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## **Reflection and Cognitive Strategy Instruction: Modeling Active Learning for Pre-service Teachers**

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*Reading methodology courses, like other courses in college, are often one-dimensional when it comes to instructional delivery systems. Too often, "teacher talk" that elicits far too little reflection prevails. This practice can be changed with activities calling for students to construct knowledge from their experiences, thus following basic tenets of constructivism. The purpose of this article is to discuss how pre-service teachers can be taught to think beyond strategies in methodology and reflect upon language itself. Three instructional strategies - semantic feature analysis, fictitious writing systems activities, and nonsense story analysis - are examples of ways college professors can get students to reflect upon the intricacies of language and thought processes relating to reading and language arts. We discuss how these strategies can help move classes away from lecture-oriented formats that call for too little reflection and integration of students' experiences and knowledge to formats that actively engage students in learning.*

IN COLLEGES OF EDUCATION courses preparing America's future teachers, the dominant approach to teaching, can mirror passive instruction often found in other disciplines, despite education professors' own admonitions to make learning active and reflective, to engage students creatively, and to build on students' experiences. Teacher educators lament about students who do not use what they learn in their foundations, methods, and/or field experience classes, but who slip into a more traditional approach of teaching often oriented toward "teacher telling." The question we ask is simple: Should teacher educators practice what they preach and engage students in making learning an active process, putting these students in situations where they must reflect on teaching and learning? If yes, then what can reading and language arts educators do to move away from the passive mode of "teacher telling" to have prospective teachers actively engaged in learning?

The purpose of this article is to illustrate how reading/language arts methodology professors can more actively engage students in learning concepts and strategies in their courses. Several strategies will be discussed to illustrate how reading and language arts methodology courses can be more active and reflective than they have been traditionally. These instructional strategies, following basic tenets of constructivism, have been tried in our classes and have proven successful in building on what students already know.

Constructivism is the foundational theory for the instructional strategies that will be discussed. Marlowe and Page (1998) explain constructivism by saying that:

The main proposition of constructivism is that learning means constructing, creating, inventing, and developing our own knowledge. Others can give us information, we can find information in books, and we can get information from the media, but as important as information is—and it is important—receiving it, getting it, and hearing it does not necessarily equal learning. Learning in constructivist terms is:

- both the process and the result of questioning, interpreting and analyzing information
- using this information and thinking process to develop, build and alter our meaning and understanding of concepts and ideas
- integrating current experiences with our past experiences and what we already know about a given subject. (p.10)

Thus, constructivism forms the theoretical underpinnings of interactive learning and cognitive strategy instruction (Graves, Juel, & Graves, 2001; Harris & Pressley, 1991; Raphael & Englert, 1990). As Kauchak and Eggen (1998) state, "Learners construct their own understanding rather than having it delivered or transmitted to them" (p. 9). These tenets are based on the social learning theory of Vygotsky (1962), which proposes that students acquire new knowledge through meaningful interactions with other people. Vygotsky emphasizes the social, contextual, and cultural nature of learning and considers cognitive development to be the result of social interaction within the environment. The key principle in Vygotsky's (1978) theory, the zone of proximal development, is defined as "the distance between actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 76). According to this principle, students engaged in activities that are too difficult to complete independently will learn best when their learning activities are mediated by a more knowledgeable individual (Gavelek & Raphael, 1996). Social engagement is an integral component of constructivist-based instruction. Tovani (2004) emphasizes the importance of social interaction in her explanation as to why she has students work in small groups. She points out that small group discussion "stimulates higher levels of thinking. . . encourages articulation of thinking. . . helps students remember. . . allows students to make connections . . . [and] see different perspectives, as well as promotes deeper understanding"(p. 90).

The five basic operating elements of constructivism are (Zahorik, 1995):

- activating prior knowledge
- acquiring knowledge
- understanding knowledge
- using knowledge
- reflecting on knowledge

It is the reading/language arts professor's responsibility to incorporate these operating elements into the design of instruction for pre-service teachers.

The following are three examples of such instructional strategies to promote active learning and reflection in our methodology courses for reading and language arts pre-service teachers.

