Secondary content area reading: challenging sell for professors in teacher education programs

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ABSTRACT

Candidates in teacher education programs who are training to become secondary education content area teachers are required in most programs to enroll in a class dealing with teaching reading in the content areas. A number of these candidates reluctantly attend these courses and question the appropriateness of the content they are required to endure. This paper addresses the resistance professors who teach these courses experience and the strategies which, when implemented can turn these reluctant learners into true believers of the value of teaching reading strategies in their content area classes.

Keywords: secondary content area reading, reading in the content area, vocabulary development, comprehension strategies

WHAT IS THE ROLE OF LITERACY INCONTENT CLASSROOMS?

Many teacher candidates wonder why they need to complete a course in content reading instruction. After all, when teaching content, they contend, they are not teaching reading – or are they? One way to address these questions is through an interactive question answer session that could be conducted the first day of a reading in the content area class. The professor would ask the candidates to consider the following questions and answers about the role of literacy in the content classroom (Richardson, Morgan, and Fleener, 2009).

The professor would begin by placing the questions in a hat and asking a volunteer to pull one out at a time so the professor can answer it! To truly capture the candidates attention, the professor should use a microphone (real or toy version) and ask that the question be read to him or her as if conducting an interview. The following dialogue is an example of what could ensue.

Question (incredulous candidate):
Why should teachers of subjects such as mathematics, social studies, science, English, foreign language, etc. even think about using reading and writing as a means to learning? Isn't that the job of the language arts or reading teacher?

Response (professor):
Reading forms the basis of all learning; reading and writing are the major tools for learning in any subject. These language skills help us learn how to learn. So these tools must be used in every classroom, regardless of discipline, at every grade level, and in every school to provide the application and practice necessary for students to become effective learners.

Question (incredulous candidate):
What exactly is reading to learn? Is that like teaching students how to read, with phonics and decoding? By the time they come to me in middle and high school shouldn't they already know how to read?

Response (professor)**:**
The answer to the first question is no. It is understood that content teachers teach a subject, not how to read. But within a given subject, students will encounter many new words, or words used in new ways (referred to as technical words). Therefore, the development of effective instructional strategies to address these new words is vital to student comprehension of a given discipline. Students will have to read with understanding and study effectively to learn the subject matter. Skills, such as vocabulary development and comprehension building strategies are important for secondary teachers, regardless of content area they teach.

Question (incredulous candidate):
Why should content teachers change their instructional practices?

Response (professor)**:**
In the past decade, public comment, research, and assessment results have led to an uneasiness about and criticism of our educational system. Some of the criticism suggests students in secondary education programs are not learning important factual information, are unable to think critically, and cannot apply skills in the real worlds of work and college once they graduate from high school.

Additionally, teachers are living in a time of standards-based assessment. They are now, more than ever, being held directly responsible for their students' learning. Today throughout our nation many state level education departments actually measure program completers' impact on P-12 learning in all state approved teacher preparation programs. In some cases this measure of

impact affects the employment status of program graduates and the ranking/grading of the schools in which they teach. Educators need to employ strategies in content area classrooms that will ensure the successful teaching and learning of content material.

Question (incredulous but maybe somewhat intrigued candidate):
How difficult will it be to implement the content of this class into the classroom?

Response (professor)**:**
The instructional strategies shared can be used in the classrooms almost
 immediately.

At this point, hopefully the professor is on his or her way to having the candidates "hooked" on the importance of content area reading instruction.

ASSUMPTIONS ABOUT CONTENT AREA TEACHING

The purpose of this paper is to share knowledge and strategies which can be used with teacher candidates to help their future students become more literate in their specified subject area classrooms. Richardson, Morgan, and Fleener (2009) found that middle and high school level teachers need more information and training to teach higher levels of language and literacy. They suggest most secondary education teachers in the field do not possess this skill set and often expect their students to be fluent in processing reading material, making inferences and reading critically. These teachers assume their students will be able to express their understanding of material orally and on tests. They expect their students will possess a certain amount of knowledge and will want to read to learn. Herber (1978) used the term assumptive teaching to describe what teachers do when they unconsciously take for granted their students know how to read and learn and have the motivation and interest to do so. Alvermann, Phelps, and Gillis (2010) explore assumptions underlying content area teaching. The first of these assumptions is that the content area teachers assume it is their responsibility to address their subject matter is a timely, accurate, and effective manner. Most content area teachers take pride in knowing a lot about their subject area and they want to impart this abundance of knowledge to their students. Newmann (1988) warns content area teachers though, of becoming addicted to coverage of subject matter knowledge. He states:

