Vygotskian Vocabulary Development in the Secondary Classroom

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Real concepts are impossible without words, and thinking in concepts does not exist beyond verbal thinking. That is why the central moment in concept formation, and its generative cause, is a specific use of words as functional 'tools.'

- Lev Vygotsky, Thought and Language (1962)

Words. Marks on a page, a screen, a billboard, or a T-shirt that represent some idea or concept that the "word-maker" deemed important. Ever wonder why a banana is a banana and not a watch? Simple really. We have all agreed, at least in general, that this long, curved, yellow fruit is to be called by the name "banana." If we were all to agree to call a banana a "watch," a banana would become a watch. Thus, the words we learn and the words we create are all dependent upon "we," that is, the culture in which we live.

Not that the English language we create is devoid of organization or underlying structure. It is not. For instance, words with the same root will often involve a form of the same meaning. Words such as controversy, reversible, aversion, and conversion all involve the morpheme "vers," meaning "to turn." The words do not all mean "to turn," but they all involve some type of turning (Burmeister, 1976).

So who are these "word-makers?" We are. If you discover a new chemical element, you

get to name it. If you conjure up a new concept or a novel way of looking at an old concept, you get to create a new word to represent that new concept. If technology creates a new device or instrument, it will need a name.

Children, for example, are wonderful word-makers. They make words we know, such as ball and cat, as well as words we do not know, such as ma (milk) and baba (basketball). It may be thought that a child learning the conceptual meaning and usage of the word "ball" is not creating; however the child is creating a meaning and understanding that is unique to that individual based on the child's prior knowledge and experience.

While word-making or vocabulary development are typically thought of as exploding around the age of 2 years, significant verbal development occurs throughout a child's and adolescent's academic life. According to Nagy and Herman (1987), children from the age of 7 through the age of 16 typically learn 3000 words per year.

Research has demonstrated the importance of cultivating this large vocabulary. Anderson and Freebody (1981, 1985) have indicated that a large vocabulary is positively related to such notable abilities as general intelligence, reading ability, reading comprehension, and school success. Further, it has been demonstrated that words influence and facilitate our cognitive processes, and thus our ability to understand our environment (Gathercole & Baddeley, 1993).

A review of the available research concerning the acquisition and development of vocabulary has revealed that there are several effective methods for teaching and learning vocabulary in the classroom. These methods include the contextual redefinition strategy (Readence, Bean, & Baldwin, 1992), the vocabulary self-collection strategy (Haggard, 1992), the use of possible sentences (Moore & Moore, 1992), semantic mapping (Johnson & Pearson, 1984), direct dictionary study (Gray, 1948; Roberts, 1956), the keyword vocabulary method (Pressley, Levin, & McDaniel, 1987; Pressley, Levin, & Miller, 1981), fast mapping (Carey & Bartlett, 1978; Rice, 1990) and the subjective approach to vocabulary method (SAV) (Manzo, 1983). Yet, overall, no single method has been demonstrated to be most effective for all students.

In light of this inability to discern or discover the method to use in facilitating vocabulary

development in the secondary classroom, a macroview of vocabulary development may be in order. This macroview is not concerned with the best method for presenting new vocabulary, but rather is concerned with the process that students go through in learning new vocabulary, regardless of the presentation methodology used. One such macroview is given by the Russian psychologist Lev Vygotsky (1896-1934).

Vygotskian Vocabulary Development

Vygotsky (1978) believed that students construct new knowledge, concepts, and skills through interacting with other members of their culture. This cultural interaction allows the students to learn the symbols that will later form the basis of their thought processes. Vygotsky used the term "sign" to represent these culture-based mental symbols (e.g., words, numbers, or images). The importance of vocabulary did not escape Vygotsky, "Words and other signs are those means that direct our mental operations, control their course, and channel them toward the solution of the problem confronting us" (Vygotsky, 1962, p. 106).

To understand the relationship between Vygotsky's ideas and a student's vocabulary development, four topics must be discussed. These include, (a) the relationship between words, concepts and thought, (b) the social origin of words and concepts, (c) the genesis of spontaneous and scientific concepts, and (d) the role of the zone of proximal development in the acquisition of words and concepts.