### **Strategy 1: Semantic Feature Analysis (SFA)**

Semantic Feature Analysis uses a multi-dimensional matrix to focus students' attention on differences and similarities between words that fall into a specific category. For example, words that identify means of transportation (e.g., bicycle, jinrikisha, Conestoga wagon, automobile, airplane) might be compared in a matrix where categories of fast speed, fuel propelled, people propelled, large, small, many passengers, and road travel are examined. Using a matrix with the five means of transportation above on one axis and features to be compared on another, students would use a clarification process among the terms/features by employing their prior knowledge and marking an "x" or check mark where terms and features intersect. Where features are not known, a question mark would be inserted, perhaps to be replaced with an "x" or check mark after appropriate explorations have occurred. While the more common modes of transportation (bicycle, automobile, and airplane) might lend themselves to easy comparisons, Conestoga wagon, and especially jinrikisha (ricksha or rickshaw used by those outside Japan, the country of origin), would conceivably call for further explanation.

The expansion of various conceptual categories of schema, the mental network of known knowledge that helps with extended comprehension, is a value of semantic feature analysis (Anders & Bos,

1986; Johnson & Pearson, 1984; Pittelman, Heimlich, Berglund, & French, 1991; Vacca & Vacca, 2005). Semantic feature analysis synthesizes schema theory with practical instructional strategies. Schema theory advocates that knowledge is organized into units known as schemata. Schemata also provides information as to how knowledge is used (Rumelhart, 1980). As students learn, new concepts are linked and organized according to their relationship to pre-existing schema. A form of scaffolding is involved in helping make transitions from known to unknown knowledge. Scaffolding, a key component of effective vocabulary instruction and schema development, provides links and connections that occur only when the existing knowledge is stable, discernible from other, pre-existing knowledge, and directly relevant to the new knowledge (Ausubel, 1963). Through scaffolding, teachers initiate interactive strategies that teach students *how* to learn. As prior knowledge is activated, new concepts are developed through teacher questioning as well as self-questioning strategies, all of which are key constructive components of semantic feature analysis.

For semantic feature analysis to work effectively, content of the activity must be constructed in such a way that there are presumably both known and unknown factors. If content is too readily known, the activity becomes a *recall* activity rather than a *reflective* activity. Going back to the example given on means of transportation, the not-so-common modes of transportation (Conestoga wagon and jinrikisha) would lead to a greater degree of reflection and self-questioning than would the other forms of transportation listed. Another modification of semantic feature analysis that can be made with more mature students (in this case, college students taking a course in content area reading), is to let them help with development of the comparative features.

In a reading class where this activity took place, officially entitled "Supervision and Instruction for Secondary Reading," the main objective of a particular lesson was not just to teach students how to implement the SFA strategy, but rather to illustrate how the strategy leads to reflective and active learning. The professor accomplished this objective by purposefully leading students through the completion of an SFA. Consequently, the students' learning expanded far beyond what would

occur in a situation where the strategy is merely explained, with one or two examples shown.

For this particular lesson, we carefully selected content and focused on comparison of two birds, the owl and the dodo. We placed students in groups of three. Small groups are an important component of reflective instruction. We asked students to review and analyze what they knew about "birds of prey," beginning with a definition for this term and then progressing to an identification of common birds of prey. The discussions in each group were highly engaging and often focused on being precise, such as when participants felt the need for the agreement on the scientific definition of "birds of prey."

Each group completed a semantic feature analysis matrix, leading to a composite matrix (see Figure 1). In general, as anticipated by the instructor, the common features of *owls* were readily known, although this was not the case for the long-extinct dodo. This lack of knowledge about the dodo easily led to new learning since the juxtaposition of pre-existing knowledge of the two species of birds made them excellent subjects for learning about the use of semantic feature analysis. The diverse utility of a semantic feature analysis is readily illustrated when the relationships between word concepts are not easily distinguishable (Nagy, 2000; Pittelman et al., 1991).

The features on the matrix begin with those relatively easy for students to identify. All birds have feathers, thus it is most logical to list this feature first in the matrix. Likewise, it can be expected that students will know that owls are nocturnal creatures and have hooked beaks, yet these particulars may not be known about the dodo bird. These two characteristics opened the door for discussion and led to active engagement in learning more about the remaining features in the matrix. As groups moved to the increasingly unfamiliar features, they consulted available reference materials provided in the setting or available elsewhere (discussed later) in order to complete the matrix. Some students conferred with members in other small groups and, in the process, increased their knowledge.