We are addicted to coverage. This addiction seems endemic in high schools…but it affects all levels of the curriculum, from Kindergarten through college. We expose students to broad surveys of the disciplines and to endless sets of skills and competencies…The press for broad coverage causes many teachers to feel inadequate about leaving out so much content and apologetically mindful of the fact that much of what they teach is not fully understood by their students. (p. 346)

When many secondary content area teacher candidates begin their course of study thinking they need to cover all the content through lecture or text book readings, they do not realize by doing so they are denying their future students the kind of instruction that leads to active and independent learning (Alvermann et.al. 2010).

A second assumption explained by Alvermann et.al. (2010) is that teacher candidates believe their future students will use their textbooks to learn course material independently and effectively. Another assumption is the textbook will present the content in a coherent and understandable manner. Using textbooks effectively however, requires teachers to know both the subject matter and the processes needed to understand that content.

The Educational Testing Service (ETS) study How Teaching Matters (Wenglinski, 2000) found that teachers' content knowledge is an important factor in student achievement. However, the study also found that content knowledge alone is not the only factor needed to help increase student achievement. In fact, the classroom instructional practices and strategies implemented by the teachers significantly influenced student achievement.

Richardson, Morgan, and Fleener (2009) assert that all students in secondary classrooms, regardless of what level of literacy or learning challenges they may face, deserve instruction in content subjects that enable them to learn. They feel students at all levels need excellent teachers to guide and facilitate their learning. Students need teachers who can impart both content and the desire and willingness to learn.

DEFINING CONTENT AREA LITERACY

Bean, Readence and Baldwin (2008) define content area literacy as the level of reading and writing skill necessary to read, comprehend, and react to appropriate instructional materials in a given subject area. Alvermann, Phelps, and Gillis (2010) define content literacy as the ability to use reading and writing for the acquisition of new content in a given disciplines. Vacca, Vacca, and Mraz (2011) suggest literacy has come to represent a synthesis of language, thinking, and contextual practices through which people make and communicate meaning. They believe the responsibility of content area teachers is that of helping students think and learn with all types of text, including multimedia sources.

ENGAGING STUDENTS IN CONTENT AREA LEARNING

To be successful in any classroom at any age or grade level, a student must be able to read and understand the textbook and ancillary materials distributed in class. There is a strong connection between vocabulary knowledge and reading comprehension. If students are not familiar with most of the words they meet in print, they undoubtedly will have trouble understanding what they read. Both traditional research and current studies including the research reported by the National Reading Panel (National Institute of Child Health and Human Development) (2000), have shown the existence of a strong link between vocabulary and reading comprehension. Pressley (2002) found that approximately 70 to 80 percent of reading comprehension is based on word knowledge. Simply stated, if readers do not know the meanings of most words in a passage, they will be unable to understand the passage. The professor in a secondary reading course could provide the following example to demonstrate the importance of vocabulary knowledge in comprehension of a passage. The sentences below are shared with the teacher candidates as follows:

The magistrate chastised the assembly of onlookers for the brouhaha that erupted when the verdict was rendered.

The judge scolded the people in the courtroom for the disruption that took place when he gave his decision.

1. The professor shows the first sentence, reads it to the class and asks for volunteers to interpret its meaning.
2. After several interpretations are shared the professor shows the second sentence and discusses how its meaning is affected by word choice. Both sentences convey the same information,

however, the first sentence is loaded with technical terms making it more difficult to understand for many readers.

Much of the material in perspective content area disciplines contains "technical words" or words unique to that content area. These words are often unfamiliar to students, but are especially important for disciplinary thinking and learning. The more experience students have with unfamiliar words and the more exposure they have to them, the more meaningful the words will become.