Words, Concepts, & Thoughts

Words and concepts, according to Vygotsky (1962), form a basic unit of thought for students. Students learn that a particular word represents a specific concept and once this relationship is understood the word is used in thought to manipulate that concept.
The importance of this relationship in the mental functioning of the adolescent was expressed by Vygotsky (1962), "The new significative use of the word, its use as a means of concept formation, is the immediate psychological cause of the radical change in the intellectual process that occurs on

the threshold of adolescence" (p. 108). Thus words, concepts, and thoughts are intricately intertwined.

As an example of this intricate relationship, consider a secondary student in a sophomore biology class. This student may learn about the role of lactic acid build-up in the production of muscular pain and soreness. This student may have experienced muscular pain and soreness before but did not have accurate vocabulary with which to discuss the pain. In this particular case, the student already had an understanding of some aspects of the concept of lactic acid build-up prior to being introduced to the new vocabulary. A brief synopsis of this word-concept-thought relationship may be as follows: After learning the term lactic acid (word), including how it is formed, how it affects the body, and how it is removed (concepts), the student is more able to think about the role of lactic acid build-up in her daily life and is better able to relate previously learned concepts (e.g., pre-workout stretching, muscular fatigue, regulated breathing) to the concept of lactic acid build-up (thoughts).

Social Mediation

The acquisition of these word-concept-thought formations, according to Vygotsky (1962), is based on social interaction. Vygotsky (1978) has stated that words and concepts are first experienced in a social setting and only later are they internalized so that they may be used in thought.

> Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first between people, and then inside the child. This applies equally to voluntary attention, to logical memory, and to the formation of concepts. (Vygotsky, 1978, p. 57)

Internalization, this transformation of an external or social event into the student's mental structure for later use in thinking, is central to a Vygotskian view of learning and development.

Continuing the biology class example, the introduction of the term "lactic acid" occurred within the social setting of a classroom. The student learned the term and its association to its concept through interacting with the teacher and with other students (if group work was involved).

The teacher was present to assist the student in internalizing the word and concept so that the student could later use both the word and the concept in directing her thinking.

Spontaneous and Scientific Concepts

The student's learning of the word "lactic acid" exemplifies one type of concept formation espoused by Vygotsky. Vygotsky (1962) theorized that there are two general concepts, spontaneous and scientific, and that each concept was learned in a different manner. Spontaneous concepts are concepts that are learned inductively. That is, students have concrete or everyday experiences from which they develop a concept. Only later do they attach a word to this concept. During the time between the student's actual experience with a concept and her learning a word to represent and organize this concept the concept lies at a less than conscious level. The student may understand the concept but will lack the words to adequately explain it.

For example, if the student in the biology class is an athlete and has experienced significant muscular pain and soreness in the past, then this student will already have developed a concept that relates exercise to pain and soreness. This student may have also noticed that muscular pain and soreness is present more for those less physically fit than those more physically fit. In this case, the student already understands the concept but is incapable of accurately discussing the concept at a conscious level since the student does not have a label or sign to use in manipulating this concept.

Scientific concepts, on the other hand, are learned deductively. Students are given words, definitions, and explanations of a concept, and then later they may or may not have concrete experiences with this concept. For a given time then, the student will understand the definition of a concept, but lack a true depth of understanding due to a lack of experience with the concept.

If the student in the biology class has never experienced muscular pain and soreness due to overexertion, then her understanding of lactic acid build-up must be abstracted from the classroom discussions and the teacher's explanations. In this case, the student has no experience with the concept and learns the label or sign first. After learning the new sign the student must then attempt to develop an understanding of the concept.

Thus, for spontaneous concepts the concept is learned first from experience and a word is later applied to this concept, while for scientific concepts a word is learned first, in the absence of any direct experience, and the concept is then developed based on explanations and words. According to Kikas (1992), "children can use [spontaneous] concepts better in everyday situations, without being conscious of their meaning, whereas they can define scientific concepts better, though they may be unable to use them in concrete situations" (p. 41). Vygotsky (1962) has stated that scientific concepts are what is typically taught in schools.

Zone of Proximal Development

Learning both spontaneous and scientific concepts takes place, according to Vygotsky (1962, 1978), within the zone of proximal development. The zone of proximal development is a construct developed by Vygotsky to represent a student's potential for immediate cognitive growth. The zone is defined by Vygotsky as that region between what a student can do by themselves (actual development) and what a student can do with assistance (potential development) (see Figure 1).

