Content Area Vocabulary Instruction:
Teachers' Beliefs, Knowledge, And Practices

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Dedication

For my wonderful wife and my beloved boys

Abstract

In an effort to improve an understanding of content area vocabulary instruction and how to support teacher-educators, in this study I sought to determine which vocabulary instructional practices were selected from the corpus and applied in instruction. I examined the knowledge and beliefs held by the participants about vocabulary instruction in their respective disciplines. In addition, I worked to determine the sources from which teachers acquire information to professionally proceed with the vocabulary instruction that does occur. Using a mixed methods design, I studied grades 6-12 science, social studies, and technical studies teachers' beliefs about, and conceptions of, vocabulary instruction. While there has been increased attention to teaching vocabulary (Baumann, 2009; Blachowicz & Fisher, 2010; Fisher & Frey, 2014; Graves, 2006; Manyak et al., 2014; McKeown et al., 2018; Nagy & Townsend, 2012), little is known about how content area teachers conceptualize teaching their respective discipline-specific terminology. Therefore, the goal is to add to the existing knowledge base in academic disciplines via an examination of how teachers' beliefs and conceptualization and enactment of the specific instructional practices in vocabulary.

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**Chapter One**

In this chapter I present and overview of the study. After presenting a rationale for the study, I state the purpose and guiding questions. Finally, I conclude chapter one with a preview of chapter two.

**Problem and Rationale for the Study**

Students are exposed to a voluminous body of difficult, conceptually dense, and often abstract words that pose unique challenges and possibilities for learning. Many of these words are defined by other words that are equally unknown or challenging. However, content disciplines (e.g. science, social studies, technical subjects) can also present students with multiple, meaningful, multimodal, thematically-related, and context-rich experiences with discipline-specific words, which increases opportunities for students to build both general academic and discipline-specific academic language (Bravo & Cervetti, 2008; Green & Lambert, 2018; Larson, 2017). In turn, an important part of increasing adolescents' vocabularies is pushing them to become active word learners by providing the opportunities and the motivation to discuss, analyze, and use target words on multiple occasions (Deschler, Palinscar, Biancarosa, & Nair, 2007; Edwards, Font, Baumann, & Boland, 2004; Graves, Schneider, & Ringstaff, 2017).

I am currently in my twenty-seventh year of teaching in a public school setting. From 1992-1997, I taught at the elementary level (Grades 3 & 5) which has been followed by a combination 19 years at the middle level (Grades 6-8) and three years at the district level. I have served as an Eighth Grade Language Arts teacher since 2004, which has bracketed a three-year appointment as the District Literacy Coordinator (2012-2015). Additionally, since 2005, I have served as an Adjunct Professor of Content Area

Literacy and Foundations of Literacy courses at the graduate level. Over the course of this journey, I have interacted with a wide array of teachers who enact a variety of classroom practices. I have first-hand evidence of young people who have been granted access to conventions of disciplinary knowledge production and communication. Such knowledge provides students the capacity to critically read through and across a variety of texts and a variety of disciplines (Moje, Overby, Tysvaer, & Morris, 2008). In essence, the strategies teachers use to teach their content bolsters students' comprehension, vocabulary knowledge, and study skills, which enhances student learning. I have also observed content colleagues for many years who, although encouraged to incorporate reading and vocabulary instruction, have chosen not to do so for a variety of reasons.

In an effort to improve my understanding of content area vocabulary instruction and how to support teacher-educators, I aimed to determine which vocabulary instructional practices teachers select from the existing corpus and actually use in instruction. Additionally, it was important to determine from which sources content teachers acquire their information that directly impacts their vocabulary instruction.

Teaching vocabulary is far too important to be done incidentally or accidentally, since every academic discipline uses a unique academic language to represent its discipline-specific concepts (Vacca, Vacca, & Mraz, 2016). Additionally, vocabulary instruction improves the literacy competencies of students K-12 (Harmon & Wood, 2018). However, given the powerful impact of teachers' beliefs, and considering the pressures to cover extensive prescribed curricula, the wide range of student abilities, and time constraints within which teachers work, they must be in command of vocabulary

instructional strategies that yield the greatest benefit with the least expense in terms of planning and instructional time (Alvermann, Gillis, & Phelps, 2013).

Simply, students need teachers who teach their content area vocabulary directly and richly (Blachowicz & Fisher, 2010; Gallagher, Barber, Beck, & Buehl, 2019). Bravo and Cervetti (2008) noted, "The fact that content area vocabulary terms are numerous, abstract, polysemous, and conceptually unfamiliar can potentially derail content area learning" (p. 144). Therefore, students need to hear, see, and use new terminology in many contexts to develop deep understanding. For one, vocabulary knowledge is the single most important contributing factor to reading comprehension. And two, each content area has its own unique vocabulary - the labels used to identify concepts.

Of the critical mass of background knowledge that subsumes vocabulary, Manzo, Manzo, & Thomas (2006) claimed that vocabulary development is one of the most important things  teachers can do for students including cognitive, social, and cultural components. While many word's meanings can be learned through reading, speaking, and listening, it is essential to provide readers with effective, explicit vocabulary instruction (Gallagher et al., 2019; Harmon & Wood, 2018). To this point, Marzano and Pickering (2005) discussed that knowledge of a given topic is encapsulated in the terms the students know that are relevant to the topic. The greater the students' depth of understanding, the easier it will be to understand the information they read or hear about the topic. The more terms students know with the conceptual frame of a given topic, the easier it is to comprehend and learn new information that is related to that topic.

Teaching vocabulary is not a simple process of merely teaching words; rather it requires selecting specific words to teach to particular students for a particular reason

(Graves et al., 2014). According to Snow, Griffin and Burns (2005) conventional wisdom about vocabulary instruction vacillates between two poles: acquiring vocabulary through reading voluminously; or targeting certain word lists and having students memorize words and definitions for end-of-the-week quizzes. However, neither of these positions represents the true north of vocabulary growth that has a lasting impact on students' reading achievement. What actually works is well-planned instruction that fosters student engagement in a variety of contexts so students use new words, gain feedback, and make personal connections among new and known words.

Student comprehension of words as well as the word learning process is also dependent on the types of instruction they receive (Graves et al., 2017; Nagy & Scott, 2000). For a myriad of reasons, many content area teachers continue to view vocabulary from a reductionist perspective that focuses on word learning through rote memory of short definitions and sentences. This notion of understanding comes from a "strictly bottom-up fashion by putting together the meanings of individual words - a picture inconsistent with our current understanding of the reading process" (Nagy & Scott, 2000, p. 269). This reductionist, bottom-up view also leaves students to their own devices in figuring out unfamiliar words or subjects them to the whims of a look-up-and-record the definition strategy as their only means by which to access and acquire language in a given academic discipline (Vacca & Vacca, 2008). Such practices (e.g. synonyms, glossary definitions) fail to produce usable knowledge of words and create beliefs that can interfere with word learning. Therefore, the vision and employment of vocabulary instruction must produce more than immediate gains in the understanding of specific words. The vision and employment must also communicate an accurate view of the

nature of word knowledge and include expectations about the word learning process (Nagy & Scott, 2000). This more comprehensive conception requires educators to be diligent and purposeful about the vocabulary they select for instruction, as the words that should be taught and the sequence in which they ought to be introduced depends on the texts and on the students who will read them (Graves et al., 2014).

Vocabulary instruction supports student learning in content areas. As content area instruction seems bound to the specificity of the subject(s) and to the social context in which its teaching is framed, teachers ought to analyze how they prepare students to learn, spend time examining how they activate prior knowledge, introduce vocabulary and related concepts, and foster engagement with the content. This is important, for in order to comprehend a text, students need both a strong grasp on the knowledge and on the vocabulary contained in a given text (Wright & Gotwals, 2017). The Alliance for Excellent Education (2007) provided four general principles for encouraging "larger numbers of content [-area] teachers to integrate literacy instruction more fully into their everyday practice" (p. 25).

1. The roles are responsibilities of content-area teachers must be clear and consistent.
2. Every academic discipline should define its own literacy skills.
3. All secondary school teachers should receive initial and ongoing professional development in the literacy of their own content areas.
4. Content-area teachers need positive incentives and appropriate tools to provide reading and writing instruction. (pp. 25-29)

This recommended professional engagement involves reflection, study, and renewal. It is also associated with the construction of professional knowledge that takes into account the wide variety of tensions and ambivalences brought to the teaching process because of teachers' histories and the choices (Greene, 2001).

**Purpose and Guiding Questions**

The purpose of the study was to examine the knowledge and beliefs of secondary science, social studies, and technical subjects teachers by exploring the participants' conceptions and enactments of vocabulary instruction. While there has been increased attention to teaching vocabulary (Graves 2006, Blachowicz & Fisher 2010, Green & Lambert, 2018; Nagy & Scott 2000), little is known about how content area teachers conceptualize teaching their respective content terminology. Therefore, the goal of adding to the existing "teaching reading in the content areas" literature involves an examination of "How do teachers conceptualize the instructional vocabulary methods they employ in their respective classrooms?"

The broad research question that examines why the participants think and act as they do was, "How do secondary science, social studies, and technical subjects teachers conceptualize instruction in their respective classrooms?" This is important, for students' comprehension of words, the word learning process, and the types of instruction they receive impacts their ability to make meaning from text and comprehend course content. The following questions were subsumed by this overarching question:

1. How do secondary science, social studies, and technical subjects teachers conceptualize their knowledge and beliefs about the teaching of vocabulary?

2. How do secondary science, social studies, and technical subjects teachers find out about vocabulary instruction, and how do they find out about which words to teach?

3. How are secondary science, social studies, and technical subjects teachers' knowledge and beliefs about teaching vocabulary evident in their instructional practices?

In order to respond to these questions, I designed the study to examine participants' knowledge and beliefs about vocabulary instruction. In addition, the study aimed to determine the sources from which teachers acquire information to proceed with the vocabulary instruction that does occur and which vocabulary instructional practices they select from the corpus and apply in instruction.

In Chapter Two, I first discuss disciplinary learning and vocabulary knowledge and learning. Next, I examine teacher beliefs and unpack them at three levels. Last, I examine the research regarding guidelines for vocabulary instruction.

**Chapter Two**

In this chapter, I first discuss disciplinary learning and vocabulary knowledge and learning. Next, I examine teacher beliefs and unpack them at three levels: beliefs related to practice, beliefs related to developing disciplinary literacy, and beliefs related to vocabulary instruction. I conclude this chapter with an examination of the research on guidelines for vocabulary instruction.

**Introduction**

In my professional life as a teacher, I have been driven to understand teaching practices that lead to a high degree of student learning and enact them in the classroom. I work collaboratively with colleagues as an Eighth Grade Language Arts teacher within my district. I also work alongside graduate level students at a nearby four-year university to examine teacher decisions and how student learning is supported, in particular as it relates to building literacy in the content areas (including methods of content vocabulary instruction). I aim to provide instruction that takes students who are often outsiders to subjects such as science, social studies, and technical subjects and demystify the vocabulary of these disciplines, to help students become insiders (Readence, Bean, & Baldwin, 1985).

**Disciplinary Understanding**

The attention to student development as insiders remains crucial (Buehl, 2017; Townsend, Brock, & Morrison, 2018). Strong early reading skills do not automatically develop into more complex skills that enable students to deal with the sophisticated reading of challenging texts in science, history, literature, mathematics, or technology (Grigg, Donahue, & Dion, 2007; McLaughlin & DeVoogd, 2018). And, while most

students can and do learn to decode and answer foundational comprehension questions, few are able to synthesize, interpret, or critique information and ideas offered in texts, in particular as it concerns expository texts (Moje, 2006; Pyle et al., 2017).

Disciplines are different in how they "create, disseminate, and evaluate knowledge, and these differences are instantiated in their use of language" (Shanahan and Shanahan, 2008, p. 48), as are the variety of language approaches and resources that are used in different disciplines. As such, students must be provided with explicit instruction in the genres, specialized language conventions, and discipline-specific terminology to support their learning (Jenkins, 2018; Seibert et al., 2016; Shanahan & Shanahan, 2008; Vacca & Vacca, 2013).

Smagorinsky (2015) explained that in the same way that teachers have a specific vocabulary (e.g. scaffolding, pedagogy), so does every other social group (e.g. car mechanics, wrestlers). Learned, Stockdill and Moje (2011) found that as students engage in learning in the content areas, they need to access a variety of knowledge types (e.g. word, genre, topic). Also, the manner in which students use this knowledge to comprehend a given text varies, especially from content area to content area. For example, in a biology course, students may comprehend how plants grow, but the lack of precise vocabulary knowledge may keep them from successfully reading a science text about this process.

"Academic thinking involves the cognitive processing of disciplinary concepts and phenomena, which would be near impossible without academic language" (Nagy et al., 2012, p. 92). One core idea, it would seem, is when teachers help students understand

content specific terminology, students can in turn effectively deal with the specific demands of content area coursework and texts (Mountain, 2015; Shanahan, 2015).

**Vocabulary Knowledge and Learning**

During my tenure as a teacher, I have regularly encountered teachers who believe that vocabulary learning is crucial and they see vocabulary knowledge as an expression of deep conceptual knowledge; yet, the classroom instruction that accompanies this belief often appears atomistic and skill based. For example, several colleagues continue to assign lists of words that are copied down in a notebook and accompanied by definitional information from a dictionary or textbook glossary. However, Nagy and Scott (2000) stressed that, "Definitions, the traditional means of offering concentrated information about the words to students, do not contain the quantity or quality of information that constitutes true word knowledge" (p. 280). And Gillis (2014/15) explained that knowing words involves the degree to which words are known, the dimensions of those words, and "the interrelatedness of that knowledge" (p. 281).

Many researchers have provided a large body of findings on vocabulary learning and instruction (Beck, McKeown, & Kucan, 2002; Graves, 2016; Stahl & Nagy, 2006; Wright & Cervetti, 2017). Among these findings is that vocabulary learning needs to occur in authentic contexts, and provide students with numerous opportunities to understand how words interact, create meaning from, and support other words' meanings (Nagy & Townsend, 2012). These authors also point out the recent efforts to change teacher practice, though the change is "largely about the types of words teachers teach and not about effectively teaching words within the discourse of the disciplines" (p. 93). Attention to vocabulary instruction is important, for discipline-specific words may be

technical or abstract, and their comprehension is essential to developing conceptual knowledge in the disciplines (McKeown et al., 2018).

**Teachers' Beliefs**

Learning how and why teachers use certain literacy practices requires an examination of their beliefs, not solely an examination of the strategies or practices they purport to enact in classrooms. As evidenced in multiple studies, not only are beliefs reflected in teachers' decisions and actions, but also teachers' beliefs and attitudes drive important decisions and classroom practices (Carter et al., 2015; Renzaglia et al., 1997). At this juncture, it is prudent to define teachers' beliefs, examine how beliefs are developed, and then build a foundational understanding of how beliefs impact instructional decision-making.

**Beliefs related to practice.** Beliefs strongly influence both perception and behavior. According to Fang (1996) theories and beliefs maintain a prominent place upon which teachers build their general knowledge through their perceptions, reflections, and actions in the classroom. These beliefs guide pedagogical decision making and teacher practice. Calderhead (1996) claimed that five main areas contribute to teacher beliefs: (a) beliefs about learners and learning; (b) beliefs about teaching; (c) beliefs about subjects or curriculum; (d) beliefs about learning to teach; (e) beliefs about the self and the nature of teaching. Pajares (1992) concluded that teachers' beliefs about teaching and learning have significant influence on planning, instructional decision-making, and classroom practice, which has been further confirmed by other scholars (Agee, 2004; Enyedy, Goldberg, & Welsh, 2006; Lasky, 2005). Beliefs may be derived from sources like

established practices, teacher personalities, principles of education, research-based evidence, and principles obtained from an approach or methodology (Jenkins, 2018).

Teachers' beliefs represent a rich store of knowledge through which teachers make sense of their respective contexts and respond accordingly to contexts by creating a complex system of professional and personal knowledge. Teacher beliefs are also interconnected, eclectic, complex, and lack uniformity. An individual's beliefs that are firmly developed and have become time-honored are often interpreted by that individual as being knowledge, whether or not they are accompanied by extrinsic verification. (Carter et al., 2015; Rokeach, 1968). Zeichner and Tabachnick (1985) noted that beliefs seem to be "highly person-specific" (p. 24), and Pajares (1992) found that the filtering effect or beliefs "ultimately screens, redefines, distorts, or reshapes subsequent thinking and information processing" (p. 324).

Teacher beliefs are an amalgamation of their personalities, their educational backgrounds, and their lived experiences in classrooms. Ball and Goodson (1985) suggested that teacher development is inevitably idiosyncratic and ought to be viewed in relationship to life history and the context in which development takes place. Britzman (1991) noted that it is not only the university that shapes a student teacher's pedagogy; a student teacher's life history - in and out of classrooms - also defines what it means to teach and to learn. Kagan (1992) argued that the majority of teachers' professional knowledge ought to be regarded as belief, for as teachers gain experience in the field, the respective knowledge each one compiles allows for the creation of a highly personalized pedagogy or belief system that ultimately constrains perception, judgment, and behavior.