Vacca, Vacca and Mraz (2011) state "Vocabulary is as unique to a content area as fingerprints are to a human being." This is because a content area is distinguished by its language, particularly the technical terms that label the concepts found within the subject matter. Most teachers realize they need to do something with the language of their content area – but they often resort to reducing instruction to routines that ask their students to look up, define, memorize, and use the content-specific word in a sentence. Doing this takes the learning of content vocabulary and separates it from the content – it becomes an isolated activity – not an integral part of learning academic content. Teachers in the content areas need to teach the vocabulary well enough to remove potential barriers to students' understanding of texts.

INTENTIONAL VOCABULARY DEVELOPMENT

Making time to develop word knowledge has proven beneficial (Richardson, Morgan, and Fleener 2009). Research supports practices that help students connect new vocabulary to known vocabulary and concepts. Through direct instruction teachers may think aloud, model, and provide opportunities for practice and offer strategies and techniques for independent word learning. Instructional activities discussed in this paper can include interactive teacher directed/lead activities such as semantic feature analysis, alphaboxes with a twist, and contextual redefinition.

A general decoding strategy content area teachers should share with their students is described by Bean, Readence and Baldwin (2008). This strategy gives students the skills needed to independently and systematically decode the meaning of unknown words they encounter in their reading.

When the student is reading from a text and stumbles across an unknown word he/she should:
1. Read on to the end of the sentence and try to determine if the word is technical or general. If unsure it should be assumed it is technical.
2. If the word is technical:
a. Try the glossary first,
b. Then try the index;
c. Then try the dictionary.
3. If the word is general:
a. Try the dictionary first,
b. Then try the glossary;
c. Then try the index.
4. After determining the meaning of the unknown word, check it in the context of the sentence to see if it makes sense. Context (the surrounding words and sentences) are important in the meaning verification process.

Once students have learned the general decoding strategy, the content area teacher then introduces through direct instruction vocabulary development strategies. These strategies move from being teacher-directed to student-directed with practice over time.

Semantic Feature Analysis

Semantic Feature Analysis (Pittleman, Heimlich, Berglund, & French, 1991) is a strategy for teaching vocabulary. It helps students see relationships among key concepts and vocabulary. It establishes a meaningful connection between students' prior knowledge and words or ideas that are conceptually related to one another. The strategy requires the teacher to develop a chart or grid to help students analyze similarities and differences among related concepts. A category or topic is selected, words or concepts related to that topic are written across the top of the grid and features or properties shared by some of the words in the column are listed down the left side of the grid. Students are asked to analyze each word or concept, feature by feature, as follows:

- a plus sign (+) in a cell to represent a positive relationship between the two terms,
- a minus (─) sign in a cell to indicate negative relationship;
- and a question mark (?) meaning the student was unsure of the relationship between the two words.

This strategy is versatile and can be used before, during, or after reading. If used before reading to activate what students know about words, they can use the grid to clarify and reformulate some of their initial responses. Additionally, the strategy can be used before reading by holding a class discussion of the semantic feature analysis grid, before students are assigned a reading central to the topic of study. Then as the students read, they are asked to verify or revise their responses on the grid, thereby establishing a purpose for reading. The next day, a whole class discussion can be held regarding the reading and the new information recorded in the grid. Special attention will be given to the previously "unknown" relationships. An example of a semantic feature analysis based on a chapter from a class text in a college level content area reading course is found in Appendix A.

Alphabox with a Twist

Hoyt (1998) created the vocabulary development strategy, Alphaboxes, which uses the 26 letters of the alphabet to help students' record important concepts about a specific concept or theme. The strategy involves creating a grid which contains each of the letters of the alphabet in its own cell. As students read from their assigned text, they are to write important words or concepts they encounter in their reading. When slightly modified, this strategy provides a focused purposeful reading task which lends itself to small and large group exploration of important vocabulary related to thematic content.