The learning mechanism within the zone is one of scaffolding. A student is provided with a learning opportunity that is beyond her level of current development, but is not beyond her level of potential development (i.e., a learning opportunity that is in the zone). The student is then given the assistance (social mediation) necessary to be successful. In ensuing encounters with this learning opportunity the amount of assistance is lessened as the student learns and develops. Ultimately, the student will need no assistance in performing the task successfully. This is the goal of learning and development within a Vygotskian (1987) framework, "What lies in the zone of proximal development at one stage is realized and moves to the level of actual development at a second. In other words, what the child is able to do in collaboration today, he will be able to do independently tomorrow" (p. 211).

The zone of proximal development provides the meeting ground for spontaneous and scientific concepts.

> The strength of scientific concepts lies in their conscious and deliberate character. Spontaneous concepts, on the contrary, are strong in what concerns the situational, empirical, and practical. These two conceptual systems, developing "from above [scientific]" and "from below [spontaneous]," reveal their real nature in the interrelations between actual development and the zone of proximal development" (Vygotsky, 1962, p. 194).

Neither spontaneous nor scientific concepts seems to be of a higher nature. That is, each is truly dependent upon the other. Spontaneous concepts develop within the zone through concrete experience in the absence of an organizing definition. Scientific concepts develop within the zone in the absence of concrete experience. With sufficient social mediation (teaching) a student's spontaneous concept and scientific concept should approach each other to the point that the spontaneous concept may be used to understand the scientific concept and the scientific concept may be used to explain the spontaneous concept. At this point a student has a fully developed concept that is understood at both the definitional level and the experiential level.

Continuing the biology class example, a student may have the spontaneous concept that when they begin to lift weights after a prolonged period of rest (several weeks), muscle soreness is to be expected. They may know this intuitively, but may not be able to explain it or give it a definition. At the same time the student may be learning in biology class the physical ramifications of a build-up of lactic acid in muscle tissue. If both the student's spontaneous concept and scientific concept are sufficiently well developed, the connection between the two will be made and the full concept of lactic acid build-up will be achieved.

In summary, one's spontaneous and scientific concepts are developed within one's zone of proximal development with the assistance of some more knowledgeable other. The development of these concepts results in these concepts being internalized and used to guide one's thought processes. This basic process of experiencing a concept socially, internalizing the concept, and using the concept to guide thought has some interesting implications for vocabulary development in the secondary classroom.

Implications and Applications

Vygotsky felt strongly that formal education was important in the development of higher mental functions, such as words and concepts. "Instruction is one of the principal sources of the schoolchild's concepts and is also a powerful force in directing their evolution; it determines the fate of his total mental development" (Vygotsky, 1962, p. 85). Vygotsky's views on the development of words and concepts, and their influence on thought, have significant bearing on the teaching of vocabulary. The following is a series of suggestions for teaching vocabulary to secondary students based upon the ideas of Vygotsky.

Create a *need* for the new vocabulary. Vygotsky emphasized that knowledge transmitted in formal educational settings should be necessary for life. One of the major failures of education is the teaching of "inert" knowledge, knowledge that has no usefulness. Vygotsky (1978) explained this in a general statement concerning the teaching of reading and writing.

> Teaching should be organized in such a way that reading and writing are necessary for something...Reading and writing must be something the child needs. Here we have the most vivid example of the basic contradiction that appears in the teaching of writing...that writing is taught as a motor skill and not as a complex cultural activity...Writing must be 'relevant to life.' (p. 117-118)

Useful or necessary vocabulary for secondary students may usually be garnished from students' own lives. A healthy rapport with students will often allow the teacher to anticipate necessary vocabulary. In addition, asking students to keep a running journal of words they encounter in life and in reading that they do not know will provide a plethora of relevant words.

Emphasize using the new vocabulary in social situations. For students to "own" new vocabulary and for vocabulary not be "inert" knowledge, the students must use the vocabulary. Providing situations in which the students must use the new vocabulary to convey meaning will foster greater understanding. According to Vygotsky (1981) "The word's first function is the

social function, and if we want to trace how the word functions in the behavior of the individual we must consider how it functioned formerly in social behavior" (p. 158).