Figure 1

*Semantic Feature Analysis*

Features Bird											
	Feathers	Nocturnal	Razor-sharp talons	Hooked beak	Bird of prey	Wide wing span	Quick movements	Nests on the ground	Multiple habitats	Binocular vision	Extinct
Owl	➡	➡	➡	➡	➡	➡	➡	?	➡	➡	†
Dodo	➡	†	†	➡	†	†	†	➡	†	†	➡

Code: ➡ = Yes

† = No

? = Don't know

During the completion of the matrix for the semantic feature analysis, the professor encouraged students in each group to explore how vocabulary development took place, to clarify concepts, to raise questions, and to find resources that could answer questions. The professor encouraged these investigations by using specific descriptors such as “razor-sharp talons” and “wide-wing span.” These descriptors led to much discussion with students easily reaching the conclusion that descriptions such as “wide-wing span” reflected more than simplistic



adjectives of large, short, weak, and so on. One student even quipped, "What we need here is the wing span of the pterodactyl (purported to be 23-30 feet)!" Another group member responded with the reminder that this prehistoric creature was a flying reptile rather than a bird.

The discussions that took place during the completion of the matrix led students in the class to discuss the significance of other values of completing the semantic feature analysis on the *owl* and the *dodo*. Students learned two features prompting them to see cause and effect relationships: *dodos* were slow and clumsy creatures, characteristics that led to the demise of this bird in the seventeenth century, and *owls* are quick with their movements, very quiet, and can attack without alerting their prey by sound. Tovani (2004) points out that "good readers use talk and collaboration with peers to extend their thinking about text." (p. 98) The students experienced this truth firsthand as they acknowledged how such discussions expanded schema development and provided authentic opportunities to practice listening, speaking, and higher-order thinking.

To address the feature "nests on the ground," we intentionally inserted a "?" into the space for the owl. According to the matrix's coding system, this symbol indicates an uncertainty as to whether this is a characteristic of an owl. The purposeful use of this symbol created more discussion as well as a catalyst for students to explore the wide array of differences that sometimes exist in the habits of animals within the same groups. Through self-scaffolding research, students learned that *dodos* did, in fact, build their nests on the ground. Students initially were tempted to indicate that *owls* do not build their nests on the ground. However, student-initiated research revealed at least two species of *owls* that *do* build their nests *on* the ground, Snowy Owls and Short-eared Owls, and at least one species, Burrowing Owls, that build their nest *under* the ground. The next feature, "multiple habitats," provided a natural continuation of this discussion. If the teacher-educator so desired, discussion could be extended to include the vocabulary of geographical features, such as the term "climate."

Semantic feature analysis is a learning strategy that is flexible and can be used easily as a springboard to cross into other academic disciplines (see Figure 2). Students identified this flexibility as they

moved across the matrix to the feature “binocular vision.” Owls only have forward facing eyes and thus do not have peripheral vision. Therefore, to see to their right or to their left, owls must completely turn their heads to that direction. This is an opportunity to integrate vocabulary related to mathematics by exploring owls’ ability to turn their heads 180 degrees in either direction.

This integration of new knowledge is further extended with the feature “extinct.” By reflecting upon previous features, students’ comprehension levels continue to expand as they discuss why dodo birds are extinct. Through this feature students can actively identify the interdisciplinary connections by discussing the time period of dodo bird extinction, approximately 1681, and by connecting this extinction with other important events occurring at that time in different parts of the world. History can be used to help elucidate “how” the demise of the dodo occurred through man’s introduction of new species, such as dogs, and through the hunting of the bird. Science can then be used to link the past to the present through a discussion of recent discoveries of dodo DNA that suggest that the extinct bird, whose scientific name is *raphus cucullatus*, was a member of the pigeon family.

The final feature presented in the matrix is “important to the ecosystems.” As with the “multiple habitat” feature, students can identify the opportunity to extend vocabulary instruction into the areas of geographical features and biology terminology. For example, dodo birds lived on the island of Mauritius, located off the east coast of Africa. Soon after the dodo bird’s elimination from the island, the Mauritian Calvaria tree faced extinction because it no longer had the dodo bird to help spread its seeds. This information introduces geography-based vocabulary such as “island” and “continent,” as well as biology-based vocabulary such as “germination.”