Alphabox with a Twist consists of the following steps:
1. Before students read a given passage, they are presented with the Alphabox grid and placed into small groups. The teacher reads over the directions and asks the students to read independently within their groups and record words they find which they think are important to know in the Alphabox grid that start with the corresponding

letters. Students are also directed to record the page number where the words are located and list any questions they may have about the content.

2. After students have read the material independently, in their small groups, they will compare and discuss the terms they identified and questions they formed. The groups should be allowed about 3-5 minutes to accomplish this task.

3. Next, the teacher will ask a spokesperson from each group to share words from the Alphabox grid, one at a time, telling where each was found, what the group believes it means, and why it was chosen. As each word is presented, the teacher will write it for all to see in an Alphabox on the board or overhead projector and lead a discussion to define it, first from context, then if needed, from references available in the classroom. The discussion should include contributions from other class members so that definitions are extended and personalized.

4. The teacher will ask students to share any questions generated from the reading and discuss those as well.

5. Students will then write the definitions (which are based on class discussion and are not to be directly copied from the text) in the space provided in the Alphabox.

6. For any questions not satisfactorily answered through class discussion, students will be directed to revisit the text to find the answers to their questions, if not found in the assigned materials, the teacher can provide additional readings addressing those questions.

An example of an Alphabox with a Twist constructed for a tenth grade general biology class studying the nervous system is found in Appendix B.

Contextual Redefinition

Tierney and Readence (2005) recommend the vocabulary development strategy, Contextual Redefinition for its simplicity and ease for content area teachers. The steps for this strategy are as follows:

1. Select unfamiliar words in the reading. The teacher identifies four to six words which may challenge students and are central to understanding important concepts presented in the text.

2. Write a sentence. The teacher will write a sentence for each of the selected words which contain rich context clues. The sentences are saved for Step 4.

3. Present the words in isolation. The teacher will then present each word and ask the students to provide a definition. The definitions will be written by the teacher on the board or the overhead projector.

4. Present the words in a sentence. Using the sentences prepared in Step 2, the teacher will present the word in the context of the sentence written which provides rich context clues. The teacher will then ask the students to provide a definition based on context clues found in the sentences shared. Students who volunteer definitions must defend their guess by providing the rationale for it.

5. Definition verification. A volunteer or volunteers look the word up in a dictionary to either verify or negate the guesses offered by the class. The definition is then restated and written by the teacher for students to copy in their notes.

COMPREHENSION STRATEGIES

Constructing meaning from texts varies in each content area. Reading a novel is fundamentally different from reading about history or math or chemistry (Alvermann, Phelps, and Gillis, 2010). Reading a novel requires the ability to follow plot, understand characters and their motivations, and have some understanding of different fictional genres. Reading about history demands attention to the authors or source and reading the text not as truth but as an interpretation of events. In math, close reading and rereading are two important strategies readers use to gain precise understanding of the interrelation of formal operations, terms, letters, and symbols. Reading about chemistry requires transforming information from prose to visualization, charts, formulas, or graphs along with paying close attention to descriptions of experimental procedures and results. Therefore, the more generic strategies explored here need to be adapted to the distinct needs of a content area and a particular topic as well as the standards driven by the state and the objectives developed by the teacher.

Students who struggle with text are usually unaware that strategies exist which can help them more effectively comprehend and make meaning of what they are reading (Vacca, Vacca and Mraz 2011).We know that students can be taught comprehension strategies and that such instruction is an excellent way to improve their understanding of the textbooks and content area materials they read (Richardson, Morgan, and Fleener 2009). Unfortunately, much of the research shows comprehension instruction is not taking place in many secondary content area classrooms.

Directed Reading-Thinking Activity (DRTA)

Comprehension is influenced by how much teachers help students understand the way texts are organized. An effective teacher lead strategy for teaching the organizational structure of the text is the Directed Reading-Thinking Activity (DRTA) (Stauffer, 1969). The DRTA promotes comprehension by engaging students in a process that involves predicting, reading, and proving. It is a self-questioning process that encourages students to predict oncoming information in expository and narrative text and set purposes for reading that are personally interesting.