Provide concrete experiences. Full conceptual understanding is dependent upon both spontaneous and scientific concepts. While scientific concepts are what is typically taught in school, there is a growing trend toward teaching spontaneous concepts. Spontaneous concepts are what is being taught when hands-on, concrete activities are being used in the classroom. These activities provide more interaction within the students' zones of proximal development and foster the uniting of students' scientific and spontaneous concepts.

Vygotsky (1962) believed that teaching only scientific concepts would lead to shallow conceptual development, that concrete experiences were necessary for the development of spontaneous concepts and a more accurate conceptual picture.

> Practical experience also shows that direct teaching of concepts is impossible and fruitless. A teacher who tries to do this usually accomplishes nothing but empty verbalism, a parrotlike repetition of words by the child, simulating a knowledge of the corresponding concepts but actually covering up vacuum. (Vygotsky, 1962, p. 117)

Provide activities that encourage mental manipulation. The goal of vocabulary development is the internalization of new words and their subsequent involvement in guiding thought. In order for this process to progress effectively and efficiently the new words and concepts must be necessary for thought. Activities should be provided that encourage the student to use the new words and concepts in problem solving as well as integrate the new words with previously learned concepts.

Teach both scientific and spontaneous concepts. Vygotsky has stated that formal education teaches primarily scientific concepts. However, for students to develop full and functional concepts that are readily applied to one's environment, one must combine both the

definitional aspects of the scientific concept with the experiential aspects of the spontaneous concept. Each concept type in isolation has a major limitation, only in tandem are they truly effective.

> The weak aspect of the child's use of spontaneous concepts lies in the child's inability to use these concepts freely and voluntarily and to form abstractions. The difficulty with scientific concepts lies in their verbalism, i.e., in their excessive abstractness and detachment from reality. (Vygotsky, 1962, p. 148-149)

Vygotsky (1962) believed that while scientific and spontaneous concepts developed independently, it was in their union that the student's gained full knowledge of a concept. Thus, teaching both types of concepts is necessary for a full understanding of any concept.

Expect prior scientific and spontaneous concepts in class. Kikas (1992) has demonstrated that even though formal education is a breeding ground for scientific concepts, students often enter schooling with certain scientific concepts already known. These scientific concepts may have been learned at home, on television, or through self-study. The importance of these previously learned scientific concepts is that they allow the student to progress more readily toward integrating these scientific concepts with their appropriate spontaneous concepts.

Since both scientific and spontaneous concepts are needed to fully understand a larger concept, a student's prior knowledge can be effectively utilized in the teaching of that larger concept. In addition, since students are bringing to class previously learned concepts, they already have an idea of how things work. Unfortunately, many of these previously learned concepts may be wrong. In this case, the teacher needs to understand the misconceptions and work to develop new and more accurate conceptions.

Realize that incorrect word usage is incorrect concept formation. Words are signs that represent certain concepts. If a student uses a word incorrectly, it is a good indication that the student does not adequately understand the concept being discussed. This misconception may be

due to an initially flawed learning of the concept, or it may be due to a change in the way that the student thinks. Vygotsky (1962) has stated, "Word meanings are dynamic rather than static formations. They change as the child develops; they change also with the various ways in which thought functions. If word meanings change in their inner nature, then the relation of thought to word also changes" (p. 217). Thus, consistent monitoring of a student's conceptual framework, through the words they use, is necessary to ensure proper mental development.

Strive for useful words and concepts. Useful words must be associated with useful concepts, which in turn are used for useful thought. Vocabulary development is designed to create viable word-concept pairings and ultimately to allow these pairings to influence thought. Vygotsky (1962) has stated that "a word without meaning is an empty sound" (p. 212).

The power behind a large vocabulary is its ability to promote reading and listening comprehension as well as clarity of thought and expression. Teaching vocabulary development in the secondary classroom is a vital component of not only language skills but also of thinking skills. The ideas and theories of Lev Vygotsky provide insight into both the need for vocabulary development and the basic processes involved in vocabulary development.

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Figure 1 - The dynamic nature of the zone of proximal development is represented by the zone moving past the task to be learned. Early in learning a student will require much assistance in accomplishing a task that is in the student's upper end of their zone. However with practice and understanding the student's zone will move, as the result of cognitive development, in the direction of the instruction. Later in learning the student will be able to accomplish on their own what they were only able to accomplish before with much assistance. (Note that the degree of difficulty of the task to be learned remains constant while the skill of the learner increases.)