Belief systems, once established, are highly resistant to change. Zeichner and Tabachnick (1981) found that teacher education typically has a nominal impact on teacher knowledge and beliefs. It seems that whatever preservice teachers learn at the university level tends to have eroded by the time they arrive in schools. Richardson (1996) concluded that beliefs of preservice teachers are often so strong that they are virtually impossible to change within the confines of a teacher education program. Inservice teachers are typically more entrenched in their beliefs about teaching and learning. They have developed idiosyncratic ways of considering and implementing instruction as a result of their experiences and classroom routines; these ways are often resistant to change. Alvermann and Hayes explained (1989), "Teachers have their own experiences, beliefs, and intuitions that are translated into practical arguments and instructional goals to which they are firmly committed" (p. 333).

Goodlad (1984), claimed, "Teachers are both conditioned and are conditioned by the circumstances of schools" (p. 29). This statement encompasses two key issues regarding teachers' beliefs and practices; (a) teachers' beliefs about reading and learning drive the selection (or ignorance) and employment of methods and materials; (b) external factors, sociocultural and environmental, limit the implementation of instruction founded on teacher beliefs.

Teacher beliefs are influenced by the context in which the instruction takes place. Leinhardt (2001) found that when class begins, teachers contend not only with their own beliefs and intentions, but also with the constant revisions and reworkings of their intentions and beliefs which are based on what is actually happening. Duffy and Anderson (1982) noted that teachers can state theoretical components of reading and

instruction, but a myriad of contextual factors are what actually govern teacher practices. Duffy (1982) and Duffy and Ball (1986) contended that classroom complexities often constrain teachers' abilities to attend to their beliefs and provide instruction that is consistent with their beliefs. Lytle (2006) explained the importance of contextual factors on teachers' beliefs and resultant practices. Access to teachers' knowledge involves creating spaces for discussing and interrogating their stories of practice, a space that allows agency in the ways daily experiences are rendered, framed, and responded to. As well, these spaces must embrace "the uncertainties and struggles endemic to this work" (p. 257). There is also a requirement to attend to context, in particular how teachers understand their work as embedded within the cultures of their classrooms, schools, school districts, and beyond (Fives & Buehl, 2012).

It may be that the inconsistencies between teacher beliefs and teacher practices are due to teachers placing greater value on their central beliefs about teaching than on their beliefs about literacy. It is also possible that theories that are associated with academic disciplines rather than experience are more influential on beliefs and instructional decision-making. Readence, Kile, and Mallette (1998), content literacy researchers, cautioned, "It may be counterproductive to assume a shared belief system on the part of secondary teachers in trying to determine the relation that exists between beliefs and practices" (p. 144). These differences may be due to the idiosyncratic nature of beliefs; they may also be due to the beliefs that exist across content areas because each discipline has its own set of beliefs, practices, and norms and these factors influence the work of teachers (Grossman & Stoldosky, 1995). No doubt the importance of beliefs in framing teacher knowledge significantly impacts the process of teaching, for teachers'

beliefs accrue over time and ultimately serve as the well from which teachers draw to make their educational decisions.

For example, Davis, Konopak, and Readence (1993) investigated two Chapter I teachers' beliefs regarding reading and instructional practices. They examined the relationship between the participants' reader-based beliefs about reading and their instructional decision making (while planning for instruction and during the actual teaching). They also aimed to identify constraints and/or opportunities that may have influenced the instructional decision-making process. Observers recorded field notes, audio-taped lessons, and performed teacher interviews over the course of 10 separate Chapter I instructional lessons, each from a participant's pull-out class (6-10) students. The study confirmed the participants shared a similar belief system, however, their use of instructional practices varied widely. The most dominant impact on the decision-making process was the teachers' beliefs about reading instruction. The participant's context for learning also varied widely; they indicated that the students, support personnel, and the overall school culture had influenced their practices.

Kinzer (1988) administered identical instruments consisting of an inventory designed to identify beliefs about how reading takes place and develops via a set of three lesson plans each in vocabulary, comprehension, and syllabication. Though the study did not involve observation of actual teacher practice, Kinzer found the only statistically significant relation was for teachers who held reader-based views in vocabulary. The participants included 83 preservice and 44 in-service teachers who wrote lesson plans to reflect how reading takes place and develops. Those preservice and in-service teachers with reader-based/holistic explanations for how reading takes place and develops tended

to choose vocabulary and comprehension lesson reflecting their beliefs. Little difference existed between groups in theoretical orientation regarding how reading takes place and develop because little consistency was found between the theoretical orientation of the teachers and the lesson plan choices.

Most frequently, content area courses are viewed as a relatively rigid collection of knowledge (facts, concepts, skills) that must be learned and then applied. Accordingly, the work of secondary teachers is commonly defined by subject specialization and those learning to teach must become masters of particular subject areas and immersed in the direct process of teaching those areas (Britzman, 1991). This belief sets in motion approaches to teaching that most commonly use structured, relatively linear approaches to learning. As Leinhardt (2001) stated, "We know intuitively that subject matter content affects the nature and practices of teaching" (p. 334).

**Beliefs related to developing disciplinary literacy.** "Disciplinary literacy practices are shared language and symbolic tools that members of academic disciplines (e.g., biology, philosophy, musical theater, architecture and design, psychology) use to construct knowledge alongside others" (Rainey, Moje, & Maher, 2018, p. 371). The importance of beliefs in framing teacher knowledge impacts the teaching process. Historically, two broad explanations are most commonly offered regarding the failure to successfully teach literacy at the secondary level. These explanations range from those that are rooted in knowledge, beliefs, or cultural values among students and teachers to the contextual factors of the school and the dominant views of content area norms (Alvermann & Moore, 1991). Content area teachers may make decisions about how to teach reading based on incomplete/incorrect knowledge or how they have observed other

teachers teach it. These decisions are then "a reflection of their beliefs, and not necessarily governed by pedagogical and subject matter knowledge" (Hall, 2005, p. 405). Goodlad (1990) discussed preservice teachers' tendency to "judge the quality of everything encountered on the grounds of perceived practicality. They are drawn purposefully to the discrete and utilitarian - things unencumbered by whatever intellectual roots have nourished them" (p. 25). Bean (2000) asserted that while there is some variance in preservice content teachers' beliefs and practices, they tend toward a transmission style of teaching which reinforces teacher control while compromising content area strategies. Vacca, Vacca, and Mraz (2016) argued that teachers resist integrating literacy teaching practices as they perceive them to be antithetical to their work as content area teachers. Similarly, Yore (2004) cited his most challenging task as that of convincing science educators about the critical nature of language in science and the importance of language-oriented tasks in instruction.

As in the case of work on teacher knowledge and beliefs in general, research in literacy shows, "The bigger picture of teacher beliefs encompasses not only beliefs about literacy but also beliefs about subject matter, teaching, learning, and learners themselves" (Readence, Kile, and Mallette, 2008, p. 143). Powers and Zippay (2006) discovered inconsistencies between what preservice teachers stated they believed (in regards to the importance of literacy instruction) and the teaching practices they actually employed. Freedman and Carver (2007) found preservice teachers began literacy coursework with the recognition that literacy skills are important to student learning. However, few were able to articulate how they might develop student literacy given the obligations to their content areas. Heller and Greenleaf (2007) argued that if content area educators see

literacy instruction as "completely external to their academic disciplines - a set of generic teaching strategies imposed on them from the outside - they will be unlikely to embrace it fully or to make it truly integral to their teaching" (p. 26). Additionally, teacher educators, both preservice and in-service, question the efficacy of literacy instruction for their classrooms, their ability to promote literacy, and whether doing so will take time away from content instruction (Draper, 2008). Moje (2008) suggested that the knowledge, beliefs, and practices of both teachers and students combine to create barriers to disciplinary literacy instruction.

Another belief that impacts content area teachers' practices is the view that an unfair burden has been placed upon them in regards to teaching reading, for they believe they ought to be teaching content. Like other content-area literacy educators (e.g., Stewart & O'Brien, 1989), I have faced teachers, both preservice and in-service, who question the efficacy of literacy instruction for their classrooms, who question their ability to promote literacy, and who question whether doing so will take time away from content instruction. O'Brien, Stewart and Moje (1995) argued that teachers do not readily incorporate literacy in disciplines due to institutional time constraints, the teachers' limited knowledge of literacy processes and literacy teaching practices, and resistance to incorporating literacy as part of learning in their content area. Dillon (1989), found that "Secondary content teachers seldom mention reading when planning instruction for students, believing that reading is merely an activity that students participate in to cover the material" (p. 229).

Konopak, Wilson, and Readence (1994) examined a group of preservice and in-service secondary social studies teachers' beliefs and instructional choices about learning

with text. They found that while both the preservice and in-service teachers favored reader-based explanations for how learning with text takes place and develops, they also chose vocabulary and comprehension plans that held consistent to those beliefs. They utilized four instruments: a set of 15 beliefs statements regarding learning with text (a process model), how learning with text develops (instructional approach), and two sets of lesson scenarios on vocabulary and comprehension instruction. Each set incorporated three theoretically divergent explanations for learning with text: text-based (teacher as authority), reader-based (student-centered orientation), and interactive (a combination of the two). The 70 participants included 35 preservice teachers enrolled in undergraduate social studies methods course and 35 in-service teachers enrolled in graduate courses. Concerning vocabulary and comprehension, the text-based approach stressed the text as the primary source of information, drill and practice, and teacher affirmation of correct responses. In contrast, reader-based plans stressed the theory that readers make meaning from the text, use their prior knowledge to learn, and teacher as guide. Interactive plans stressed that the text and prior knowledge make meaning, students employ a variety of strategies, and the teacher takes individual student differences into consideration. Teachers from both groups primarily held reader-based orientations across all instruments, followed by interactive orientations on the two sets of beliefs on the vocabulary and comprehension lessons. Also, teachers who held reader-based beliefs chose to employ corresponding lessons in comprehension but not with vocabulary. Finally, the authors also pointed out that the selected instructional decisions may have been made due to what the participants felt they ought to do versus that which they actually employ.

Khonamri and Salimi (2010) examined the degree of discrepancies or consistencies between teachers' beliefs about reading strategies and the practical strategies they used in the context of teaching English as a foreign language. They found the relationship between teachers' beliefs and teachers' practices to be highly complex, including the discrepancy between teachers' beliefs and their self-reported practices. Fifty-seven teachers ranging in professional experience from 5 to 25 years (77% of whom had 10 or more years of teaching English experience) completed three-part questionnaires as follows: the importance of reading strategies in reading comprehension, beliefs about the necessity of reading strategies in teaching practices, and actual employment of reading strategies in teachers' reading classes. Each section held 20 identical elements - important factors in reading comprehension - which were grouped into six categories of reading strategies: linguistic knowledge, English text translation, conceptually driven basis, cognitive strategies, metacognitive strategies, and aided strategies. Teachers identified vocabulary, finding the main idea, and guessing the meaning of words as the three most important teaching strategies, whereas, translation, reading the text aloud, and grammar were the lowest. The authors concluded that teachers believe reading strategies are important in reading comprehension, and it is necessary to teach reading strategies in reading classes. A number of factors may have contributed to this perspective: a desire to teach reading strategies (but a lack of procedural knowledge), complexities of the classroom which may constrain teachers' abilities to attend to their beliefs and instruct in line with their theoretical beliefs, and/or portrayal of teacher practices in a more favorable light than what actually takes place.

The International Reading Association's (IRA) teacher education task force (TETF) undertook a critical review of 82 empirical peer-reviewed investigations in reading teacher preparation from 1990-2006. Teacher educators conducted the majority within their own institutions over one semester as constructivist studies. The reviewers noted four patterns "(a) changes in beliefs and pedagogical knowledge, (b) conditions associated with these changes, (c) use of explicit teaching conditions, and (d) instructional tools commonly used by the teacher educator researchers" (Risko et al., 2008, p. 276). Eleven of the 82 studies focused on teacher preparation at the secondary level in content area reading; 44% focused on teachers instructing preservice teachers (PTs) to use explicit instruction, modeling, and demonstration when teaching reading. In terms of teacher beliefs, Dillon, O'Brien, Sato, and Kelly (2011) discovered that the PTs faced a high degree of challenge when expected to use coursework knowledge to reshape their own beliefs. However, "PTs often shifted their beliefs about students' abilities to learn and embraced effective teaching strategies" (p. 14) when they experienced learning that occurred as a result of instructor modeling through carefully designed practical experiences.

Hall (2005) examined reasons that motivate preservice and in-service content area teachers in grades 6-12 to either teach or not to teach reading in order to understand teachers' beliefs about reading instruction and their regard for the teachers of reading role. Based on the data, Hall identified four main teacher beliefs about teaching reading that determines the extent to which it is taught. One, content area teachers cannot or should not teach reading due to their lack of qualification. Two, teaching reading is responsibility of someone else, which was expressed by the belief that the

Reading/Language Arts teacher is more qualified. Three, while teaching reading is important, students neither need instruction nor a high level of ability to read and write in their content area. Four, content area teachers would like to teach reading but do not know how. In summary, content area teachers primarily make decisions about how to teach reading either based on incomplete/incorrect knowledge or their observations of other teachers teach it. These decisions are "a reflection of their beliefs, and not necessarily governed by pedagogical and subject matter knowledge" (Hall, 2005, p. 405).

Dillon (1989) undertook a year-long micro ethnography in order to generate a description of the social organization of a low-track secondary English-reading classroom. Of particular interest were the actions and patterns of actions the teacher displayed during the lessons, how these were shaped by students' actions, and how that impacted the social structure of that classroom. Dillon provided this critique:

His teaching style represents the synthesis of his beliefs about purposes of education, teaching, and how students learn; his beliefs about himself including his strengths and weaknesses; and the knowledge gleaned from day-to-day interactions and experiences with students. Because of the congruence between Appleby's knowledge, beliefs, and actions, his teaching is informed, dynamic, and artful, as opposed to prescribed and static. Appleby's teaching is informed because he continually gathers data on his students through observing and listening as they interact during lessons. He also works to keep his content and pedagogy current. Appleby then uses all of this information to continually reflect upon and flexibly adapt his actions. (pp. 245-246)

Students in grades 7-12 (74% black and 26% white) comprised the small consolidated high school of Brown/Hill; they were tracked based on reading levels returned from standardized test scores early in their academic lives. 17 students (11 female, 6 male) comprised Mr. Appleby's eleventh grade basic English-reading classroom. After having taught several quarters at Brown/Hill High School, Mr. Appleby requested to work with the "basic, low-reading ability level students, whom he refers to as 'road-dogs' - students who keep trying despite their backgrounds and academic failures" (p. 231). Mr. Appleby, interacted with them in ways that met their cognitive and affective needs. Dillon (1989) asserted that social organization in this classroom had been constructed by Mr. Appleby and his students, thus creating a classroom environment that "reduced resistance to learning and increased active participation during lessons" (p. 234). Appleby expressed that students need to have the opportunity to discuss and 'get personal' with their respective teachers; he iterated the belief that small group instruction has distinct benefits for students. Appleby posed problems and allowed - even encouraged - students to respond. Dillon wrote, "Another set of actions Appleby displayed reflected his concern for the low amount of background knowledge most of his students came to school with" (p. 242). He provided a scaffold to better understand concepts covered in lessons. Dillon pointed out, "Appleby stopped at predetermined places in the text to discuss vocabulary, concepts, and what had happened, was happening, and might happen in the story" (p. 242). Appleby continued along this line of instruction due to his belief that exposing them to good literature, though far above the students' reading level, was beneficial. One critical factor in Appleby's efficacy was his unwillingness to conform to someone else's teaching model.

Moje (1996) undertook an ethnographic study of a high school basic chemistry class over the course of a two-year period looking at the ways in which high school teachers either resist the use of or inconsistently use content literacy practices. Moje (1996) found that literacy was "practiced as a tool for organizing, thinking and learning in the context of a relationship built between the teacher and her students" (p. 180). The foci were as follows: "(a) What is the nature of the literacy events in one chemistry classroom? (b) How do students and the teacher make decisions about using literacy to learn chemistry? (c) How are these decisions about literacy events and practices shaped by the teacher's and student's life experiences and histories? and (d) How are these decisions shaped by classroom interactions? How do the decisions shape interactions?" (p. 172). Moje drew from sociocultural theories of literacy, teaching, and learning to make sense of how the participants' beliefs and experiences influence classroom interactions and overall learning. The data was comprised of daily observational field notes, seven structured interviews with the chemistry teacher, 15 student interviews, and daily informal participant interviews. Moje demonstrated the climate of the classroom and the past experiences of the teacher and the students played inherent roles in how the literacy practices were carried out. In this particular classroom, strategies included: previews, SQ3R, Venn Diagrams, concept maps, graphic organizers, notebooks, and portfolios. Moje also explored the development of the course's teacher-student relationships, developing a narrative of the teacher's (Landy) history, both familial and experience in teaching. She then explored the connection of her history to her beliefs and classroom decisions. Moje noted that students did not transfer the use of the strategies used in this particular teacher's classroom to other classrooms. Two main implications

were: (1) additional research must focus on instruction as contextualized in classrooms and schools (2) in addition to teachers' beliefs about literacy, teacher beliefs should represent their beliefs about content areas and about students and context (social and political) of the school. Moje treated teaching as an integrated, evolving system that is responsive to the knowledge base and experiences of teachers as well as students' beliefs, experiences, and initiatives. Accordingly, strategies are not easily inserted into a classroom unless the complexity of established relations and the teacher's conception of the work support their incorporation.