- Predicting involves asking readers to use both what they know and what they learn from a quick preview of the material to predict what the material is going to be about. Predicting prepares the reader for comprehension. When students are asked what they think might happen next and then read to verify their prediction, they are being encouraged by the teacher to read with a purpose. It is a very important DRTA step, but it cannot stand alone. Students must justify their predictions as well. This predicting and justifying component of the DRTA offers a lively listening and speaking opportunity for the students – allowing learning to become social.
- Once predictions are made and justified, students are asked to read the appropriate portions of the text to confirm or alter their predictions. Students reflect aloud on those predictions before going on to read another segment of the text.

Richardson, Morgan, and Fleener (2009) have identified a five step process for implementing a DRTA as follows:

DR-TA for Fiction
   1. Previewing
         Preread:
               Title

        Pictures

        Introduction (if the story is lengthy)

        Close the book and develop hypotheses/make predictions: What do you think will happen? Why do you think that (What gives you a clue?)

2. Verifying

        Read: To find whether predictions were right.

3. Reflecting on reading

    Developing comprehension by:

        Checking on individual and group hypotheses

        Staying with or redefining hypotheses

DR-TA for Nonfiction

1. Previewing – students are directed to survey the topic by considering the following:

        Title

        Headings

        Introduction

        Subtitles

        Pictures

        Illustrations

        Diagrams

        Charts

        Maps

        Graphs

        Summary or conclusion

        End-of-chapter questions

2. Writing – have students write questions which came to mind in the survey. Writing specific questions students need to learn such as, "What is known after previewing?" "What do we need to learn"?

3. Discussing – As a class, discuss various student-generated questions.

4. Reading – In groups have the students read the text to find answers to their students written questions. Let them discuss their answers in small groups, then as a whole class. Reflecting on the reading by – Having students defend their inferences by referring to text and

   Finding out what we still need to know
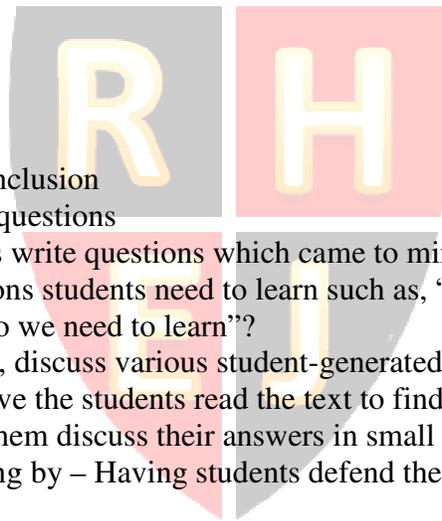
Improving Student Comprehension through Questions and Questioning

        Many researchers feel that the dialogue between teachers and students is of utmost importance to the teaching and learning process. This dialogue typically comes from teacher-student questions. Classroom questioning strategies and questioning instruction can help develop and enhance memory for what was read, can improve information finding abilities of students, and can lead to a more in-depth processing of text. When questioning works, it works well. Studies show that the most effective teachers encourage higher-level thinking through questioning techniques. Questions can help teachers know whether students understand the material and can guide readers to consider many aspects of the text. Questions are excellent probes. Sternberg (1994) argues that the ability to ask good questions and to know how to answer them in the most essential part of intelligence. Well-constructed questions are essential to

guide students' thinking and reasoning abilities. Often, however, questioning does not work well because teachers fall into the trap of asking lower level literal comprehension questions as they teach.

The trouble with asking lower-level questions is that students reply with lower level responses. Higher-level questions are more challenging to generate but by asking questions at this level teachers are promoting higher order thinking skills like critical thinking and problem solving.

Student-Developed Questions

When students are encouraged to develop their own questions, they develop higher-levels of understanding. Van Blerkom, Van Blerkom, and Bertsch (2006) found that students who read and generated questions comprehended class texts better than those who read and took notes or read and highlighted.

Vacca, Vacca and Mraz (2011) developed the following student directed questioning strategy called "Your Own Question" to improve text comprehension:
Steps:
1. Have student listen to or read a portion of the text from the beginning of a selection.
2. Ask students to write 5 to 10 questions they think will be answered by the remainder of the selection.
3. Discuss some of the questions asked by the students before reading. Write the questions on the board.
4. Have students read to determine whether the questions are answered.
5. After reading, ask the students to explain which questions were answered, which were not, and why not.