As students moved through the matrix, inquisitive discussion continued among and within the small groups. This discourse was anchored by numerous vocabulary resource materials, such as books and web-based information about owls and dodo birds, and fueled by the students’ desires to connect familiar concepts with unfamiliar terms and to communicate these new constructions with one another. As groups

completed the analysis grid and identified each bird's characteristics, the professor continually provided the students with resources to help them locate unknown information and "scaffolded" as needed, thereby encouraging active engagement.

To carry out the semantic feature analysis on the *owl* and the *dodo*, the professor exposed students to a wide variety of resource materials that they used with a great deal of enthusiasm. The resources (found in Appendix A) consisted of children's books, video resources, and web-based resources. Some resources were available when the students completed the semantic feature analysis, some additional web materials were available on the Internet for each individual who had access to a computer, and some materials were available in the resource center in the college where this course was taught. Students in the reading class easily grasped the significance of having a variety of materials available for students whom they would one day teach. They could easily see how use of such materials could help students not only build on their knowledge of birds but also greatly extend learning in an engaging atmosphere.

We evaluated the involvement of students in completing the semantic feature analysis on the *owl* and the *dodo* in three ways. One obvious method was to note the participation in the group construction of the matrix used in this activity. The professor observed each student in the class to be totally involved in the activity. The professor in the class mentally contrasted this level of involvement and the learning that took place with past classes taught where semantic feature analysis had only been explained and/or discussed in class. While our experiences indicate that showing and discussing a semantic feature analysis matrix almost always sparks some interest, the interest as well as retention of information does not compare to the activity where students in groups created and discussed the matrix we have shared.

Students' comprehension of the strategy was also evaluated through the course's final examination with an applied question. This question is shown in Appendix B. On this question, students did exceedingly well. With a focus on understanding, the professor of this class was quite pleased with the depth of responses to this type of question rather than

administering three or four multiple-choice questions about semantic feature analysis.

The professor also evaluated the learning of semantic feature analysis through a questionnaire distributed to the students a year after they had been enrolled in the class. In response to the questionnaire, one student wrote that she had done a semantic feature analysis with her students contrasting Iraq, Afghanistan, and the United States. She used features such as religious beliefs, government, lifestyle differences, and recent wars. This same teacher stated that "SFA helps eliminate some of the confusion—because it constantly brings students back to the familiar." Two other teachers who design in-service programs reported that they had introduced semantic feature analysis to teachers who did not know about this technique.

Time would not permit every reading/language arts strategy to be taught in the college classroom as semantic feature analysis was taught in the classroom discussed here. However, other strategies that might be introduced in a more traditional way could be contrasted with the process used in teaching semantic feature analysis. One such strategy is semantic mapping or webbing, a strategy that uses a visual or graphic display to show the relationships among words and helps categorize words (Collins & Cheek, 1993). An example of this strategy is seen in Figure 2, where a semantic map of the dodo is shown. Again, Zahorik's basic elements of constructivism identified earlier (activating prior knowledge, acquiring knowledge, understanding knowledge, using knowledge, and reflecting on knowledge) could be discussed in the contexts of constructivism in operation and expanded learning that reading/language arts teachers should constantly strive for with students in the K-12 setting.