*What have we learned through this aforementioned review of literature?* A variety of entrenched beliefs and respective practices continue to impose obstacles on literacy instruction in content areas. As evidenced in this section of the literature review, factors that deter teachers from employing sound literacy instruction include: pressure to teach voluminous amounts of content, conflicting views on literacy instruction, content area teachers' cultural beliefs and practices, and the belief that literacy instruction ought to be relegated to the elementary school level.

It may be that the inconsistencies between teacher beliefs and teacher practices are due to teachers placing greater value on their central beliefs about teaching than their beliefs about literacy. Readence, Kile, and Mallette (1998) cautioned, "It may be counterproductive to assume a shared belief system on the part of secondary teachers in trying to determine the relation that exists between beliefs and practices" (p. 144). There also exists a misguided impression that educational practices can readily change simply by being put into place. To the contrary, teachers interpret and adapt these so-called innovations such that the intent, enactment, and the effect of any given innovation

changes from context to context. Many beliefs about teaching, learning, learners, and content areas may serve as personal roadblocks to change. They underlie practices and policies such as teacher evaluation, student learning, and student assessment. For example, teachers might struggle to adopt the perspective that students are to be actively engaged in the learning process. Thinking through and trying out the implications of this perspective in his/her classroom may contend with oppositional beliefs held by students, parents, teachers, and administration which creates an even greater challenge to teachers to alter their beliefs and practices (Borko & Putnam, 1996).

It is also possible that theories which are associated with academic disciplines rather than experience are more influential on beliefs and instructional decision making. Indeed, the work of secondary teachers is commonly defined by subject specialization, therefore those learning to teach must "master particular subject areas, as well as immerse themselves in the direct process of teaching them" (Britzman, 1991, p. 37).

The literature review also demonstrates researchers' bents toward examining the relationship between teachers' beliefs and their respective practices. Readence, Kile, and Mallette (1998) explained, "The studying of beliefs gives us clearer insights into teacher practices; an examination of teacher practices, on the other hand, demonstrates how they are influenced by beliefs" (p. 143).

***What does this review tell us based on data?*** Another factor that contributes to teachers' beliefs and their instructional practices includes the assumptions they have about student learning and the reading process. In fact, these cognitions and beliefs very much drive everyday practice at the local level (Richardson & Placier, 2001). These beliefs about the reading process are located along a historical continuum of reading

theory. Over the course of the nineteenth and early twentieth centuries, reading moved

from an act of transmission, one which held that the author was the sole source of

meaning, to that of a theory of translation, one in which meaning resides in a text. The

readers' role was passive as the construction of meaning was geared toward determining

one correct meaning, either by memorization or recitation or by translating the text's

structural features into information without any interpretation. In both of these cases, the

underlying assumption was that meaning resides in the text and can be understood only if

readers have enough background knowledge to help them interact with the author through

the structure of the text. In the latter half of the twentieth century, reading scholars

viewed reading as a transactional process. Meaning came to be thought of as constructed

as a result of a complex transaction among the reader's knowledge bases, the experience

of reading, and the situation of reading. Alvermann et al. (2013) stated that different

understandings of a reading are "textually, personally, and socially constructed" (p. 195),

as they are rendered depending on a reader's prior knowledge, attitudes, intention, and

learning strategies as well as the social context they occur. This cognitive view of the

reading process assumes that readers actively construct meaning by integrating new and

existing knowledge and "the flexible use of strategies to foster, monitor, regulate, and

maintain comprehension" (Dole et al., 1991, p.242). Informally, this can be described as

learning *with* text rather than learning *from* text. This view places the act of reading to

learn "squarely in the context of a human transaction between two parties rather than

being a transmission of information from one party to another" (Vacca et. al., 2016, p. 8).

So, learning *with* text implies that readers contribute to the process of meaning making

and knowledge construction. More recently, the RAND Reading Study Group (2002)

described socio-cognitive theories of reading as a meaning-construction process that takes place when there is an interaction between the reader, the teacher, the classroom context, the text, and the reading activity. This context influences and is influenced by the reader's and teacher's decisions and background, including cognitive and affective conditions. Alvermann, Phelps, and Gillis (2013) are among those who approach literacy from lines of inquiry that are grounded in philosophical, sociocultural, and sociolinguistic theories. Though not all encompassing, the term socio-historical constructivism is a major influence on these authors' work. The authors tend to follow Vygotsky's (1978) perspective that "mental functioning in the individual originates in social, communicative processes which are embedded in an array of cultural, historical, and institutional contexts" and that students will benefit from social engagement in groups where more knowledgeable others can help guide their learning (Alvermann et al., 2013, p.41). As such, the authors believe many factors may affect student performance in a content classroom including: considerations of student's language, reading, writing, as well as interests, values, traditions and beliefs.

It is important to note these theories of reading and their influence changes over time. Barr (2001) explained methodological shifts to be

> symptomatic of underlying changes in how we think about teaching and
> learning. Theoretically, this shift from behavioristic to socio-constructivist
> formulations marks a change from thinking of teaching and learning as separate
> processes to those that are tied together, from viewing the teaching-learning
> process as unidirectional to inter-active, from believing what is taught is also

learned to understanding that what is taught may not be what is learned, from

viewing learning as an individual process to one that is social. (p. 407)

The significance of the models of reading to which teachers subscribe and the

understandings teachers possess of them cannot be understated as they directly impact

student learning.

*__What does this review tell us about what we need to continue to look at?__* One

persistent problem reported by instructional model developers and researchers is that

teachers do not use the tools available to them, for a myriad of reasons (Snow &

Biancarosa, 2003). This may be due to a lack of systemic or building support, or support

may exist, but there may be a lack of resources. In other cases, teachers are resistant to

change because they do not possess the appropriate knowledge base in reading

development to understand a new approach. For example, "constructivism" refers to

learning or meaning-making in which individuals create new understandings. These are

based upon the interaction of their existing schema and beliefs and the ideas with which

they come into contact. However, a vast majority of in-service teachers and preservice

teacher education students have not yet experienced constructivist classrooms in their

own education. Thus, as Richardson and Placier (2001) explained, "to change teacher-

centered, traditional classrooms to more constructivist environments, experienced

teachers and teachers-in-training require the acquisition of a new set of beliefs and

practices" (p. 914).

Teachers' beliefs are an amalgamation of their personalities, their educational

backgrounds, and their lived experiences in classrooms. That which is becoming evident

through this examination of teachers' beliefs and their respective instructional decision-

making is the difficulty in changing the type of tacit beliefs and understandings that lie buried within each person's being. As Lortie (1975) stated, "Students are undoubtedly impressed by some teacher actions and not by others, but one would not expect them to view the differences in a pedagogical way" (p. 62). Rather, that which students learn about teaching is intuitive and imitative, not explicit and analytical. It is actually based on individual personalities, not pedagogical principles. Therefore, as school and university personnel may be asked to become more sensitive to and knowledgeable about the impact of beliefs on teaching, teachers need to analyze their own instructional beliefs and how they affect their practice and adolescents' learning. For becoming thoroughly aware of why teachers take the actions they do may just afford them with "a convenient and profitable way to improve classroom instruction" (Readence, Kile & Mallette, 1998, p. 145).

**Beliefs related to vocabulary instruction.** Of the critical mass of background knowledge that subsumes vocabulary, Manzo, Manzo, & Thomas (2006) noted vocabulary development just may be "one of the most important things that we can do with and for students cognitively, culturally, and socially" (p. 614). While many word's meanings can be learned through reading, speaking, and listening, it is essential to provide readers with effective, explicit vocabulary instruction. Marzano and Pickering (2005) offered that knowledge of a given topic is encapsulated by the words one knows to be relevant to that topic. The more in-depth these words are understood, the easier it will be to understand information students read or hear in relation to the topic. Simply, the more words a person knows about a given subject, the easier it is to comprehend - and learn - new information related to that topic.

The emphasis on teaching vocabulary throughout the K-12 system stems from the tremendous size of the vocabulary learning task. Graves (2006) stated, "most students enter school with relatively large oral vocabularies - perhaps 10,000 words - and quite small reading vocabularies - perhaps numbering only a few words" (p.3) then cited White, Graves, and Slater's (1990) claim students learn in the neighborhood of 3,000-4,000 word families per year and are able to read around 50,000 words by high school graduation. The size of this vocabulary learning task would require teachers to foster student mastery of 24 word families per day if each was directly instructed. Nagy and Scott (2000) decreed, "any attempt to understand the processes by which children's vocabularies grow must be based on a recognition of the complexity of word knowledge" (p. 270). Five aspects of this complexity have long been recognized by vocabulary researchers, including: incrementality (word knowledge as a matter of degree), multidimensionality (several types of knowledge contribute to word knowledge), polysemy (words commonly have multiple meanings), interrelatedness (word knowledge is connected to knowledge of other words), and heterogeneity (knowing a word depends upon the kind of word) (Goodwin & Perkins, 2015; McKeown et al., 2018; Oslund et al., 2018). An additional mitigating factor in vocabulary instruction involves content area learning, for as students learn content, they learn new words for familiar concepts, new words that define new concepts, and learning new meanings for familiar words used in specialized ways in particular disciplines (Beck et al., 2013; Fisher & Frey, 2014; Graves et al. 2017).

Vocabulary instruction improves the overall literacy competencies of students K-12. Baumann and Kame'enui (2004) offered the importance of "ensuring that all children,

regardless of their place in the vocabulary development continuum, are taught, encouraged, and inspired to gain access to the meanings of words" (p. 9). Blachowicz and Fisher (2010) proclaimed that students need teachers who teach core content area vocabulary directly.

Students need to hear, see, and utilize new terminology in many contexts to develop a deep understanding of them; in essence, all content area teachers need to focus on vocabulary instruction (Townsend, 2015). First, vocabulary knowledge is the single most important contributing factor to reading comprehension. Second, each content area has its own unique vocabulary, for content areas are often quite distinguishable by the labels they use to identify concepts. Bravo and Cervetti (2008) decreed, "The fact that content area vocabulary terms are numerous, abstract, polysemous, and conceptually unfamiliar can potentially derail content area learning" (p. 144). Vacca et al. (2016) likened the uniqueness of content area vocabulary to human fingerprints; they noted that content areas are distinguishable by their language, particularly the discipline-specific words that name the concepts that support the content area. Third, content area vocabulary varies greatly from that of the vocabulary selected for instruction in literature-based courses. Armbruster and Nagy (1992) argued in favor of three distinct differences between vocabulary in reading lessons and in content lessons. One is how closely the meaning is tied to the purpose(s) of the lesson. The second is "the degree to which the vocabulary represents familiar concepts," and the third is "the degree of semantic relatedness of the vocabulary words" (p. 550).

The types of powerful instruction documented in research needs to become more commonplace and frequent, especially in content areas such as science, social studies,

and math. Ogle et al. (2016) claimed that students must be interested in and become knowledgeable about words and how they function, in particular as they increasingly encounter content-specific vocabulary. For one, content area texts introduce a multitude of new and distinct concepts; most often these are represented by unfamiliar words or by familiar words used in new ways. Graves and Watts-Taffe (2002) asserted students may encounter anywhere from 50,000-100,000 new vocabulary words within the school context. Carleton and Marzano (2010) compiled lists of academic terms for four grade band levels: lower elementary, upper elementary, middle school, and high school. These lists included the following number of terms considered crucial for instruction at the middle and high school levels: Language Arts (470), Math (422), Science (517), and Social Studies (2,457). Therefore, teachers ought to vary their approaches to teaching word meanings based on the target words (Graves, 2009; Stahl & Nagy, 2006).

Second, while students may contextually comprehend the general meaning of a particular content text, if the important vocabulary is not understood, it is highly unlikely text comprehension will occur. In fact, the conceptual load of just one chapter or just one page can be quite weighty, and that has a cumulative effect (Alvermann et al., 2013). For example, reading Math texts requires precision of meaning, whereas, "each word must be understood specifically in service to that particular meaning" (Shanahan & Shanahan, 2008, p. 49). Also, students who struggle with vocabulary have a hard time keeping up with course content in the form of textbooks, lectures, and other instruction (Bryant et al., 2003; Jitendra et al., 2004; Vaughn et al., 2009). Science textbooks have high lexical density which is marked by the number of content words embedded in clauses, the total number of content words, or through the percentage of content words in relation to the

total number of words. Shanahan and Shanahan (2008) reported, "the abstract language that is used in chemistry texts is daunting for many high school students because it makes the subject matter more distant and disconnected from everyday experiences" (p. 53). Clearly, all academic disciplines utilize a unique language to represent its respective important concepts which is why "teaching vocabulary is too important to be incidental or accidental" (Vacca et al., 2016, p. 146).

Teaching vocabulary is not a simplistic process of merely teaching words; rather it requires selecting specific words to teach to particular students for a particular reason (Harmon & Wood, 2018; Graves et al., 2014). According to Snow, Griffin, and Burns (Eds.), (2005) conventional wisdom about vocabulary instruction vacillates between two poles: read voluminously or utilize word lists for end-of-the-week quizzes. Neither of these positions represents true north as it pertains to vocabulary growth that has a lasting impact on reading achievement. What actually works is well-planned instruction that fosters student engagement in a variety of contexts so students use new words, gain feedback, and make personal connections among new and known vocabulary terms. This is important, for student understanding of words and the word learning process is highly dependent upon the type of instruction students experience (Nagy & Scott, 2000).

**Guidelines for Vocabulary Instruction**

Several researchers have offered guidelines for vocabulary instruction. Blachowicz and Fisher (2010) disseminated five guidelines for effective vocabulary teaching. (1) Build a word-rich environment to develop word consciousness. (2) Help develop students as independent word learners. (3) Use instructional strategies that teach vocabulary effectively and model good word learning behaviors. (4) Develop general

vocabulary through scaffolded wide reading, writing, and discussion. (5) Use assessments that match the goal of instruction.

Alvermann et al. (2013) discussed their evaluation of research on teaching vocabulary and denoted it points to six guidelines for instruction: (1) Start with student prior knowledge. (2) Provide students with multiple exposures. (3) Involve the students in a variety of activities that use the new terms and concepts. (4) Promote transfer by focusing on words and strategies that have the widest application possible. (5) Include discussion. (6) Employ a word-rich classroom environment.

The four components of a vocabulary program described by Graves (2006) are (1) providing rich and varied language experiences, (2) teaching individual words, (3) teaching word learning strategies, and (4) fostering word consciousness. This study relies on Graves' four-part approach, for each is "likely to make an important contribution to students' long-term vocabulary growth and, hence, to their reading comprehension" (Snow, 2002, p. 39).

**Provide rich and varied language experiences.** Most words are learned incidentally. Through the primary years, those that lead to increasingly focused, content specific domains, word learning will largely come from listening and discussion. However, Nagy and Scott (2000) declared, "The complexity of word knowledge further bolsters the argument that much of students' vocabulary knowledge must be gained through means other than explicit vocabulary instruction" (p. 273). Considering the powerful impact of teachers' beliefs and the pressures of ever-expanding curricula, time limitations, and wide-ranging student abilities, teachers need vocabulary strategies that can yield the greatest benefit in learning while costing the least in planning and

instructional time (Alvermann et al., 2013). Therefore, here are several well-researched strategies that support the construction of rich and powerful vocabularies via incidental contact.

Reading aloud exposes students to vocabulary they would not encounter on their own (Barnes & Oliveira, 2018; Toth, 2013). Biemiller (2004) underscored the issue that school emphasis on reading skills in the early grades without emphasis on books with challenging vocabulary results in problems for many middle elementary children's reading comprehension. In order to foster vocabulary learning, teachers need to read aloud and provide word explanations, keep a record of which words are taught, teach vocabulary using children's literature, and read aloud specified curriculum materials in science and social studies.

Teacher modeling of words' meanings is also important (Gillis, 2014/15). Learning vocabulary in the content areas generally involves learning whole concepts, therefore extensive explanation and discussion is required. Nagy and Scott (2000) claimed, "If students are to become active and independent learners in the area of vocabulary, they need to have some understanding of the territory they are operating in. Such an understanding depends on explanations by teachers who themselves have some grasp of the complexity of word knowledge" (p. 280).