More Comprehension Instructional Strategies

KWL

Another instructional strategy that engages students with active learning is KWL developed by Donna Ogle in 1986. In this strategy, the teacher presents the students with the KWL chart which consists of three columns. At the top of each column are three letters K, W, and L respectively. In the K column, students are to identify what they know about the topic before reading. In the W column they are to decide what they want to know or find out about the topic as they read and in the L column they will record what they have learned about the topic as a result of their text reading. Follow up to the KWL can include class discussions, the construction of graphic organizers, and writing a summary to internalize the content read.

KWL works well in both a large group and small group settings. Once students are comfortable using the strategy, it works well for independent learning.
Procedures for KWL
1. Introduce the KWL strategy in conjunction with a new topic or text selection. Before assigning the text reading, the teacher needs to ensure the students understand what their role involves and why it is important for learners to examine what they know and to ask questions about topics they will be reading and studying. The teacher can explain the strategy in the following manner:

"It is important to first determine what we think we know about the topic. Then we want to anticipate how an author is likely to present and organize the information. From this assignment we can generate good questions to focus our reading and studying. Our level of knowledge will determine to some extent how well we study. Then as we read we will make notes of questions that get answered and other new information we learn. During the process some new questions will probably occur to us; these should also be noted so we can get clarification later."

2. Identify what students think they know (K) about the topic. Engage the class in brainstorming, writing their ideas in the K column of the chart on the board or overhead transparency. It is important to record everything the students think they know even their misconceptions. They key in this step is to get the class actively involved in making associations with the topic, not to evaluate the correctness of their ideas.

3. Generate a list of student questions (W). The teacher will ask, "What do you want to know about the topic?" or "What are you most interested in learning about the topic?" The teacher will record student responses in the center or "W" column of the KWL chart.

4. Anticipate the organizational structure of ideas that the author is likely to use in the text selection. As part of the preparation for reading, have students next use their knowledge and their questions to make predictions about the organizational structure of the text. The teacher can ask, "What major categories of information is the author likely to use in organizing his/her ideas?" or "How do you think the author of the text (or an article) on the given topic is likely to organize the information?" Have the students revisit the ideas brainstormed and the questions generated on the K and L sections of the chart to predict possible categories. The teacher will record the predictions on the board or overhead transparency in the area on the KWL chart.

5. Read the text selection to answer the questions. As students read the text they write the answers to the questions raised and make notes for new ideas and information in the L column of the KWL chart. The teacher will model this step for the students before they are asked to complete this task independently.

6. Engage students in follow-up activities to clarify and extend learning. Use KWL as a catalyst into post reading activities to help student internalize the concepts discovered in the text reading.

Inquiry Charts

Inquiry Charts, developed by Hoffman (1992), allow students to gather, examine, compare, and summarize information related to a given topic from a number of resources. This strategy is a prelude to research paper writing and can be used from the intermediate (grades 4-6) through college grade levels.

Steps for Using the Inquiry Chart Strategy
1. Planning – in planning the teacher decides the following:
   ✓ Topic,
   ✓ Questions to drive the inquiry process;
   ✓ Sources to be used for data /information collection.
   The teacher will most likely have the students use the class text as one resource for gathering information related to the topic. Other sources may include trade books,

websites, reference books, all of which can be part of a text set developed by the teacher for a given topic of study.

2. The teacher will then develop the Inquiry Chart using the format found in Appendix C.

3. Interacting – in this step the students and the teacher work together to record information in the appropriate sections of the I-Chart. This can be done in a whole group or with small groups who discuss each component of the chart first and then share with the whole group. Students receive a copy of the I-Chart and the teacher has a copy in the classroom which is used to record student responses (overhead transparency, on the computer, on the board, or on chart paper)

   ✓ First, ask the students to respond the questions using their prior knowledge – this offers the teacher a glimpse into what the students are bringing to the table as far as background knowledge possessed about the topic. The teacher writes the information shared by the students in the appropriate cells of the inquiry chart on the board/computer/overhead transparency/chart paper.