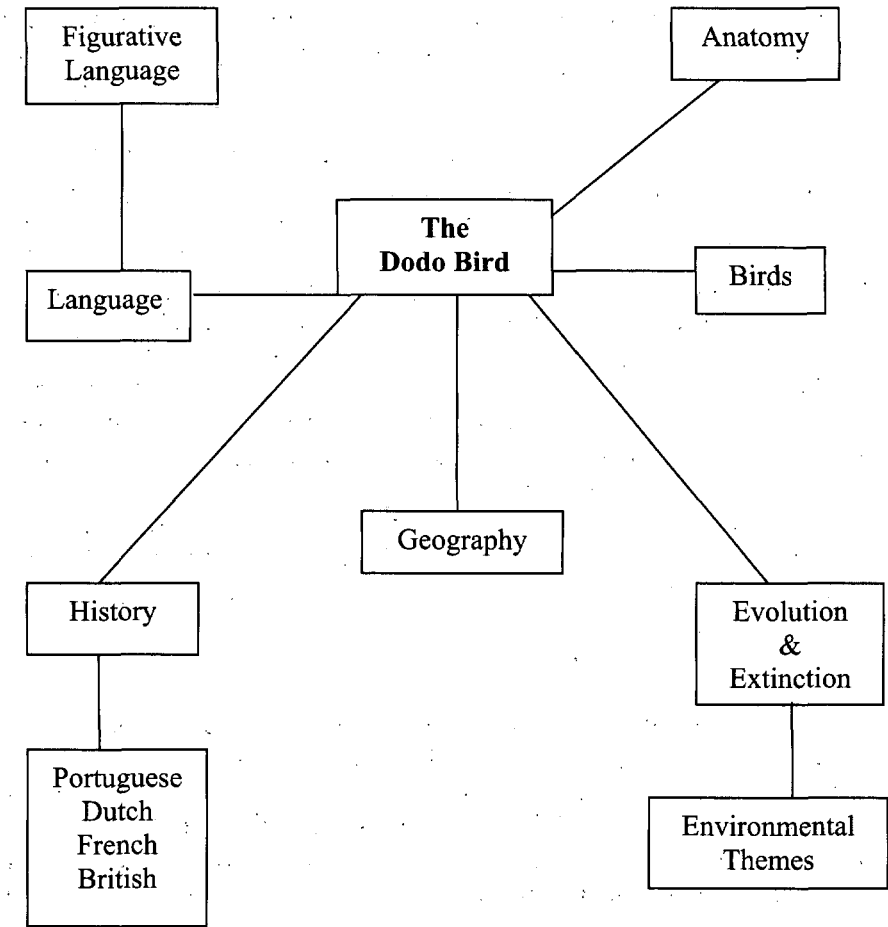
### **Strategy 2: Fictitious Writing Systems**

In both reading and language arts methodology courses, one of the authors of this study has long used a fictitious writing systems group activity to help students (especially undergraduate students) better understand the nature of different writing systems that evolved over time in various parts of the world. In this activity (see Figure 3), four different writing systems are presented. One group uses a system in

which the symbols represent words and concepts. The second group uses a system where symbols represent syllables. The third group presented in the activity uses symbols to represent sounds or phonemes (with and without a one-to-one relationship between phoneme and grapheme). The fourth group uses a system that is similar to another group's but still includes some distinguishing features.

Figure 2

*The Dodo Bird Across Disciplines*



The discussions for this activity never fail to elicit questions about ways to change our alphabet. “Why can’t we have a unique symbol (grapheme) for each of the forty plus phonemes used in our writing? Wouldn’t it be easy to add letters to our alphabet? When words came into use in the English language, why weren’t the symbols used for the sounds in the words changed to the way the sounds were already spelled in English, such as in the French word ‘beau’?”

This constructive activity meets several reflective-based objectives. First, it helps prospective teachers see what children face when they are trying to read symbols that are new to them. Second, it leads students to a better understanding of the alphabetic principle where sounds (not words or syllables) are represented by symbols. It also leads to a better understanding of our own writing system (alphabetic). Finally, it illustrates how some countries use a logographic system (symbols for words/concepts), while others use primarily a syllabic writing system (symbols for syllables). For example, each written character of Chinese represents a unit of meaning while “in syllabic writing systems, such as kana in Japanese and Sequoyah’s Cherokee syllabary, each written symbol represents a syllable” (Peregoy & Boyle, 2004, p. 110). This activity usually takes about 30 minutes for small group discussions, followed by about 15 minutes for a large group discussion of the four points identified above.

### **Strategy 3: Nonsense Stories and Words**

In both reading and language arts methods courses, nonsense sentences and stories are appropriate for helping students see and reflect on the various systems (phonological, morphological, and syntactical) in operation in our language. Students who are quite skilled in using their language sometimes are not aware of the various systems that operate together to make language functional. One of the authors of this study uses the nonsense story found in Figure 4, “Going Lelling,” to promote reflection on the systems in operation in a language. While college students cannot initially talk much about language systems in use, they can rather easily talk about systems in the body (circulatory, digestive, respiratory, and so on) that operate for keeping one alive. The contrast of body systems and language systems is made to:

- identify what is meant by “systems”
- develop the idea that different systems work together for a common purpose

“Going Lelling” is usually presented to students with questions such as: “What did the brimpy yob do?” “Where did the brimpy yob go lelling?” “Who did the brimpy yob meet?” “Why do we pronounce the word *lelling* as if it rhymes with *telling* and *selling*?” “What is the relationship among the words *lell*, *lelled*, and *lelling*?”