Another critical component of acquiring vocabulary knowledge is both a cause and consequence of effective and voluminous reading (Solis, Vaughn, Stillman-Spisak, & Cho, 2018; Suk, 2017). Snow, Burns, and Griffin (2005) stated, "Word learning is influenced by the amount and variety of reading a person does. Building vocabulary is a gradual process, with most words learned from use in context rather than formal study"

(p. 30). Stanovich (1986) discussed the "Matthew Effect," concluding that the more

students read, the better readers they become. Increases in reading caused an increase in

vocabulary knowledge which in turn increased students' reading ability which motivated

students to read even more which continued the cycle. Similarly, the amount of free

reading was the best predictor of vocabulary growth between grades two and five

(Anderson, Wilson, & Fielding, 1988). It also has been found to account for one-third or

more of vocabulary growth. As a result, vocabulary instruction across grade levels

requires students to engage in wide reading both in and out of school, as it impacts their

comprehension of subject matter and enables them to identify and acquire new terms

(Cunningham & Stanovich, 1998; Hirsch, 2003; Ponniah, 2011).

Vocabulary instruction ought not end with the hope that teacher discussion and

wide reading will be sufficient, for, "if time spent reading is an important explanatory

factor, then *all* reading should increase opportunities for incidental word learning or the

building of background knowledge" (Moje, Overby, Tysvaer, & Morris, 2008, p. 131).

Beck and McKeown (1991) argued that research, which spans several decades now, has

failed to uncover evidence that word meanings are routinely acquired from context" (p.

799). The goal of making meaning from text is hindered when readers struggle to

comprehend due to decoding deficiencies, lack of word recognition, and/or an inability to

derive meaning about a word from context. This adds further importance to teaching

vocabulary explicitly. Moje et al. (2008) asserted, "general word reading and writing

activities may not provide the incidental word and concept learning necessary for

achieving high levels of success in upper-level, academic, content-area classes" (p. 131).

Therefore, teachers must directly teach vocabulary to augment the comprehension of text

and concepts and improve literacy/communication capabilities across scholastic disciplines.

**Teaching individual words.** Teachers must decide which words are important for direct teaching, for as Graves (2006) decreed, "the fact that students need to learn more words than we can possibly teach them does not mean that we should not teach them some words. In fact, we should teach them a lot of words" (p. 1). Not only are there far too many words to teach all of them one by one; there is far too much each word to be learned by anything but rich, multifaceted instruction (Nagy & Scott, 2000). Rich instruction includes definitional and contextual information, multiple exposures to the words, rehearsal of the words over time, the use of discussion, and significant time spent with the words (Beck & McKeown, 2004; Beck, McKeown, & Kucan, 2013; Graves et al., 2017).

Vocabulary terms are often presented to students in conjunction with a definition, whether given to them outright by teachers or expected to look them up in the dictionary and retrieve the definition in order to use it in a student composed sentence. However, effective vocabulary instruction does not rely solely on definitions. By themselves, definitions can achieve only a superficial level of word knowledge. On its own, looking up words in a dictionary or memorizing definitions is not a reliable means by which to improve reading comprehension (Nagy, 1988). Baumann et al. (2003) concurred, "definitional instruction alone is not likely to promote comprehension of passages that contain taught words. Additional instructional dimensions - contextual information or semantic relatedness, for example - must support or extend definition instruction" (p. 765). Beck, McKeown, and Kucan (2013) offered a viable alternative to presenting

students with definitions. They explained when people first learn words, they understand them more as descriptions of words as opposed to definitions, and advocate for the presentation of words' meanings to students in everyday language. Graves (2006) advocated for beginning vocabulary instruction with student friendly definitions and following that with meaningful contexts that are based on students' experience. It is safe to say sound definitions and contexts are "minimal requirements for good instruction, but by no means do they exhaust what can be put into a good vocabulary lesson" (Nagy, 1988, p. 9).

When students are dependent on instruction to learn a word, and they are expected to effectively achieve ownership of that word, the instruction must provide multiple and varied encounters with that word (Stahl & Fairbanks, 1986). Pittelman, Heimlich, Berglund, and French (1991) claimed that in order for students to learn new words well enough to improve comprehension of written texts, multiple, meaningful opportunities to build conceptual and contextual knowledge of the words and to relate this new knowledge to background knowledge is required. Beck, McKeown, & Kucan (2013) declared that the mere provision of word meanings' information - even be that rich and meaningful explanations - will not equate to deep, long-term word knowledge. Multiple encounters over time are a necessity if the goal is "more than temporary surface-level understanding and if new words are to become permanently and flexibly represented in students' vocabulary repertoires" (p. 32).

As vocabulary development is incremental, content areas must regularly review and rehearse word meanings to remind students about the word in various contexts over time. Vacca et al. (2016) declared that teachers are able to help students build conceptual

knowledge of content area terminology by facilitating understanding of concepts based on their relationship to other concepts. Bravo and Cervetti (2008) noted that vocabulary instruction also needs to actively involve students as they uncover nuances and deeper meanings of target words through discipline-specific experiences. This regular, active, and deep processing of words supports learning meanings of specific words as well as learning strategies to become independent word learners (Harmon & Wood, 2018; Ogle et al., 2016; Townsend et al., 2016).

Augmenting adolescents' vocabularies is also achieved by "pushing students to become active learners of words by providing them with opportunities and the motivation to talk about, compare, analyze, and use target words and by providing these opportunities on multiple occasions" (Deschler, Palinscar, Biancarosa, & Nair, 2007, p. 41). Applebee reported open discussion was one of the most significant variables related to higher end-of-year literacy testing results (as cited in Phelps, 2005, p. 22). Kamil et al. (2008) promoted discussion as it rests on the idea that, "students can, and will, internalize thinking processes experienced repeatedly during discussions" (p. 22).

It is also important to spend significant amounts of time on the words to be learned. In an observational study that included 23 upper level classrooms in Canada, Scott, Jamieson, and Asselin (2003) found there to be minimal amounts of time devoted to vocabulary instruction in content area and language arts classrooms. In fact, a mere 1.4% of school time was spent on supporting vocabulary learning in science, math, and social studies classes. Perhaps content area teachers would do well to remember that "To teach the vocabulary is to teach the content" (Alvermann et al., 2013, p. 249).

**Selecting words for instruction.** Each domain-specific area (e.g. science, social studies, and technical subjects) has an esoteric vocabulary for communicating and for conceptual learning within that particular domain. These vocabularies contain not only the labels for specific concepts, but also important phrases and features that connect and hold ideas together (Harmon, Wood, & Hedrick, 2008). Additionally, the frequency of general academic words and their abstract nature points to the importance of these words for developing comprehension (Townsend, Fillipini, Collins, & Biancarosa, 2012). Therefore, it is important to identify potentially difficult or unknown vocabulary in a selection, such that a judicious decision about which words to teach can be made. Among other things teachers make the distinction between target vocabulary -words introduced and explained in a given text - and prerequisite vocabulary - words needed for comprehending the text (Armbruster, 1992). In essence, effective vocabulary instruction involves selecting the right words to teach (Snow, 2002).

Several prominent voices in vocabulary research have contributed to criteria for which words to teach. Herber (1978) suggested four criteria for vocabulary selection: the relation to key concepts, importance, student background and ability, the potential for supporting and enhancing independent learning. Bravo and Cervetti (2008) argued that explicit instructional measures are necessary in order to realize the benefits of such favorable word-learning conditions. This includes judiciously considering the number of words targeted for instruction and selecting words based on their "utility, domain centrality, and semantic relatedness" (p. 145). Graves (2006) listed four considerations:

1. Is understanding the word important to understanding the selection it which it appears?

2. Are students able to use context or structural-analysis skills to discover the word's meaning?

3. Can working with this word be useful in furthering students' context, structural analysis, or dictionary skills?

4. How useful is this word outside of the reading selection currently being taught? (p. 68)

Blachowicz and Fisher (2010) proposed four types of words as candidates for instructional consideration based on is the relationship to the students' necessity to know how will the words be used. The include:

*Comprehension words* - …essential to understanding a selection to be read… *Useful words* – not critical to understanding a particular selection but are of high utility for later use…*Generative words* – …they have parts or morphemes that lead to further word learning…*Academic words* – words that cause a lot of trouble to students lacking school experience and to second language learners." (p. 10)

Beck, McKeown, and Kucan (2002) recommended teaching 8-10 Tier Two words per week. They described Tier I as the most basic words (e.g. clock, baby, and walk) and explain, "Words in this tier rarely require instructional attention to their meanings in school" (p. 8). Tier II words are high frequency for mature language learners and are found across a wide variety of domains. These words have a powerful impact on verbal functioning, and because they appear infrequently enough, the chance of learning them in context is slim. Tier III words frequency is low and limited to specific domains (content areas).

**Instructional practices that lead to vocabulary learning.** While there are a number of effective ways to teach individual words, it is important to be mindful of Nagy's (1988) claim: "Effective vocabulary instruction also should establish connections among the instructed items" (p. 14).

The contextual redefinition method immerses students in vocabulary learning and aids in their efforts to discover the meaning of unknown words by utilizing context and definition (Readence, Bean, and Baldwin, 2004). Eight to ten words central to the content are selected for student learning; then each word is presented one at a time. First, students are asked to accurately define the word, then they are placed into groups in order to arrive at a consensus on the "guess" that is the most accurate. Third, students are presented with a prefabricated contextually rich sentence for each word to be learned. Students then have an opportunity to revise their definitions prior to looking up each term in the dictionary and verifying their answers. Over time, students begin to rely on the context to define unknown words which in turn significantly decreases the interruptions that are made during the reading process. This method has been proven to increase student motivation to engage with new vocabulary terminology rather than discard the meaning making process when confronted with unknown vocabulary words.

Semantic feature analysis is a semantic-based instructional strategy for vocabulary development; it organizes information in terms of the semantic features they do or do not possess. Semantic feature analysis supports students' efforts to understand relationships amongst key concepts and vocabulary, in particular "the many dimensions of meaning that may be associated with a particular term" (Alvermann et al., 2013, p. 254). Based on selected attributes or semantic features with the use of a table or grid,

students analyze similarities and differences among related concepts. This proves crucial to comprehension, for the majority of concepts do not represent a specific event or object or event, but a class that is linked by common elements or relationships (Johnson & Pearson, 1984). First a topic or category is selected; then words are listed in that category. Features or characteristics of that topic are then listed on the opposite axis of the organizer. Next, students are guided through the matrix where each word in the column is analyzed feature by feature, and a system of pluses (+) and minuses (-) are added to indicate which features each word possesses (Pittelman et al., 1991). The grid then serves as a basis for discussion, synthesis, and evaluation. Many studies have supported its effectiveness as an instructional strategy. Toms-Bronowski (1983) conducted a study with over 1,000 fourth through sixth grade students which revealed that students who learned selected vocabulary words using semantic feature analysis and semantic mapping achieved significantly higher than students who learned the words through contextual analysis. Anders, Bos and Filip (1984) found this to be true with learning disabled students in tenth and eleventh grade; those that used a semantic feature analysis rather than a dictionary/definition/sentence writing approach performed significantly higher on content vocabulary and reading comprehension tests.

Semantic mapping is one technique of teaching word meanings; it connects classroom discussion with visual display (Johnson & Pearson, 1984). Stahl and Vancil (1986) compared three classes of 6th grade students from a small rural Illinois school of mixed socio-economic background. Students were given one of three treatments: a semantic map with the full physical map and rich discussion, discussion only, and a semantic map without rich discussion. The assessments utilized a cloze passage and a

synonym posttest, both of which revealed a significantly higher score for the groups that included discussion. Discussion requires students to process word meanings more actively and when used in combination with a semantic mapping activity it "may enable children to connect to new information more efficiently to knowledge they already have" (Stahl & Vancil, 1986, p. 66).

Possible Sentences (Moore & Moore, 1986) is an instructional strategy that teaches new concepts in terms of their relationship to one another and to the overall topic of a text. The teacher first chooses 6-8 words that may cause difficulty for the students; these are generally key concepts, but may be challenging words that relate to the concepts. Then, 4-6 words likely to be familiar to students are also chosen. The 10-12 words are placed on the board; short definitions are often provided. Students compose sentences containing two of the words from the list that could be possible sentences from the selection to be read; both accurate and inaccurate compositions are included at this juncture. Following the reading, the teacher returns student attention to the possible sentences to check to see if they either could be true or could not be true based on the reading. Those deemed as "could not be true" are modified to make them true. A study done by Stahl and Kapunis (1991) sought to determine the level of effectiveness of possible sentences compared to semantic mapping as a prereading vocabulary instruction technique. Sixty-two fifth grade students with slightly above national norm vocabulary scores from a middle-upper class suburban district in Washington, D.C. participated. After assessing the students' general vocabulary knowledge and knowledge of the target words, students were asked to read a passage about a science topic, which were each roughly 500 words in length. Prior to each reading, students either received a possible

sentences treatment, a semantic mapping treatment, or no introduction. Possible sentences consistently produced the highest results and was statistically significant on the multiple-choice measures, which suggests Possible Sentences has a more lasting impact on information recall.

**Teaching word-learning strategies.** Along with teaching individual words, it is important to teach word-learning strategies. This includes using context to determine an unknown word's meaning, teaching word parts, and using dictionaries.

Teaching students to learn from context is crucial, for of 100 unfamiliar words met in a reading, a reader may learn 3-15 of them. Nagy, Anderson, and Herman (1987) measured incidental learning from context by students who read grade level texts in the third, fifth, and seventh grades. Students who read grade-level texts under fairly natural conditions had about a one-in-twenty chance of learning the meaning of any particular word in context.

Teaching word parts enhances students' understanding of terms and has traditionally been a part of vocabulary instruction, for knowledge of roots and affixes enables students to determine meanings of unknown words. In "Teaching Prefixes: As Good as it Gets," Graves (2004) proclaimed that vocabulary knowledge is crucial to reading comprehension. This research supports teaching prefixes as a small but important part of the vocabulary acquisition process, as 15 of the most frequently occurring prefixes virtually equal a vocabulary of 4,000 words. In fact, a handful of prefixes account for a large percentage of the prefixed words. Un- accounts for 26% of the total and 51% is explained by un-, re-, and in- "not." Merely four prefixes, un, re, in- "not", and dis-, account for approximately three-fifths of the prefixed words (58%). Adams (1990)

attested to the logic of teaching word parts, having noted the importance of teaching words with common elements such as: induction, production, and reduction as they are similarly spelled and share a common root (duct = lead). Edwards et al. (2004) support teaching roots in grades 7-12; Greek first as the meanings are more apparent, then Latin which is more abstract. The researchers contended that students at this age must be able to disassemble words into roots and affixes and learn how word parts function together to construct word meanings.

      **Promoting word consciousness.** Another important aspect of word learning is word consciousness which is also referred to as metalinguistic awareness (Templeton et al., 2015). Definitions, context, and word parts can each supply important information about the meaning of a word, but each of these sources has limitations. One effective method that fosters word awareness is the vocabulary self-collection strategy (Haggard, 1986; Ruddell & Shearer, 2002). The five steps in this strategy include: (1) Each student selects one word for study thought to be important for the class to learn (chosen from any source). (2) Students bring in the word and include where it was found, a guessed definition, and why it is important to know. (3) Students discuss and use dictionaries to clarify the meanings of the words then record them in a vocabulary journal. (4) Over the course of a week, words are interactively worked with in multiple ways. (5) Evaluate students' abilities to explain and use the words in written sentences (Graves, 2009). Haggard (1982) and Ruddell (2002) emphasized student choice of words to be studied and systematic discussion of those words. The VSS condition increased classroom collaboration time, ownership and enjoyment; in fact, students in the VSS condition scored higher on short-term tests that were administered at the end of the experimental

treatment. Teachers should scaffold vocabulary self-selection by modeling their own strategies for selecting vocabulary as well as how they use context, morphemic analysis, or the dictionary to help determine word meanings (Blachowicz & Fisher, 2000).

Several studies have found similar results to the work of Haggard. Blachowicz, Fisher, Costa, and Pozzi (1993) studied the effects of self-selection in cooperative reading groups on word learning in fifth and seventh grade readers. The students consistently chose words at or above grade level for study. Other activities that build word consciousness include studying idiomatic expressions, playing word games like Scrabble, Bananagrams, or Scattergories, and doing crossword puzzles.

**Direct vocabulary instruction can increase vocabulary and comprehension.** The role of knowledge and domain-specific vocabulary in reading comprehension is well known. To the point, if students are not provided the opportunity to learn subject area concepts and vocabulary, "their word knowledge and capacity to read a broader range of texts will be further diminished" (Heller & Greenleaf, 2007, p. 12). As has been discussed, effective vocabulary instruction must move beyond definitional information only. According to Nagy (1988), knowledge of words' definitions is insufficient to guarantee comprehension of text containing the words defined, for "reading comprehension depends on a wealth of encyclopedic knowledge and not merely on definitional knowledge of words in a text" (p. 7). In fact, the connection between the vocabulary knowledge of readers and their ability to understand what they read is one of the longest, most clearly articulated lines of research in literacy education. It is also supported by the tenet that educators must integrate a comprehensive word study/phonic program into reading/writing instruction. Pressley (2000) identified three important

factors in vocabulary instruction from the list of five that impact comprehension at the word and prior knowledge levels (Block & Pressley, 2002). These include: teaching decoding skills, encouraging the development of sight words, and teaching vocabulary meanings. According to the RAND Reading Study Group (2002) "direct instruction of vocabulary improved reading comprehension" (p. 36).