   ✓ Students are then directed to read the sources the teacher has provided to answer the questions listed across the top of the chart. This step shows students that sources can sometimes present conflicting or contradictory information regarding the same topic. On the other hand, sources can also verify information on the same topic. This component of the process can be time intensive depending on the number of questions and the number of sources included. For instance, an inquiry chart dealing with "Forms of Government" could take a week for the students to complete. Every day the class would address the questions from one of the listed sources until all the readings were finished.

4. Interacting and Evaluating – in this step the I-Chart is completed and the findings are evaluated and shared. All of the information has been collected from prior knowledge and the sources. Now the students will summarize the information for each of the questions asked and record their conclusions in the appropriate space in the I-Chart. Part of this step involves the development of new questions which emerge as both converging and conflicting information is considered. These new questions are the basis for future research into the topic.

Follow-up idea:

✓ Students expand the summaries into paragraphs which then become part of a research report.

BUY IN

Effective content area teaching requires employing a variety of strategies to ensure a positive impact is being made on student achievement. The strategies shared here are research based, accessible, and adaptable to content area instruction. Middle and secondary students need teachers who are willing and able to continually explore effective teaching strategies in the never ending effort of facilitating student learning. These teachers will attain the greatest satisfaction when they see their students being challenged to think and grow in an atmosphere they create and one which is conducive to meaningful learning.

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Appendix A

Chapter 3
Language, Diversity, and Cognition

Directions: In the table below are two lists dealing with the subject of language and diversity. The definitions in the left hand column describe instructional strategies used with second language learners. The words written across the top of the table lists programs designed for second language learning. You are to place the appropriate symbol as indicated below in the intersecting cell of two lists to signify the relationship between each.
- a plus sign (+) in a cell to represent a positive relationship between the two terms,
- a minus (─) sign in a cell to indicate negative;
- a question mark (?) meaning you are unsure of the relationship between information found in the two lists.

Characteristics of programs designed for second language learners	Immersion bilingual education	English as a second language	Transitional bilingual education	Developmental bilingual education	Two-way bilingual education
All instruction is in the second language.					
Structured lessons in English while maintaining facility in the native language.					
Both native English and non-native English speakers learn each other's language.					
Instruction where the native language is phased out.					
Instruction which promotes a classroom atmosphere where students feel their native language and culture are valued.					
A submersion type program where second language speakers are					

expected to shift into English as a dominant language.				
Content area instruction in a native language while a student receives second language instruction for a three year period.				
Instruction where English Language Learners do the majority of their content learning in their native language.				
Instruction where no time limit is given for phasing out of the native language.				
Instructional practice which may be demoralizing to non-native English speaking students.				
Instruction supported with visuals including graphic organizers, story maps, word banks, and pictures.				

Appendix B
Alphabox with a Twist

The Nervous System

Directions: As you read Chapter 8, The Nervous System, you are to record important words you encounter related to the concept. In the table below are boxes, each containing a letter of the alphabet and a space for questions that may arise as you read. You are to write important words which start with the letter in the corresponding cells. Some cells will have multiple words; some may not have any words. Also, please record the page number where the word was found. If you have any questions about the material write them in the space provided. After reading the text, we will discuss the words, develop definitions for each, and address questions.

A	B Brain p. 346	C Cerebrum p. 348 Cerebellum p. 349	D
E	F	G	H
I Involuntary Actions p. 352	J	K	L
M	N	O	P

Medulla p. 350			
Q	R Reflexes p. 355	S Spinal Cord p. 342	T
U	V Voluntary Actions p. 354	W	X
Y	Z	Questions	

Appendix C

Inquiry Chart (I-Chart) – Topic

Topic	Guiding Questions					
Write topic here.	Question 1: Generated by the teacher.	Question 2: Generated by the teacher.	Question 3: Generated by the teacher.	Question 4: Generated by the teacher.	Interesting Facts and Figures	New Questions
What We Know						
Source 1: Class Text						
Source 2: Trade book One						
Source 3: Trade book Two						
Source 4: Encyclopedia						
Summary						