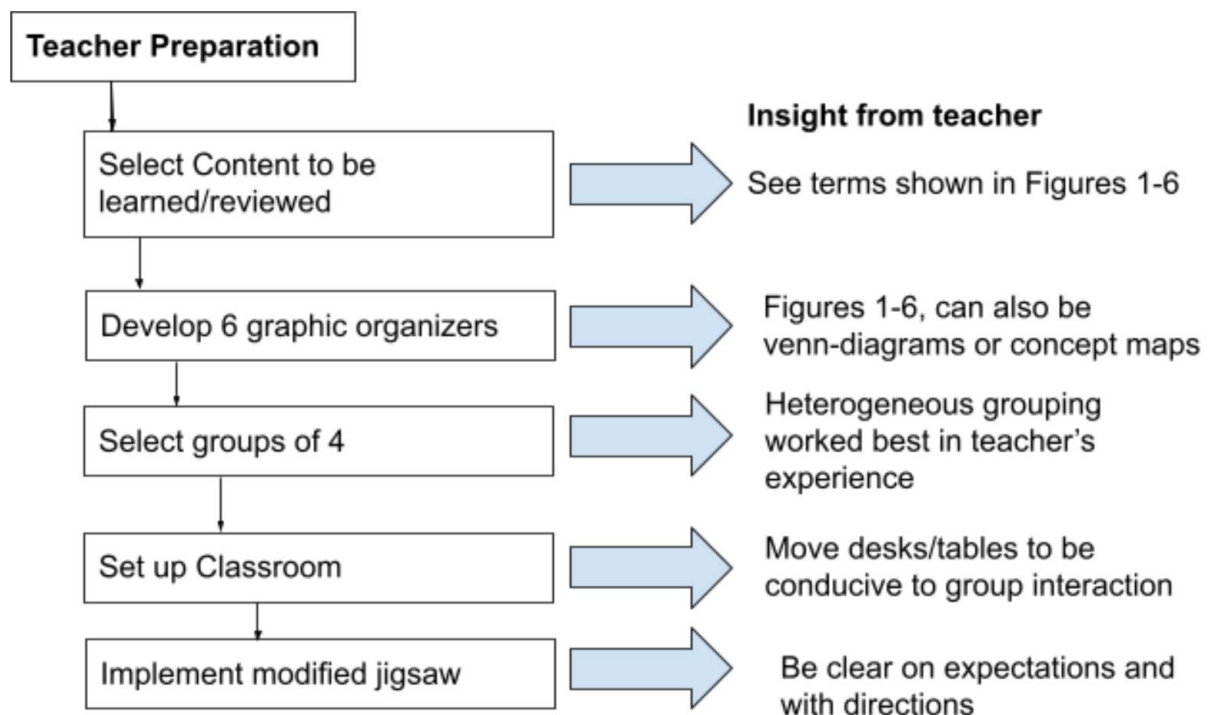
To alleviate some of the confusion that can happen with a new activity, the teacher used three different colored papers to correspond to Groups A, B and C. This helped the teacher to know which graphic organizer each group had and the students knew what colored key to ask for when correcting answers. The teacher also spent time explaining how the activity would work, the roles of each student in the group and that if one student chose not to fully participate, the strategy could not work well.

Practical Application in the Classroom

The benefit of using this modified jigsaw approach is that it can be used across all disciplines and levels of education. Below in Figure 7 is an outline of the steps the teacher followed in planning and preparing for incorporating this pedagogical approach into the classroom.

Figure 7

Directions to Implement the Modified Jigsaw



Conclusion

After completing this activity, the students were able to identify similarities and differences between the different words in the previous day's activity and were no longer caught up with an onslaught of new vocabulary. A contributing factor to the success of this activity was its design to have students interact with the vocabulary and one another (Ranney, 2012). According to Bautista and Castañeda (2011), learning another language requires interaction with the vocabulary by internalizing it and then using it. For the students to have fully learned their genetics vocabulary, the pedagogical practices of the teacher had to move beyond the simple direct instruction method. Creating this modified jigsaw activity allowed the teacher the flexibility needed to ensure that the students were learning at the appropriate level. Using the jigsaw method allows for teacher flexibility in grouping students and employing different pedagogical strategies (Woods, 2019).

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