Integrating a comprehensive word study/phonic program into reading/writing instruction is paramount, as several studies underscore the significance of vocabulary knowledge as crucial to reading comprehension. Beck, Perfetti, and McKeown (1982) found teaching vocabulary can improve reading comprehension for native English speakers. Over the course of five months, students in grade four were taught 104 new vocabulary words. Students encountered the words frequently as a component of the intervention; the words were also used in multiple ways as a part of the instructional process. Comprehension was better for students who had received the vocabulary intervention, including on an analysis of pre to post-test scores on a standardized comprehension test, as compared to the control students. Anderson and Freebody (1981) noted the proportion of difficult words in a text is the single most powerful predictor of text difficulty, and a reader's general vocabulary knowledge is the single best predictor of how well that reader can understand text. Block and Pressley (2002) cited the work of Anderson & Freebody (1981) and Stanovich (1986) denoting that "comprehension depends on vocabulary, with good readers having more extensive vocabularies than weaker readers" (p. 23).

**Conclusion**

As is evidenced in this chapter, teachers' beliefs regarding teaching and learning greatly impacts the manner in which instructional practices are selected and applied. For a myriad of reasons, many content area teachers continue to view vocabulary from a reductionist perspective, one that fosters word learning "by memorizing short definitions and sentences are understood in a strictly bottom-up fashion by putting together the meanings of individual words - a picture inconsistent with our current understanding of the reading process" (Nagy & Scott, 2000, p. 269). This view leaves students to their own devices or subjects them "to the vagaries of a look up and define strategy as their only access to the long-term acquisition of language in an academic discipline" (Vacca et al., 2016, p. 147). Such practice, that of synonyms and short glossary definitions, runs the danger of failing to produce usable knowledge of words. It creates simplistic beliefs that may interfere with word learning. Thus, the quality of vocabulary instruction must be judged, not solely on whether it is able to produce immediate gains in student comprehension of specific words, but also on whether it is able to communicate "an accurate picture of the nature of word knowledge and reasonable expectations about the word learning process" (Nagy & Scott, 2000, p. 281).

In contrast, in order to meaningfully engage students in the word learning process, teachers must contextualize the terminology, allow for self-selection, and provide rich, multiple, and meaningful word experiences. Baumann, Simmons, and Kame'enui (1995) penned that of the best ways to facilitate greater independence in vocabulary growth, one is through "the strategic integration of vocabulary learning opportunities in multiple curricular areas" (p. 14). This requires educators to be diligent and purposeful about the

vocabulary that is selected for instruction, as the words that should be taught and the sequence in which they ought to be introduced highly depends on the texts and on the students who will read them. In order to be effective, "vocabulary instruction must provide both adequate definitions and illustrations of how words are used in natural sounding contexts" (Nagy, 1988, p. 9).

Vocabulary instruction is one tool that supports student learning in content areas. As content area instruction seems bound to the specificity of the subject(s) being taught and to the social context in which that teaching is framed, teachers ought to analyze how they prepare students to learn, spend time examining how they activate prior knowledge, introduce vocabulary and related concepts, and foster engagement with the content. This type of professional engagement involves serious reflection, study, and renewal associated with constructing professional knowledge that chooses to account for "the tensions and ambivalences that different people bring to the teaching process because of their own histories and the choices they have made" (Greene, 2001, p. 85).

Next, in Chapter Three, I describe the theoretical framework, methodology, and design of the study. I conclude the upcoming chapter with a description of the participants, the setting, the data sources, and the analysis I employed.

**Chapter Three**

In this chapter, I describe the theoretical framework of the study. I then move to the methodology I employed and the design of the study. I complete this chapter with a description of the participants and the setting as well as the data sources and analysis I employed.

**Theoretical Framework**

The theoretical framework for viewing teacher beliefs, knowledge, and vocabulary instructional methods that guides this study is socio-cognitive-constructivism. It draws from socio-cognitive, cognitive constructivism, and social constructivism.

The RAND Reading Study Group (2002) described socio-cognitive theories of reading as a meaning-construction process that takes place when there is an interaction between the reader, the teacher, the classroom context, the text, and the reading activity. This context influences and is influenced by the reader's and teacher's decisions and background, including cognitive and affective conditions. Under this theoretical framework, the view of human functioning gives central roles to cognitive, self-regulatory, and self-reflective processes in order that humans might adapt and change. People are considered to be self-organizing, proactive, self-reflecting and self-regulating.

Social cognitive theory is rooted in a view of human agency in which individuals are agents proactively engaged in their own development and can make things happen by their actions. Gee (2001) pointed to socio-cognitive theory's ability to provide a perspective on teacher practice as it integrates cognition, language, and social interaction.

Constructivism refers to learning or meaning making in which individuals create new understandings based on the interaction of their existing schema and beliefs and the

ideas with which they come into contact. Piaget's (1972) proposed, in his theory of cognitive development, that people cannot be "given" information with the expectation that it be immediately understood and pragmatically applied; rather, conceptual change, as an interaction between existing cognitive structures and new experience, must be emphasized first.

Alvermann, Phelps, and Gillis (2013) ground their focus on literacy in sociocultural and sociolinguistic theories; they tend to follow Vygotsky's (1978) perspective that an individual's mental functioning originates in social, communicative processes which are directly embedded in an array of cultural, historical, and institutional contexts. From this perspective, students benefit from social engagement in groups where more knowledgeable others guide the learning. As such, multiple/varied understandings of a reading are "textually, personally, and socially constructed" (Alvermann et al., 2013, p. 195) as they are rendered depending on a reader's prior knowledge, attitudes, intention, and learning strategies as well as the social context in which they occur. The authors believe many factors may affect student performance in a content classroom including considerations of student's language, reading, writing, as well as interests, values, traditions, and beliefs. It is important to note these theories of reading and their influence changes over time. Barr (2001) explained methodological shifts to be

> symptomatic of underlying changes in how we think about teaching and learning. Theoretically, this shift from behavioristic to socio-constructivist formulations marks a change from thinking of teaching and learning as separate processes to those that are tied together, from viewing the teaching-learning process as unidirectional to inter-active, from believing what is taught is also

learned to understanding that what is taught may not be what is learned, from

viewing learning as an individual process to one that is social. (p. 407)

A sociocultural perspective on literacy acknowledges the role of print and other symbol

systems as being central to literate practice, but recognizes that learning and symbol use

are mediated by and constituted in social systems and cultural practices.

**Background and Positionality of the Researcher**

According to Merriam (1998), what makes qualitative research more dependable

is the provision of an outline of a researchers' assumptions, theoretical background,

sampling methods, details about the participants being studied, and the context in which

the participants will be studied. Accordingly, I described these items here.

My background in education began with the attainment of my Bachelor's Degree

in French, Secondary Education, and Elementary Education in 1991 from Concordia

College - Moorhead. In 1997, I earned a Master's of Education degree in Middle School

Education with an emphasis in reading instruction at Bethel University. In 2004, I

completed the requirements for my K-12 Reading license at the University of Minnesota.

Currently, I am in my twenty-seventh year of teaching in a public school setting.

From 1992-1997, I taught at the elementary level (Grades 3 & 5) which has been

followed by a combination 19 years at the middle level (Grades 6-8) and three years at

the district level. I have served as an Eighth Grade Language Arts teacher since 2004,

which has bracketed a three-year appointment as the District Literacy Coordinator (2012-

2015). Additionally, since 2005, I have served as an Adjunct Professor of Content Area

Literacy and Foundations of Literacy courses at the graduate level. As a result of this

journey, I have interacted with a high volume and wide array of teachers (many of whom

are discipline-specific) who enact a variety of classroom practices. I have had first-hand encounters with young people who have been granted access to conventions of disciplinary knowledge production and communication. I have also observed content colleagues for many years who, although encouraged to incorporate reading and vocabulary instruction, have chosen not to do so for a variety of reasons.

In order to improve my understanding of content area vocabulary instruction and how to support teacher-educators in their ability to develop literacy in the disciplines, I aimed to determine which vocabulary instructional practices teachers select from the corpus and use in instruction. Additionally, I aimed to determine from which sources content teachers acquire their information to professionally proceed with the vocabulary instruction that does occur.

**Setting and Participants**

The study took place in the Summit district (all names are pseudonyms), a suburban school district, at a middle school and high school located in the Midwestern United States. In this setting, the middle school serves students in grades 6-8 while the high school serves those enrolled in grades 9-12. Summit has an Early Childhood Center, five Kindergarten - Fifth grade elementary schools, one middle school, one two-building high school, one Area Learning Center, and offers ABE/GED services at ACE (Adult Continuing Education). The Summit district draws from approximately 43,000 residents. During the 2009-10 school year 6,725 students were enrolled in grades K-12; at the middle school level, there were 1,585 students, and in the high school there were 2,218. The certified staff includes 488 professionals, 34.3% with bachelor's degrees, 65.1% with master's degrees, and 0.6% with doctoral degrees. In 2009-10, 13.8% of students

qualified for free and reduced lunch. In 2017-18, the enrollment numbers were similar with 6,558 students enrolled in grades K-12 (18.4 % free and reduced lunch). Middle school enrollment was 1,519 and 2,144 students were enrolled in the high school.

The participants at this site were purposefully sampled. Initially, I distributed a three-part teacher survey (see Appendix A) to 75 teachers assigned to teach math, science, social studies, technical subjects (i.e. art, family and consumer science - FACS, health, music, and technical education), or world language at the secondary level (grades 6-12). These 75 teachers comprised all of the staff members in the Summit district who were assigned to teach at these grade levels in these content areas. My decision to distribute the teacher survey beyond the scope of science, social studies, and technical subjects at the outset was purposeful. For one, I felt the inclusion of these content areas may continue to increase collaboration across disciplines if all were involved. And two, based on Summit's current Professional Learning Community (PLC) set up, I felt that collegial interaction may increase participant survey completion.

I did not include English/Language Arts as a content area for this study for three reasons. One, unlike the aforementioned content areas, English/Language Arts texts are predominantly literature-based as opposed to informational text in nature. Two, while domain-specific vocabulary "serves as a proxy for students' understanding of concepts" (Fisher & Frey, 2014, p. 598), words that are commonly selected for instruction in English/Language Arts rarely occur more than one or two times in a text as opposed to the voluminous times they occur in other content areas (Snow, 2010; Vacca et al., 2016). Three, metalanguage - words or terms used to describe, discuss, or analyze a language -

(e.g. letter, paragraph, participle) - is generally connected to and taught in English/Language Arts (e.g., genre, metaphor, poem).

In all, I received 53 completed teacher survey out of the initial 75 recipients. I then further reduced the participants to include only those in science, social studies, and technical subjects per the overarching questions of this study. This meant that I included neither Math nor World Language in the data set and analysis as is described below.

I excluded Math due to its texts and vocabulary. Briefly, Math is filled with symbols (e.g. +, x/y, y=mx+b), and these symbols represent objects, processes, or verbal expressions. These symbols need to be taught as do the graphic representations and verbal expressions for numerical expressions (e.g. 2x+5 means five more than two times a number). Because the language of mathematics is complex, content-bound, and largely abstract, there is an inherent difficulty in communicating mathematics terminology to others (Kouba, 1989). This difficulty manifests itself in reading mathematics texts, including the use of specific reading strategies and the knowledge of technical vocabulary (Gullatt, 1987).

I also excluded World Languages for two reasons that are similar to those of English/Language Arts. First, the texts are predominantly literature-based (discussions and dialogue). Two, the corpus or words from which World Languages select for instruction are new labels for known words and concepts.

In all, I analyzed the teacher survey results from 41 participants who were assigned to teach at the secondary level (grades 6-12) in the content areas of social studies, science, and technical subjects.

**Design of the Study**

I employed an explanatory sequential mixed methods design (Creswell & Clark, 2011) to mix the analyses and the results from the survey about teacher beliefs and practices as they pertain to content area vocabulary instruction with the qualitative teacher observations and semi-structured interviews. In explanatory designs, quantitative results, collected first in a sequence of data sources, influence subsequent data collection and analyses. This explanatory sequential design included a large-scale survey and the identification of three intensity cases that were representative of the survey results. Each case study included a semi-structured interview and field notes from classroom observations which were member-checked.

The quantitative research component of this study placed the emphasis on the measurement of the data to be collected and analyzed; the qualitative component emphasized the meaning behind the frequency and distribution of the data I collected and analyzed. As my interest was in the phenomena that exist in content area classrooms in regards to vocabulary instruction, I sought to understand and interpret the meaning of the perspectives employed. Therefore, I broadly employed ethnographic methods (Fetterman, 1998; Hammersley, 1990) and a phenomenological case study (Moustakas, 1994) to arrive at a clearer picture of the understandings secondary content teachers have regarding vocabulary instruction. In part, this was due to Munby, Russell, and Martin's (2001) assertion that teachers often communicate their knowledge in a narrative mode (e.g. anecdotes, stories) because thinking narratively "comes naturally to teachers, perhaps more naturally than paradigmatic thinking" (pp. 877-878).

Connelly and Clandinin (1990) are widely recognized for their development of the field of narrative inquiry as an approach to the study of teachers' experiences of teaching. The core value of narrative inquiry rests in the assumption that through narrative, people interpret while drawing upon remembered experiences as well as information, beliefs, knowledge, and the tasks at hand. As narrative and life go together, the main attraction of narrative as method lies in its ability to render life experiences in meaningful, relevant ways. Connelly and Clandinin (1994) also focus on retelling teacher and student stories because these can lead to insights about and changes in teachers' practices.

Because the study focused on the situated nature and importance of context on the knowledge, beliefs, and instructional practices of the participants, I included qualitative case studies (Merriam, 1998). The inclusion of phenomenological case studies fits the research question, as noted.

**Case study.** A case study is an exploration of a bounded system over time through detailed and in-depth data collection that involves multiple sources of information and rich contextual descriptions (Creswell, 1998; Merriam, 1998). It refers to the collection and presentation of detailed information about a participant or group, and commonly includes the accounts of the participants themselves. "By concentrating on a single phenomenon or entity (the case), the researcher aims to uncover the interaction of significant factors characteristic of the phenomenon" (Merriam, 1998, p. 29).

Case studies can build upon theory, produce new theory, dispute or challenge an existing theory, explain a situation, provide a basis to apply solutions to situations, explore, or describe an object or phenomenon. Case studies typically examine the

interplay of all of the variables in order to provide as complete an understanding as possible of a particular event or situation. Case studies use thick description, which involves in-depth descriptions of the entity being evaluated, the circumstances in which it is used, the characteristics of the people, and the context in which it is situated. Case studies are the preferred method when answers to how and why questions are sought. The analysis process results in a product: a case study.

One approach into inquiry in the cases was phenomenology, which aims to make sense of how human beings make sense of experience and transform experience into consciousness, both individually and as shared meaning (van Manen, 2016). The assumption is that we can only know what we experience by attending to perceptions and meanings that awaken our conscious awareness.

The first order was to determine how the participants experienced and interpreted the world. This is the subject matter, the focus of phenomenological inquiry. The second was methodological; the only way to really know what another person experiences is to experience the phenomenon as directly as possible. Contextual factors on teachers' beliefs and resultant practices are important. Lytle (2006) explained that gaining access to teachers' knowledge

> most often involves creating a space for the telling and interrogating of stories of practice, a space that permits agency in the ways daily experiences are rendered, framed, and responded to, and a space that embraces the uncertainties and struggles endemic to this work. It also requires particular attention to context: how teachers understand their work as deeply embedded within the cultures of local classrooms, schools, and school districts. (p. 257)

In order to capture and describe how people experience this phenomenon - how they perceive it, describe it, feel about it, judge it, remember it, make sense of it, and talk about it with others, I conducted participant interviews and observations in their discipline-specific instructional contexts.

**Sampling.** Throughout the study, I was employed as a full-time teacher and was largely unable to leave my classroom setting in order to conduct research at another venue. Therefore, the site for this study was a matter of convenience; all participants were all employed in the Summit district and assigned to teach at the secondary level (grades 6-12). Merriam (1998) defined convenience sampling as that which is "based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned" (p. 61).

Certainly, a convenience sample does pose challenges to a study's validity. While I have taught in the Summit district for twenty years and I was acquainted with many of the participants, I knew few of the participants on a personal level. However, the within-district professional request for responses may have yielded a higher percentage of returned surveys. In addition, the professional connections we do share may have increased participant candor in the surveys as well as the semi-structured interviews.

After analyzing the teacher survey data, I purposefully selected three case study participants. Patton (2002) defined the constitution of a case as a unit of analysis that, "is usually determined during the design stage and becomes the basis for purposeful sampling in qualitative inquiry" (p. 447). Merriam (1998), identified two types of sampling: probability sampling (random sampling) and nonprobability sampling (purposeful sampling). The strength of random sampling lies in its generalizability;

however, the focus of most qualitative research is not generalizability, as cases are bounded by time and activity (Creswell, 2009). Therefore, I used nonprobability (purposeful sampling).