Students can, to a point, tell what the brimpy yob did and where he did it because of the way syntax is operating as a system in our language. Likewise, students pronounce the nonsense words in this story rather accurately because of the phonological patterns (or visual graphophonic cueing system) in our language. Students also can tell about the relationship among the nonsense words *lell*, *lelled*, and *lelling* because of the way the morphological system operates in our language.

In using this nonsense story, college students do indeed use their past experiences with sounds, words, sentences, and even story sense in answering questions asked in the worksheet. They also figure out that because the nonsense words in “Going Lelling” are not known by them, they cannot fully comprehend this nonsense story. The activity calls for reflection on the part of the students, with any number of them commenting that they just had not given much thought to language systems in operation. Students’ comments often add up to the old adage of not being able to see the forest for the trees.

### Other Reflective Activities

There are other equally meaningful reading/language arts activities for use in college classrooms that help students build on their past experiences and, in turn, construct new insights and new knowledge. Contrast-compare activities, cloze activities, cause-effect charts, and many other types of activities that prospective teachers use with students they will one day teach can, if made age appropriate for reading methodology and other language arts courses, build on experiences/knowledge of college students. Such activities, interspersed

among class discussions of information about the reading process, organizing for reading, phonemic awareness, phonics, reading-writing connections, etc., make learning more interactive and thus more meaningful.

Figure 3.

### *Fictitious Writing Systems*



<p>1. The <b>Unga</b> people, through hundreds of years, have developed a system to help them communicate with one another through writing and to help them tell their story to generations to come. Some of the symbols for their spoken words are shown below with the meanings of the words (in English) just under each spoken word.</p> <p>Written words: </p> <p>Spoken words: ugluh gup bupseg mup frad lep ling lingning</p> <p>English meaning: (hello) (girl) (goodbye) (boy) (said) (cat) (light) (lightning)</p>	
<p>2. The <b>Luna</b> people live between two big mountains, many miles from the <b>Unga</b> people. They, too, have developed a writing system that took many hundreds of years to build. Their system is different from the system of the <b>Unganese</b>. Here's how the <b>Lunacans'</b> writing system looks, along with English translations.</p> <p>Written words: </p> <p>Spoken words: toglee sep seknok sek fep dap viss vissul</p> <p>English meaning: (hello) (girl) (goodbye) (good) (boy) (said) (light) (lightning)</p>	
<p>3. The <b>Tippa</b> people are yet another group of people living thousands of miles from both the <b>Unganese</b> and the <b>Lunacans</b>. Their writing system also developed over hundreds of years. The writing system used by the <b>Tippalians</b> is quite different from the systems developed by the <b>Unganese</b> and the <b>Lunacans</b>.</p> <p>Written words: hello girl goodbye good boy cat light lightning</p> <p>Spoken words: hēl lō gurl good bī good boi kāt līt līt ning</p> <p>English meaning: (hello) (girl) (goodbye) (good) (boy) (cat) (light) (lightning)</p>	
<p>4. Another large group of people, the <b>Gula</b> people, live on an island far from the peoples in 1,2, and 3 above. Their writing system is more closely like the <b>Tippalians</b>, but still different. Here are some English words and how the <b>Gulalites</b> would write them (in parentheses):</p> <p>said (sed) dog (d*g) cat (kat)</p> <p>boy (b@) light (l+t) lightning (l+tni&gt;)</p> <p>fin (fin) man (man) happy (hap=)</p> <p>deep (d=p) okay (ok) dead (ded)</p>	<p><b>Which of the last two systems (the Tippa or the Gula) might it be easier to teach decoding? Why? What if our own language had only one symbol for each phoneme that children must learn when they learn to decode?</b></p>



Figure 4:

*A Nonsense Story About the Brimpy Yob*

**Going Lelling\***

**The brimpy yob went lelling. It lelled by the ganny. It lelled by the vindy. It lelled and lelled.**

**One day while lelling, the brimpy yob met a zooky hiler. The brimpy yob and the zooky hiler became lapses. Wherever the brimpy yob went, you saw the zooky hiler.**

**Today, you can see the good lapses lelling zad of the loit. They lell by the ganny. They lell by the vindy. They lell and lell. Would you like to go lelling with them?**

\* From *Assessment and correction in elementary language arts* as shown in References.