Each of the three cases was purposefully selected as an intensity sample, as I sought "excellent or rich samples of the phenomenon of interest but not highly unusual cases" (Patton, 2002, p. 234). These were information-rich cases - neither extreme nor deviant - of the phenomenon of interest. In order to determine the participants for the case studies, I constructed a table that included the two assertions their themes (three and four respectively for a total of seven). I then reevaluated the responses from the confidence, beliefs, and instructional practice sections of the survey and placed the corresponding items in the table by participant. As I was looking for information-rich cases, I selected the three that were most representative of the seven themes (see Tables 4.38, 4.39, 4.40, & 4.41 in Appendix D). In this regard, these three were the only participants whose responses were evidenced in either six or seven of the themes. Two of the case study participants were Science teachers, one a Life Science teacher (Grade 7), and the other an AP Biology teacher (Grades 10-11). The other case study participant taught Human Geography (Grade 9).

**Data Sources**

As discussed above, I used the following primary data sources to gather the data for my study. Refer to Table 3.1 below.

Table 3.1
*Data Sources*

| Research Question | Data Source | How the Data Source Addresses the Question |
|---|---|---|
| 1. How do secondary science, social studies, and technical subjects teachers conceptualize their knowledge and beliefs about the teaching of vocabulary? | Content Area Teacher Survey (everyone)<br><br>Semi-Structured Interviews (cases) | The survey was designed to understand the beliefs and get at how those beliefs inform the participant's vocabulary instructional practices.<br><br>The interviews were designed to get at participant processes for conceptualizing vocabulary instruction. |
| 2. How do secondary science, social studies, and technical subjects teachers find out about vocabulary instruction, and how do they find out about which words to teach? | Content Area Teacher Survey (everyone)<br><br>Semi-Structured Interviews (cases) | The survey was designed to get at how and from which sources participants find out about vocabulary instructional practices.<br><br>The interviews were designed to get at the sources that inform their vocabulary instruction and those that inform their respective words that are selected for instruction. |
| 3. How are secondary science, social studies, and technical subjects teachers' knowledge and beliefs about teaching vocabulary evident in their instructional practices? | Content Area Teacher Survey (everyone)<br><br>Semi-Structured Interviews (cases)<br><br>Teacher Observations (cases) | The survey was designed to get at connections between participants' knowledge, beliefs, and vocabulary instructional practices.<br><br>The interviews were designed to get at participant knowledge of and the reported ways in which vocabulary is instructed.<br><br>The observations were designed to get at participants conceptualization and beliefs about vocabulary instruction as evidenced in their practices. |

I collected the initial data via the administration of a survey (see Appendix A). I

constructed the survey based on Graves (2006) multi-faceted and long-term vocabulary

program and on well-documented vocabulary research. Accordingly, I relied on the

following recommendations. One, provide rich and varied language experiences via listening, speaking, reading, and writing to build students' vocabularies (Graves, 2006, 2009; Graves et al., 2014). Two, provide opportunities for multiple exposures to key vocabulary which includes repetition and increased exposure in varied contexts (Beck et al., 2002; Graves, 2000; Nagy, Anderson, & Herman, 1987). Three, increase students' vocabularies by teaching individual words (Graves 2004, 2006; Graves et al., 2014). The explicit instruction of individual vocabulary terms should be both direct and rich. This includes illustrating words in context, showing relationships among other words, and using graphic organizers (Marzano & Pickering, 2005; Merkley & Jefferies, 2000/2001). Four, help students increase their vocabularies through teaching word-learning strategies, the most widely recommended of which are the use of context and the use of word parts (Graves, 2004, 2016; Lesaux et al., 2014; Milligan & Ruff, 1990). Five, foster word consciousness by integrating metacognition, motivation, and a lasting interest in words (Graves 2004, 2006; Graves et al., 2014). As Ogle et al. (2016) claimed, "Students need to be interested in and knowledgeable about words and how they function as they encounter increasingly content-specific vocabulary" (p. 15). Accordingly, the survey includes three sections: confidence, beliefs, and instructional practice (see Appendix A).

As discussed, I then conducted follow-up semi-structured interviews with and observations of three case study participants. These data sources allowed me to study the reported and observed influences of teacher beliefs and knowledge on the participants' practices in their respective classroom contexts. "Qualitative interpretation begins with elucidating meanings" (Patton, 2002, p. 477). As such, my qualitative report includes

some personal information including how I gained access to the site, prior knowledge and experiences, and the perspective I brought to the study.

After I gained approval from my committee and the IRB from the University of Minnesota, I obtained permission from the school district's superintendent as well as the middle and high school principals. Next, I distributed the surveys to staff members (as previously detailed) with a cover letter explaining the purpose of the study. The survey items explored participants' backgrounds (e.g. years in the profession, content area teaching assignment, educational history) and knowledge of, beliefs about, and practices that pertain to vocabulary instruction (as previously detailed). Responses from the survey items served to help me understand how the participants' beliefs and knowledge impact their instructional practices. I also included a question regarding participants' willingness to take part in follow-up interviews, be observed, and provide relevant documents.

I statistically analyzed the data from the surveys and I examined and coded the open-ended questions. I then conducted semi-structured interviews (see Appendix B) to capture direct quotations about participants' beliefs, practices, and knowledge bases. Seidman (2006) explained that interviews are valuable, for they provide "access to the context of people's behavior and thereby provides a way for researchers to understand the meaning of the behavior" (p. 4). I conducted the interviews for the case studies in a semi-structured interview format. The exact wording and sequence of the interview questions were determined in advance. The respondents answered the same questions which increased the comparability of responses, reduced the effects of interviewer bias, and facilitated the organization and analysis of the data. This also allowed me to react to the "situation at hand, to the emerging worldview of the respondent, and to new ideas on the

topic" (Merriam, 1998, p. 74). While this flexibility allowed for a certain degree of responsiveness and improvisation, the semi-structured interviews ensured that the data that I obtained could be compared across respondents (Denzin & Lincoln, 2000).

Triangulated data painted the most comprehensive picture of what was happening in content area classrooms regarding vocabulary instruction. Therefore, the case studies included both interviews and participant observation data. One gain from interactive data like interviews is that it allows me, the researcher, to gather descriptions from each interviewee with respect to interpreting the meaning of the described phenomena. As Patton (2002) stated, "The first-order purposes of observational data are to describe the setting that was observed, the activities that took place in that setting, the people who participated in those activities, and the meanings of what was observed from the perspectives of those observed" (p. 262).

Carter (1990) identified the highly domain-specific knowledge of expert teachers, the organization of that knowledge, and its tacit nature. Expert teachers possess richly elaborated knowledge about curriculum, classroom routines, and students that allows them to apply with dispatch what they know to particular cases. Experts draw on a store of knowledge that is organized around interpretive concepts or propositions that are tied to the teaching environment. This knowledge is tacit; it does not translate easily into direct instruction or formalization. Therefore, it was crucial to get close enough to the people and situation to understand - in-depth - the details of what went on. The field notes I took aimed to accurately describe the participants' instructional activities and their interactions with students in their respective settings (what actually took place and what the participants actually said).

**Data Analysis**

I began with an inductive analysis of the survey data, for "a good place to begin inductive analysis is to inventory and define key phrases, terms, and practices that are special to the people in the setting studied" (Patton, 2002, p. 454). The inductive analysis allowed me to discover patterns and themes that emerged out of the data.

Then, I deductively analyzed the data I obtained from the surveys and semi-structured interviews, as existing frameworks provided certain broad categories. As my study was socio-culturally oriented, the methods of analysis I employed derive from and speak to that same orientation.

The statistical and constant-comparative analysis allowed my data sources and the methods to inform one another. Corbin and Strauss (2014) described constant comparative analysis as an inductive procedure that is devised to assist in generating social theory. It combines inductive category coding with a simultaneous comparison of all social incidents observed and coded. This method of analysis is typically used as a constructive procedure rather than one that is enumerative, as it is generally concerned with "generating and plausibly suggesting (but not provisionally testing) many categories, properties, and hypotheses about general problems" (Glaser & Strauss, 1967, p. 104). This attention to the process of coding is important; as Strauss and Corbin (1998) described:

> By the very act of naming phenomena, we fix continuing attention on them. Once our attention is fixed, we can begin to examine them comparatively and to *ask questions* about them. Such questions not only enable us to **systematically specify** what we see, but when they take the form of *hypotheses or propositions*,

they suggest how the phenomena might be related to each other. (p. 102)

To increase the validity of the study, I triangulated the data. Triangulation helps to make certain that the most complete information is available, and it emphasizes the use of multiple data sources (Merriam, 1998). This process helps to avoid assumptions of the meaning of an observation as one thing, since additional observations provides grounds for the revision of interpretation.

I member-checked each of the accounts included in the semi-structured interviews and observations, which added to the validity and accuracy of the findings. Merriam (1998) defined member checking as "taking data and tentative interpretations back to the people from whom they were derived and asking them if the results are plausible" (p. 204). Member checking is considered an element of triangulation and diminishes the threat of researcher misinterpretation; it also helps increase the validity and accuracy of the researchers' observations and findings.

Through the themes that emerged from the examination of these teachers' beliefs, knowledge, and instructional practices, I discovered relevant patterns to share with graduate and undergraduate faculty as well as secondary classroom teachers regarding vocabulary instruction in the content areas.

## Chapter Four

In this chapter, I examine the participants' knowledge and beliefs about vocabulary instruction in their respective domains. I also examine how the teachers pragmatically applied knowledge and beliefs in their respective instructional settings. I begin with a description of the participants. Then, I present the data analysis that focuses on the teacher survey and the interview data. Following the analysis section, I present the findings in the form of two assertions and their supporting themes and exemplar data.

## Design and Purpose

In an effort to improve my understanding of content area vocabulary instruction and how to support teacher-educators in this area, I employed an explanatory sequential mixed methods design (Creswell & Clark, 2011) which included a large-scale survey and the identification of three intensity cases that represented the survey results. Each case study was bounded by the following data: (a) semi-structured interviews in which teachers were given an opportunity to explain their vocabulary instructional practices and the sources used to inform their practice; and (b) field notes from classroom observations that documented the actual practices in which the teachers engaged.

The purpose of the study was to examine secondary content teachers' knowledge and beliefs related to vocabulary instruction. The goal was to add to the "teaching reading in the content areas" literature through an examination of content area teachers' conceptualization and enactment of instructional vocabulary methods. Broadly, my research question was, "How do content area teachers conceptualize instruction in their respective classrooms? This broad research question subsumed these three questions:

1. How do secondary science, social studies, and technical subjects teachers conceptualize their knowledge and beliefs about the teaching of vocabulary?

2. How do secondary science, social studies, and technical subjects teachers find out about vocabulary instruction, and how do they find out about which words to teach?

3. How are secondary science, social studies, and technical subjects teachers' knowledge and beliefs about teaching vocabulary evident in their instructional practices?

**Content Area Vocabulary Instruction: Teacher Survey Response Data**

As previously detailed, 41 science, social studies, or technical subjects teachers in grades 6-12 completed a survey entitled: "Content Area Vocabulary Instruction: Teachers' Beliefs, Knowledge, and Practices" (See the instrument in Appendix A). At the time the survey was completed, each of the respondents was employed by Independent School District #1 (Summit). Summit serves five communities situated in a large metro area: Concord, Grand, Central, Leo, and Bethel. Findings are reported for the following content areas: Science, Social Studies, and Technical Subjects.

*The Brief Educational History Data* section included five questions; (refer to the Content Area Teacher Survey in Appendix A). Fifteen middle school and 26 high school teachers assigned to the grade levels and content areas indicated in Table 4.1 comprised the respondents.

Table 4.1
*Participants: Content Area Teaching Assignments*

| Participants | Art | FACS | Health | Music | Science | Social | Tech Ed |
|---|---|---|---|---|---|---|---|
| Total Teachers | 4 | 4 | 1 | 3 | 12 | 15 | 2 |
| Middle School | 2 | 1 | 0 | 0 | 5 | 6 | 1 |
| High School | 2 | 3 | 1 | 3 | 7 | 9 | 1 |
| Average Years of Experience Teaching | 24 | 24.8 | 36 | 20.7 | 18.2 | 19.5 | 17 |
| Average Years in Current Position | 8.5 | 16.5 | 31 | 11.7 | 12.8 | 13.5 | 8 |

**Confidence Self-assessment**

As part of the overall goal of assessing teacher confidence, the survey focused on confidence in the specific areas of vocabulary instruction, strategies for selections vocabulary words for instruction, and strategies for teaching vocabulary (Appendix A). Respondents indicated their respective confidence levels in each of these specific areas by selecting a number from one through seven; whereas one represented the lowest level of confidence and seven represented the highest level of confidence.

I tallied each of the means by content area group (See Table 4.2). Of note, selecting words for instruction was the highest area of reported confidence; this held true in every group and subgroup (except Music). The Art and Health reported the highest confidence levels amongst the Technical Subjects subgroups. Overall, Science held the highest average of the three groups.

Table 4.2
*Participants' Confidence Self-Assessment by Content Area*

| Content Area | Confidence - Vocabulary Instruction | Confidence - Selection of Words for Instruction | Confidence - Strategies for Teaching Vocabulary |
|---|---|---|---|
| All Responses | 5.17 | 5.59 | 4.66 |
| Science (12) | 5.33 | 6.17 | 4.75 |
| Social Studies (15) | 4.87 | 5.27 | 4.47 |
| Art (4) | 5.75 | 6.25 | 5.50 |
| FACS (4) | 5.75 | 5.75 | 5.25 |
| Health (1) | 4.00 | 6.00 | 4.00 |
| Music (3) | 5.67 | 4.33 | 4.33 |
| Tech Ed (2) | 4.00 | 4.50 | 3.50 |
| Tech Subjects (14) | 5.03 | 5.37 | 4.52 |

**Beliefs Self-assessment**

The beliefs self-assessment was designed to measure participant perspectives on

vocabulary instruction and word learning. This section of the Content Area Teacher

Survey contained five statement-inferences and one open-ended response item.

Respondents were first asked to *Indicate your level of agreement with each statement by*

*selecting ONE of the indicators (SD, D, A, SA)* whereas *SD=Strongly Disagree,*

*D=Disagree, A=Agree, SA=Strongly Agree.* Table 4.3 (see below) provides the

statements, response options, and number of respondents who selected each of the given

levels of agreement. A high volume of respondents agreed or strongly agreed with each

of the five statements, which equated to 94.15% overall. A few items are worthy of note

at this juncture. One, all *Strongly Disagree* responses were provided by one participant

(Art). Two, one Social Studies and one Art teacher comprised the *Disagreed* responses to

statements two, three, and four. Three, both *Disagree* responses in statements one and

five were provided Science teachers.

Table 4.3
*Participants' Beliefs Self-Assessment*

| Beliefs Self-Assessment | SD | D | A | SA |
|---|---|---|---|---|
| 1. It is important to dedicate a regular portion of classroom lessons to vocabulary instruction. | 1 | 2 | 29 | 9 |
| 2. It is important to provide repeated exposure to new words in multiple contexts. | 1 | 1 | 21 | 18 |
| 3. It is important to allow sufficient practice to support word learning. | 1 | 1 | 29 | 10 |
| 4. It is important to give sufficient opportunities to use new vocabulary in a variety of contexts (e.g. reading, writing, discussion). | 1 | 1 | 25 | 14 |
| 5. It is important to provide students with strategies to foster independent word learning. | 1 | 2 | 24 | 14 |

These results may reflect actual strongly held professional beliefs as they pertain to

instruction; they may also be an amalgam of idealized and held beliefs as influenced by

the self-reported nature of this survey.

I also tallied each of the means of the five statements whereas *SD=Strongly*

*Disagree (1), D=Disagree (2), A=Agree (3),* and *SA=Strongly Agree (4)* according to

content area group. The average for Science, Social Studies, and Technical Subjects

groups were all above the *Agree* (3 out of 4) data point for all of the five statements.

Statement two *It is important to provide repeated exposure to new words in multiple*

*contexts* held the highest overall statement mean. This is titled as "Repetition in Multiple

Contexts" in Table 4.4 (see the following page; see Appendix D).

Table 4.4

*Participants' Beliefs Self-Assessment by Content Area*

| Beliefs | Instruction Time Dedication | Repetition in Multiple Contexts | Importance of Sufficient Practice | Importance Sufficiency to Employ | Importance of Strategy Provision |
|---|---|---|---|---|---|
| All Responses | 3.12 | 3.37 | 3.17 | 3.27 | 3.24 |
| Science (12) | 3.08 | 3.67 | 3.33 | 3.42 | 3.33 |
| Social Studies (15) | 3.20 | 3.27 | 3.07 | 3.33 | 3.40 |
| Art (4) | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 |
| FACS (4) | 3.25 | 3.50 | 3.50 | 3.50 | 3.25 |
| Health (1) | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| Music (3) | 3.00 | 3.00 | 3.00 | 2.67 | 2.67 |
| Tech Ed (2) | 3.00 | 3.50 | 3.00 | 3.00 | 3.00 |
| Tech Subjects (14) | 3.20 | 3.35 | 3.25 | 3.18 | 3.13 |

**Instructional approaches teachers reported using.** Respondents then articulated their beliefs in response this sentence frame *Students in my classroom (content area) learn the vocabulary they need to know by:*. Teachers described 27 different ways in which they claimed to support student learning of their respective content area vocabulary. Through the lens of interaction type my analysis produced the following:

- Reading: using context to determine a word's meaning, reading content texts, performing research, studying, taking quizzes/tests

- Writing: creating an acrostic poem, creating a concept map, completing a crossword puzzle, drawing an image of the word/use the image in a diagram, creating a flipbook, using the Frayer model, creating flashcards/note cards, taking notes, using the Verbal-Visual Word

Association (VVWA) instructional strategy, completing worksheets, using the words in written assignments (e.g. labs, essays, explanations)

- Speaking: applying via demonstration or lab experiment, using the word in discussion, using the word in conjunction with games, using the word during student presentations, repeating the word, performing a role-play (acting out the word)

- Viewing & Listening: applying via demonstration or lab experiment, listening during lecture, repetition of the word, using teacher-made labels or visual aids, watching videos, learning word families (explicit teaching), learning word parts (explicit teaching of roots and prefixes)

Of the 41 respondents, 40 claimed to use multiple ways (from two to 10) by which they supported students in their efforts to learn the vocabulary they need to know. One teacher indicated using one; one teacher indicated using seven, and one teacher noted the use of 10 ways in which students were supported in learning content area vocabulary. Nine Science teachers (75%) claimed to use four or more ways to accomplish this goal, which comprised 41% of the responses at these levels. 24 of the 41 (66%) respondents indicated using one, two, or three: Science (12.5%), Social Studies (45.8%), and Technical Subjects (41.7%). Refer to Table 4.5 in Appendix D for a frequency table of the number of ways provided by the total number of survey respondents and according to content area group.

I then tallied each of the ways according to content area group; recall that Science included 12 educators, Social Studies included 15 teachers, and Technical Subjects included 14 teachers. In all, the sum was 148 ways: Science (52), Social Studies (48), and

Technical Subjects (43). Multiple approaches were used by all but three teachers.

**Ways teachers reported that students learn vocabulary.** Next, I analyzed the

participant responses to *Students in my classroom (content area) learn the vocabulary*

*they need to know by:* for similarities and differences. Based on this analysis, I developed

four categories into which I placed each one. I concurrently tallied each of the ways and

its category according to content area subject area (Science, Social Studies, or Technical

Subjects).

- The Instructional Strategies category consisted of classroom strategies for

  interactive learning that students might use in order to develop word

  knowledge. Teachers claimed to employ one or more of the following ten

  instructional strategies: acrostic poems, concept maps, crossword puzzles,

  images of the word/use of word and/or its image in diagrams, flipbooks,

  Frayer model, games, role-plays (acting out the word), and Verbal-Visual

  Word Association (VVWA).

- The Application category consisted of three unique in-class opportunities

  for students to employ content vocabulary using verbal communication.

  This category included demonstrations/ laboratory experiments,

  discussions, and student presentations.

- The Teacher Directed category consisted of eight ways in which the

  teacher explicitly provided listening, viewing, or writing opportunities to

  interact with a content area vocabulary word. These included teacher-

  made labels or posted visual aids, lecture, note taking during lecture,

  requiring students to perform research, repetition of the word [teacher

(speaking) and student (writing, speaking)], students watching videos, and explicit instruction of word families and word parts (roots and prefixes).

- The Student Driven category subsumed all responses that required student engagement with words alongside an expectation to understand or demonstrate understanding without teacher support. Five items comprised this category: use context to determine a word's meaning, read content texts, study, take quizzes/tests, and use the words in written assignments (e.g. labs, essays, explanations). Exemplars from Table 4.6 (See Appendix D for the complete list) attributed to the construction of these four categories are listed below; the respondent ID number is in parentheses.

Table 4.6
*"Students Learn the Words They Need to Know By"*

| Category | Sample Associated Responses (ID#) |
|---|---|
| Instructional Strategies | "Reflective journaling using apps on their device or notebook using the Frayer model." (29) |
| Application: Demos, Labs | "They are expected to find out their meaning to be able to successfully complete the product. If they don't understand the vocab., they will not have a good product to eat." (35) |
| Teacher Directed | "We go through them together on the board, they write them down, they are used in the reading. They then should use them in the assignment to reinforce them." (30) |
| Student Driven | "Asking, Researching, Figuring it out from the context" (21) |

**Teacher claims of how they support students' vocabulary learning.** I further analyzed teacher descriptions of the ways they claim to support student learning of vocabulary they need to know in their respective content areas with reference to receptive and/or productive language. Receptive language included three foundational skills: Read,

View, and Listen. Productive language included two foundational skills: Write and Speak. In many cases, a response was attributed to more than one skill. For example, Respondent 9 wrote, "Lots of repetition of terms used throughout the unit. Notes with new vocab, Usually a packet of worksheets using the words multiple times. . . continued use of words throughout the year" (Survey, 4/30/14). Accordingly, reading, writing, and listening were all attached to this particular piece of data. I evaluated each of these data points in this manner, then I tallied them according to content area group (See Table 4.7 in Appendix D).

Respondents indicated that students employ productive language less frequently than they use receptive language skills to learn the words they need to know. The analysis shows that 101 (39%) of the cited items were involved in language production (write and speak); whereas 160 (61%) of the cited items concerned language reception (read, view, listen). Science teachers reported 41% (44) of their foundational skills as productive language and 59% (64) as receptive. Social Studies reported 39% (31) of their foundational skills as productive language and 61% (49) as receptive. Technical Subjects reported 36% (26) of their foundational skills as productive language and 64% (47) as receptive. Overall, respondents claimed to rely most heavily on writing —31% (67/210).

Reading and Listening were nearly equal across the groups. Sixty-one items were attributed to reading: Science (23), Social Studies (18), and Technical Subjects (20). Listening totaled 66 items: Science (26), Social Studies (23) and Technical Subjects (17). Of the 82 identified items concerning writing in order to learn the vocabulary they need to know by, Science claimed 45% (37), nearly double that of Technical Subjects at 28% (23). Social Studies identified 47% (9) in regards to speaking, triple that of Technical

Subjects 16% (3). Opportunities to view were most frequently identified in Science 45% (15), nearly double that of Social Studies at 24% (8).

I then tallied each of the ways in which teachers claimed to support student learning of vocabulary they need to know in their classrooms according to content area group. The total number indicated was 148: Science (52), Social Studies (48), and Technical Subjects (43). Multiple approaches were used by all but five teachers. Social Studies and Technical Subjects claimed to rely on the use of student driven methods (17), nearly twice as much as Science (nine). Also, Technical Subjects claimed to utilize instructional strategies two to three times less (five) than Social Studies (11) and Science (15). Finally, Student Driven ways in which *Students in my classroom (content area) learn the vocabulary they need to know by:* was cited nearly twice as often (48) as the use of instructional strategies (31) and application (26). See also Table 4.8 in Appendix D.

**Instructional Practice**

The instructional practice self-assessment section was designed to assess participant's vocabulary instruction and word learning practices. Below, I outline the different analyses with these data.

**Teacher reports of instructional practices**. The instructional practice section of the survey contained five statements and two open-ended response items. Respondents were first asked to *Indicate your level of agreement with each statement by selecting ONE of the indicators (SD, D, A, SA)* whereas *SD=Strongly Disagree, D=Disagree, A=Agree, SA=Strongly Agree.* Table 4.9 (see below) provides the statements, response options, and number of respondents who selected each of the given levels of agreement. Similar to the responses in the Beliefs section, a high volume of respondents agreed or

strongly agreed with each of the five statements; which equated to 78.54% overall. There were, however, several noticeable shifts in the data. One, the *Disagree* and *Strongly Disagree* responses nearly quadrupled, up 32 total responses (from 12 to 44). Overall, these 44 responses broke down fairly evenly across Science (16), Social Studies (15), and Technical Subjects (10). The *Disagree* level was selected two to three times as frequently as in the Beliefs section for statements one (6>3), two (6>2), and five (10>3). Statements three and four were selected six times more than in the Beliefs section (12 and 11 as compared to 3 and 2, respectively). Interestingly, Science and Social Studies contributed 10 of the 12 *Disagree/Strongly Disagree* responses in regards to *I allow sufficient practice to support vocabulary word learning*. Similarly, Science and Social Studies contributed 8/10 of the *Disagree* responses in regards to *I provide students with strategies that foster independent word learning*. Two, there was away from *Strongly Agree* across each of the statements, down 47 total responses (from 65 to 18). Overall, these 18 responses evenly across Science (6), Social Studies (6), and Technical Subjects (6).

Table 4.9
*Participants' Instructional Practice Self-Assessment*

| Instructional Practice | SD | D | A | SA |
|---|---|---|---|---|
| 1.  I dedicate a portion of classroom lessons to vocabulary instruction. | 0 | 6 | 33 | 2 |
| 2.  I provide repeated exposure to new vocabulary words in multiple contexts. | 0 | 6 | 28 | 7 |
| 3.  I allow sufficient practice to support vocabulary word learning. | 0 | 12 | 26 | 3 |
| 4.  I give sufficient opportunities to use new vocabulary in a variety of contexts (e.g. reading, writing, discussion). | 1 | 10 | 27 | 3 |
| 5.  I provide students with strategies that foster independent word learning. | 2 | 8 | 28 | 3 |

**Teacher practices by content area**. I then tallied each of the means of the five statements whereas *SD=Strongly Disagree (1), D=Disagree (2), A=Agree (3),* and *SA=Strongly Agree (4)* according to content area group. The average for Science, Social Studies, and Technical Subjects groups were all below the *Agree* level (3 out of 4) for four of the five statements. Teachers claimed averages slightly below the *Agree* (3 out of 4) response in four of the five categories; only Repetition in Multiple Contexts had an average slightly above *Agree* (3.02). Table 4.10 (See Appendix D) reflects the order of Instructional Practice category by strength of agreement: Repetition in Multiple Contexts (3.02), Instruction Time Dedication (2.9), Importance of Strategy Provision and Importance of Sufficient Practice (2.78), and Importance of Sufficiency to Employ (2.76). Science held averages higher than that of all respondents in two of the five categories; and counter to previous data, Science had the highest group average in just two: Repetition in Multiple Contexts (3.25) and Importance of Strategy Provision (2.83). Social Studies reported the highest Importance of Sufficiency to Employ (2.93) and Instruction Time Dedication (3.07) amongst all groups, and had two categories above the averages of all respondents. Technical subjects reported the highest Importance of Sufficient Practice (2.88) which was the only category for which it held an average above that of all respondents.

Respondents were then asked to provide a description of their instructional practices by responding to three successive prompts. The first two were open-ended: *I select words to teach by:* and *I develop student understanding of vocabulary in my classroom (content area) by:*. The last prompt included a checklist for the item that read, *The sources that are most influential on vocabulary instruction in my classroom are:*.

As for the first open-ended prompt on instructional practice, 27 of the 41 respondents indicated the use of multiple selection rationale (from two to five) to select words to teach. Fourteen teachers indicated their reliance on one source for word selection, and 18 teachers indicated drawing from just two. The number of ways provided by all survey respondents as well as by content area group was balanced (See Table 4.11 in Appendix D).

I analyzed the first open-ended question, *I select words to teach by:*; then, I synthesized the data into Selecting Words for Instruction with Text (SWIT) categories. Refer to Table 4.12 for exemplars that contributed to the construction of these 10 categories; respondent ID numbers are in parentheses (see Appendix D for all responses).

Table 4.12
*Selection of Words to Teach Categories*

| SWIT Categories | Sample Associated Responses (ID) |
| --- | --- |
| Words included in content area learning targets | "focus on essential learning components and based on that I select words" (19) |
| Review of current content area research | "current research in the field" (3) |
| Reviewal of course materials (e.g. worksheets, labs): | "Previewing all classroom readings and materials for potential vocabulary obstacles" (14) |
| Words included in department generated curriculum | • "Academic Vocabulary for Art Department" (22) <br> • "Based on music we are working on (curriculum)" (32) |
| Words found in previously taken exams | "Reviewing prior established assessments for terms and their various contexts" (14) |
| Words repeated in and/or transferable to other contexts | "Does the word thread through multiple topics/ concepts?" (24) |
| Words found in content area academic standards | "Terms that I know will be on the unit test and/or are found in the state standards" (33) |

Table 4.12 (continued)
*Selection of Words to Teach Categories*

| SWIT Categories | Sample Associated Responses (ID) |
|---|---|
| Words based on teacher beliefs and/or experience | "words that I have come across over the years of teaching that students commonly don't know" (10) |
| Words to be used in tests | "Also by words that will be on their unit tests" (27) |
| Key, bolded, or highlighted words found in the textbook | "Terms that are bold faced in a text that the students will be reading" (33) |

I then tallied each of the *I select words to teach by* according to content area group. The total number of word-selection sources indicated was 81. Science reported reliance on 24, Social Studies on 30, and Technical Subjects on 27. Thirteen of the 41 respondents indicated the reliance on "Key, bolded, or highlighted words found in the textbook;" ten of whom were Social Studies teachers. Department Generated Curriculum was the most highly represented, as 16 of 41 respondents stated its importance in this process. The percentages across groups varied, whereas Science (6, 50%) and Technical Subjects (7) were represented, while that was true for only 20% of Social Studies (3). Science claimed to rely on the use of instructional strategies (14) significantly more than Social Studies and Technical Subjects (seven and three, respectively). 75% (9) of those that indicated content area learning targets was a factor for selection from the Technical Subjects group, and those nine were exclusively from Art, FACS, and Music. Using standards to select vocabulary was mentioned by 14 of the 41 respondents; Science (6) and Social Studies (6) comprised the majority of these individuals. Lastly, Teacher Beliefs/Teacher Experience allotted for nine of the selection inputs; Social Studies claimed it the most frequently (four times). See Table 4.13 in Appendix D for the complete matrix.

The second open-ended instructional strategies prompt was *I develop student understanding of vocabulary in my classroom (content area) by:*. In sum, teachers communicated 37 different ways by which this is carried out. Through the lens of interaction type my analysis produced the following:

- Reading: using context to comprehend the word, reading content texts, performing research, and taking quizzes/tests

- Writing: writing the words in alphabetical order, answering analogies, creating a concept map, taking Cornell notes, completing a crossword puzzle, drawing an image of the word/use the image in a diagram, creating a flipbook, using the Frayer model, creating flashcards/note cards, using the word in hierarchical activities, completing a knowledge rating scale, taking notes, recording responses to assigned textbook activities, using the Verbal-Visual Word Association (VVWA) instructional strategy, completing worksheets, and using the words in written assignments (e.g. labs, essays, explanations)

- Speaking: using the word in application via demonstration or in labs, providing information to complete concept squares, using context to comprehend the word, using discussion that includes the word, encouraging students to use the words, using the word in conjunction with games, practicing/using the word regularly, and repeating the word (teacher and students)

- Viewing & Listening: teachers providing the word's definition and the recording thereof, providing teacher-made labels or visual aids, listening

during lecture, performing a role-play (acting out the word), reviewing

sample test questions, watching videos, learning word parts (explicit

teaching of roots and prefixes), and viewing words on a Word Wall

Of the 41 respondents, multiple approaches (from 2 to 12) were used by all but

five teachers by which *I develop student understanding of vocabulary in my classroom*

*(content area) by:*. Three teachers noted the use of seven, eight, and even 12 approaches

by which students learn the words they need to know in their respective classrooms.

Seven Science teachers (58%) claimed to use four or more ways to accomplish this goal,

which comprised 41% of the responses. 24 of the 41 (66%) respondents indicated using

one, two, or three ways: Science (20.8%), Social Studies (41.7%), and Technical Subjects

(37.5%). Refer to Table 4.14 in Appendix D to view the frequency table of the number of

means provided by the total number of survey respondents and by content area group.

I then compared the ways in which *I develop student understanding of vocabulary*

*in my classroom (content area) by:* for similarities and differences. This analysis led to

the development of four categories into which I placed each of the identified ways. I also

tallied each of the means and its connected category according to its reporting content

area group: Science, Social Studies, or Technical Subjects.

Instructional Strategies consisted of classroom strategies for interactive learning

that teachers might put to use in order to develop student understanding of vocabulary.

Teachers noted the employment of 14 various instructional strategies: answering

analogies, creating a concept map, completing concept squares, taking Cornell notes,

completing a crossword puzzle, drawing an image of the word/use the image in a

diagram, creating a flipbook, using the Frayer model, using the word in conjunction with

games, creating flashcards/note cards, using the word in hierarchical activities, performing a role-play (acting out the word), using a Verbal-Visual Word Association (VVWA), and learning word parts (explicit teaching of roots and prefixes).

Application consisted of three unique in-class opportunities by which teachers believed they developed understanding of content area vocabulary using verbal communication. Included in this category were the use of demonstrations/laboratory experiments, discussions, and student practice.