**Summary**

“When constructivist thinking is applied to the acquisition of knowledge about teaching and learning, it holds that teachers engage in a process of seeking and making meaning from personal, practical, and professional experiences” (Vacca, Vacca, Gove, Burkey, Lenhart, & McKeon, 2003, p. 10). The constructivist-based strategies presented in this article enable future teachers to analyze and expand upon their own learning and, in turn, become more effective in promoting the learning of their students. There should be more active learning in reading methodology and other language arts courses. Instructional strategies

should be operative, thus leading students to build on their past experiences and reflect on the language they use as well as activities they choose for teaching their own students to read and perform in other language arts.

The semantic feature analysis, fictitious writing systems activity, and nonsense story analysis presented herein are but three of many instructional strategies suited for college students learning how to teach reading, writing, and other language arts. Each creates an open-ended learning community that is invaluable for teachers in training and can help build on the college student's own background of experiences. A firsthand, engaging experience leads to reflection that otherwise might not take place, which consequently enables a deeper understanding of the complex nature of language learning and learning to read.

Because teachers tend to teach the way that they were taught (Clark, 1988; Kagan, 1992; Lortie, 1975), it is imperative that pre-service teachers be actively engaged in their methodology courses as they move through teacher education programs in colleges of education. Concomitantly, reflective practice modeling throughout these courses should enhance the likelihood that teachers will become lifelong learners themselves, a necessity today as teachers meet the diverse needs of an ever-changing population of learners.

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## Appendix A

### Resources

#### *Children's Literature Resources*

- Arnosky, J. (1995). *All about owls*. New York, NY: Scholastic, Inc.
- Baehr, P. G. (1990). *Summer of the dodo*. New York, NY: Four Winds Press.
- Butterfield, M. (1961). *Quick, quiet, and feathered*. Austin, TX: Raintree Steck-Vaughn. 1997.
- Cartwright, A. (1989). *In search of the last dodo*. Boston, MA: Joy Street Books
- George, J. C. (1919). *There's an owl in the shower*. New York, NY: HarperCollins Publishers. 1995.
- Le Tord, B. (1999). *A bird or two: A story about Henri Matisse*. Grand Rapids, MI: Eerdoman's

#### *Books for Young Readers.*

- Lehan, D. (1991). *This is not a book about dodos*. London: All Books for Children.
- Lehman, J. H. (1991). *The owl and the tuba*. Elgin, IL: Brotherstone Publishers
- Mathers, P. (2001). *Dodo gets married*. New York, NY: Atheneum Books for Young Readers
- McKeller, S. (1993). *Counting rhymes*. London: Dorling Kindersly Limited.
- Provensen, A. (1994). *An owl and three pussycats*. San Diego, CA: Browndeer Press.
- Waddell, M. (1992). *Owl babies*. Cambridge, MA: Candlewick Press.

#### *Video Resources*

- "Amazing Animals: Birds of Prey." (1997). Dorling Kindersly Vision.
- "Birds of Prey." (1999). Discovery Channel Video.

“Owls Up Close.” (1991). Ark Media, Group Ltd.

*Web-Based Resources*

<http://www.birdsmauritius.com/Dodo.htm>

<http://www.davidreilly.com/dodo>

<http://www.dodo.com>

<http://enchantedlearning.com/subjects/birds>

<http://www.birds-of-prey.org>

## **Appendix B**

### *Evaluation Instrument for SFA*

#### Final Exam

Congratulations! You have been appointed to the teaching position of your choice in the school site of your choice. Your new principal is asking that you integrate the following teaching strategy into an interdisciplinary thematic unit that is currently being developed by other teachers on your academic team:

Specifically focusing on Semantic Feature Analysis (SFA), develop a plan for using this instructional strategy with a thematic unit that you already have in place. Please prepare your response so that you clearly demonstrate your understanding of this instructional strategy; make sure that your plan is designed for a culturally and linguistically diverse population and that you use the latest technology available in your design. Finally, your plan should integrate at least three content areas (your choice, of course). If time permits, you might want to think about ideas for community involvement, including parents and extended families when possible.