Teacher Directed items consisted of 16 ways in which the teacher explicitly provided the means by which students would listen to, view, or write the term in order to develop understanding of content terminology. Among these were writing the words in alphabetical order, teachers provision of the word's definition and students recording thereof, encouraging students to use the words, completing a knowledge rating scale, providing teacher-made labels or visual aids, listening during lecture, taking notes, performing research, repeating the word [teacher (speaking) and student (writing, speaking)], reviewing sample test questions, taking quizzes/tests, recording responses to assigned textbook activities, watching videos, viewing words on a Word Wall, and completing worksheets.

The Student Driven category subsumed the responses that required students to engage and to develop understanding of vocabulary and an expectation to understand or demonstrate understanding without teacher support. Five items included in this category were using context to determine a word's meaning, reading content texts, studying, taking quizzes/tests, and using the words in written assignments (e.g. labs, essays, explanations).

Sample verbatim responses attributed to the construction of these four categories are found in Table 4.15; the respondent ID number is in parentheses. See Appendix D for the complete list of verbatim responses in this regard.

Table 4.15
*I develop student understanding of vocabulary in my classroom by:*

| Development | Sample Associated Responses (ID#) |
|---|---|
| Instructional Strategies | ● "concept mapping, word 'dissection', compare/contrast, . . ., examples/non-examples, word relationships/hierarchies" (25) |
| Application (Demos, Labs) | ● "Use in practice/performing the meaning of " (41) <br> ● "Defining words during classroom presentations" (33) |
| Teacher Directed | ● "calling attention to words in lectures" (5) <br> ● "Daily repetition and exposure is used in question of the day" (4) |
| Student Driven | ● "Reading articles with the words included. Writing sentences with the vocabulary words." (18) |

I then analyzed the ways in which *I develop student understanding of vocabulary in my classroom (content area) by:* by type of receptive and/or productive language within the following five areas: Read, Write, Speak, View, and Listen. Receptive language included three foundational skills: Read, View, and Listen; and Productive areas included two foundational skills: Write and Speak. I analyzed each of the respondents open-ended responses for these foundational skills; in many cases a response was attributed to more than one skill. For example, "Reading articles with the words included. Writing sentences with the vocabulary words" (Survey, 4/27/14). Accordingly, reading and writing were attached to this piece of data. I similarly evaluated each data point, then I tallied them by content area group: Science, Social Studies, or Technical Subjects.

The opportunity to employ the foundational skills of Reading and Listening were

nearly equal across the three content area groups. I attributed 48 total items to reading, which were evenly balanced: Science (17), Social Studies (15), and Technical Subjects (16). I attributed 47 items to listening which were also similarly balanced: Science (15), Social Studies (15) and Technical Subjects (17). Writing, Speaking, and Viewing had wider-ranging results. Of the 67 identified student opportunities to write in order develop vocabulary understanding, Science claimed 48% (32); in contrast, Technical Subjects claimed just 16% (11). Technical Subjects identified 52% (16) of the opportunities to speak, while Science had identified 23% (7). Additionally, opportunities to view were reportedly the most in Technical Subjects at 65% (11), in contrast to Social Studies that reported 6% (1). Overall, respondents claimed to most heavily rely on writing - 32% (67/210) - as it related to *I develop student understanding of vocabulary in my classroom (content area) by:*. As far as productive language, respondents cited 98 items (47%); whereas, receptive language was cited slightly more frequently (112 times, 53%).

Within the content area groups, Science cited 51% (39) of their foundational skills as productive language and 49% (37) as receptive. Social Studies cited 51% (32) of their foundational skills as productive language and 49% (31) as receptive. Technical Subjects cited 38% (27) of their foundational skills as productive language and 62% (44) as receptive. See Table 4.16 in Appendix D.

Next, I tallied each of the ways by content area group: Science, Social Studies, or Technical Subjects. The total number of ways indicated was 142: Science (52), Social Studies (49), and Technical Subjects (41); see Table 4.17 in Appendix D. Three items stand out. One, Science claimed to rely on instructional strategies (14) significantly more than Social Studies (7) and Technical Subjects (3). Two, Technical Subjects claimed to

utilize application twice as much (14) as Science (6) or Social Studies (7). Three, Teacher Directed means by which *I develop student understanding of vocabulary in my classroom (content area) by:* was cited over twice as often (57) as instructional strategies (24) and application (27) and nearly half as often as those categorized as Student Driven (34).

The third statement provided the prompt *The sources that are most influential on vocabulary instruction in my classroom are:* and a checklist from which respondents were asked to *Check all that apply* (see Table 4.18 in Appendix D). I tallied the responses by content area group and found that the 41 respondents selected multiple sources (a total of 107) as influential: Science (35), Social Studies (39), and Technical Subjects (33); see Table 4.19 in Appendix D. First, each group relies heavily on professional interactions within the respective department during Professional Learning Community time to determine words for instruction. Overall, 28 of the 41 respondents, or 68%, claimed to rely on these collaborative conversations; which was evident in Science-75% (9), Social Studies-80% (12), and Technical Subjects-50% (7) alike. Second, all three groups reported that textbooks and professional development (within district or off-site workshops) most influenced the selection of words for instruction. 22 of the 41 respondents (54%) claimed to draw from the textbook, which was comprised of Science-58% (7), Social Studies-67% (10), and Technical Subjects-36% (5). 21 of the 41 (51%) claimed that professional development/workshops was an influential source which broke down as Science-50% (6), Social Studies-40% (6), and Technical Subjects-64% (9). Third, only two teachers claimed administration was an influential source, and both of those happened to be from the Social Studies group. Fourth, the influence of pre-service teaching/undergraduate work received the lowest number of responses other than

administration. Overall, only 15% (6) of the respondents selected this source: Science -

25% (3), Social Studies - 7% (1), and Technical Subjects - 14% (2).

The final open-ended prompt was simply labeled *Additional Comments*. Eleven of

the 41 teachers who completed the survey chose to address this optional segment:

Science (5), Social Studies (3), and Technical Subjects (3). I compared and contrasted

their comments which revealed 11 distinct items (See Table 4.20 in Appendix D). I then

tallied each of the participant's input according to content area group. In all, 26 items

(multiple by nine educators) were indicated: Science (11), Social Studies (6), and

Technical Subjects (9). Next, I compared the *Additional Comments* for similarities and

differences; my analysis led to the development of two categories. I also tallied each of

the items and its connected category by content area group (Science, Social Studies, or

Technical Subjects).

Eight items comprised *Instructional Influence*: classroom application by

student(s), student dearth of disciplinary background knowledge, teacher modeling, a

multitude of standards, repetition, the rigor of disciplinary vocabulary to be learned,

instructional time constraints, and term transferability. Five of these items seemingly fall

outside the educators' locus of control. The Teacher Request category encompassed three

expressly desired professional growth and interaction items: reading and vocabulary

courses for credit, allotted time for professional networking, and ongoing professional

development. While the sample size was small (11 respondents), there were items of

interest (See Table 4.21 in Appendix D for all responses). Ten of the 11 (91%) additional

comments by Science educators dealt with instructional influence. Science was also the

only group to cite student dearth of background knowledge as a mitigating instructional

influence. Also, though there were only three members from the Technical Subjects who responded, they were responsible for fifty percent of the items in the teacher request category. Two verbatim responses that contributed to the construction of these two categories were as follows: "The physical application and modeling in Art seems to help in retention of the vocabulary" (Survey, 4/28/14), and "It would be nice to add to staff development, opportunities for teachers to take credit bearing classes at the high school related to best practice strategies, such as reading and vocabulary" (Survey, 4/25/14). See Table 4.22 in Appendix D for all responses in this regard.

## Chapter Four: Part II

I constructed two assertions supported by the data: (a) ***Teachers rely on a limited repertoire of instructional approaches***; (b) ***Teachers draw from their classroom and within-district experiences***. These two assertions are supported by seven themes. I articulated these themes and provided substantiating data analyses for each in an effort to further clarify their respective definitions. In addition, I defined key terminology related to each theme. I also provided teacher survey data, case study semi-structured interview data, and case study field notes, and arranged coded excerpts (exemplars) for each of the themes in table format by data source within each of the theme explanations.

Table 4.23 displays the evidentiary warrant according to emergent themes based on the data provided in the teacher survey and the semi-structured interviews.

Table 4.23

*Evidentiary Warrant by Occurrence - Teacher Survey & Semi-Structured Interviews*

| Theme | Coded Excerpts | Number of Participants |
|---|---|---|
| Repetition is the key to student acquisition of discipline-specific vocabulary. | 229 | 20 |
| Students learn best when a combination of word learning strategies are used. | 122 | 26 |
| Visual connections to discipline-specific terms improves student comprehension. | 38 | 25 |
| Teacher experience (discipline-specific words and previous students' difficulties) drives the selection of words for instruction. | 21 | 16 |
| Textbooks are viewed as a resource as it pertains to selecting words for instruction. | 20 | 20 |
| Within district, collegial collaboration is the number one source for learning to teach vocabulary. | 69 | 32 |
| District professional development is the preferred professional approach for learning vocabulary instructional strategies. | 45 | 33 |

Table 4.24

*Evidentiary Warrant by Data Type*

| Theme | Teacher Survey | Semi-Structured Interviews | Teacher Observations |
|---|---|---|---|
| Repetition is the key to student acquisition of discipline-specific vocabulary. | 17 | 12 | 200 |
| Students learn best when a combination of word learning strategies are used. | 25 | 8 | 89 |
| Visual connections to discipline-specific terms improves student comprehension. | 20 | 3 | 15 |
| Teacher experience (discipline-specific words and previous students' difficulties) drives the selection of words for instruction. | 13 | 8 | N/A |
| Textbooks are viewed as a resource as it pertains to selecting words for instruction. | 16 | 4 | N/A |
| Within district, collegial collaboration is the number one source for learning to teach vocabulary. | 59 | 10 | N/A |
| District professional development is the preferred professional approach for learning vocabulary instructional strategies. | 36 | 9 | N/A |

**Assertion 1**

Assertion one, ***Teachers rely on a limited repertoire of instructional approaches.***
This study's data are compatible with previous investigations. Blachowicz and Fisher
(2000) asked a number of vocabulary researchers the following question: How much has
the research on vocabulary instruction affected classroom practice? Their answer was a
disturbing and disappointing "not much" (p. 509). In an observational study of Canadian
upper elementary classrooms, Scott, Jamieson- Noel, and Asselin (2003) found that 39%
of vocabulary instructional time was dedicated to definitions, mostly through dictionary
and worksheet use. Even though much has been learned about effective vocabulary
instruction over the last several decades, and despite the fact that many teachers cite

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vocabulary instruction as an important instructional component (Cassidy & Cassidy, 2005/2006), it appears that teachers do not always incorporate best practices into their own instruction. Flanagan and Greenwood (2007) explained it this way; "Often, because they have no framework for guiding their instructional decisions, anything goes. And anything often devolves into one-size-fits-all instruction - one size for the time involved, one size for the words, one size for the method of instruction, and one size for the students" (p. 238). This is a disappointing contrast to Alvermann et al. (2013) who noted, "Given the pressures of extensive curricula, limited time, and a wide range of student abilities, teachers need vocabulary strategies that can yield the greatest benefit in student learning with the least cost in planning and instructional time" (p. 278).

Three themes support this assertion: (a) *Repetition is the key to successful student acquisition of discipline-specific vocabulary*; (b) *Students learn best when a combination of word learning strategies are used*; and (c) *Visual connections to discipline-specific terms improves student comprehension*. I discuss each of these in this section.

**Repetition is Key to Discipline-Specific Vocabulary Acquisition**

First and foremost, the data points to the theme that *Repetition is the key to successful student acquisition of discipline-specific vocabulary*. Repetition pertains to the frequency of exposure to targeted vocabulary words; as exposure increases, the likelihood of understanding and remembering new words' meanings and frequently using them increases.

**Repetition research.** Multiple studies echo the importance of repetition. Stahl (2005), claimed students must likely see a word more than once to solidify it in their long-term memories. Justice, Meier, and Walpole (2005) investigated the effectiveness of

rereading text to enhance word learning which provided evidence of the positive impact of exposure to targeted words through repeated readings. Biemiller and Boote (2006) reported that repeated reading of a storybook resulted in greater average gains (12%) in word knowledge by young children than the control group. Webb (2007) discussed the effects of repetition (1, 3, 7, and 10 encounters) on word knowledge. 121 Japanese students learning English took part in a controlled study that utilized 10 different tests that measured knowledge of orthography, association, grammatical functions, syntax, and meaning and form. Controls were set for several different numbers of repetitions, context in which the word occurred, nonsense words, and word knowledge acquisition. Each time the number of repetitions increased, greater gains in knowledge were found for at least one aspect of knowledge. Findings strongly suggest that significant gains may occur if students encounter unknown words ten times in context; though in order to develop full knowledge of a word more than ten repetitions may be needed. Chen and Truscott (2010) studied 72 Mandarin- speaking freshmen whose levels in English as a foreign language (EFL) were all intermediate. Results revealed that repetition positively affects language acquisition including word retention, productive knowledge, orthographic knowledge, and semantic knowledge. As the frequency of exposure to the target words is increased, students retain word meanings and more readily utilize target words in their speech.

**Importance of repetition.** Repetition is an important factor, for as words are repeatedly encountered, additional opportunities to store relevant information are presented which facilitates a more robust representation (Beck et al., 2013). Over time, words become increasingly familiar which dramatically improves the ability to reliably detect the word's referent and then produce them. In sum, vocabulary instruction does not

solely mean repetition or drill of the word; rather, it is the provision of repeated

exposures across a variety of contexts that creates the potential for words to become

known.

     **Repetition data.** Table 4.25 includes all responses from the open-ended question,

*Students in my classroom (content area) learn the vocabulary they need to know by:*

found in the beliefs section of the teacher survey (see Appendix D). Two exemplars that

illustrate this theme include: "Repetition in rehearsal, lessons and written work" (23) and

"Introduction to properly defined terms followed by repeated use of the term in various

formats (direct instruction, embedded terms in sample questions, small group review of

topic with specific and proper use of terms)" (14). Teachers expose their students to

content terminology to some extent or another. I'm thinking this is a "natural" occurrence;

that is, part of the content delivery rather than the employment of a strategy or the use of

a context clue to foster comprehension (Memo, 9/23/17). Essentially, this is the idea that

if students frequently hear a particular term, the likelihood that it will be understood

increases.

     The four open-ended questions regarding instructional practice found in the

teacher survey: *I select words to teach by:*, *I develop student understanding of vocabulary*

*in my classroom (content area) by:*, *The sources that are the most influential on*

*vocabulary instruction in my classroom are (Check all that apply.)*, and *Additional*

*Comments* provided further evidence of this theme. Two exemplars that illustrate the

theme of repetition include: "Daily repetition and exposure is used in question of the day

and writing responses" (Survey, 4/25/14), and "I really try to expose vocabulary and

concepts multiple times and in multiple ways to work the students towards mastery"

(Survey, 4/30/14). Refer to Table 4.26 in Appendix D for the complete list.

Dan contributed two related insights during the semi-structured interview. One, "I

teach them throughout the unit." Two, "I just use them a lot. I use them in conversation.

Every time I say it, I feel like they get closer to understanding it. A lot of repetition. I

keep just throwing it at 'ya" (Interview, 5/21/14). In this case, the teacher repeated a

discipline-specific term via simple restatement. This does not seem to include reframing,

contextualized supports, or the like (Memo, 9/23/17). In addition, the teacher articulates

the belief that the greater the volume of exposures (whether meaningful, contextualized,

or neither of these) to a discipline-specific word, the greater the comprehension of the

term will be (Memo, 10/1/17).

**Word Learning Strategies: Use a Combination**

The second theme that emerged in line with this assertion is that *Students learn*

*best when a combination of word learning strategies are used*. "Word-learning strategies

are mental processes that a learner employs when he or she comes across an unknown

word while reading" (Graves, Schneider, & Ringstaff, 2017, p. 534). Word-learning

strategies include the use of context to determine an unknown word's meaning, teaching

word parts, and using dictionaries. "Instruction focusing on structural analysis or

morphology, the learning of word parts, suggests that such instruction can help students

learn new words" (Blachowitz, 2006, p. 5). Teaching word parts enhances students'

understanding of vocabulary terms and has traditionally been a part of vocabulary

instruction; researchers have long contended that students in grades 7-12 must be able to

disassemble words into roots and affixes and learn how word parts function together to

construct word meanings (Adams, 1990; Graves, 2004; Edwards, 2004; Carlisle, 2010).

As Graves (2006) stated, "Teaching students word-learning strategies - strategies such as using context and word parts to unlock the meanings of words they don't know - is tremendously important. With tens of thousands of words to learn, anything we can do to help students become more proficient independent word learners is an absolute necessity" (p. 91).

   **Vocabulary instruction: Incidental and intentional.** Vocabulary instruction involves much more than looking up words in a dictionary and using them in sentences, for vocabulary is acquired both incidentally (indirect exposure) and intentionally (via explicit instruction of specific words and of word-learning strategies). As it pertains to this emergent theme, word-learning strategies also includes the direct explanation and support of instructional strategies that promote vocabulary understanding and use. Directly explaining strategies (an explicit, step-by-step approach) has been validated since the late 1980s (e.g., Duffy et al., 1987; Graves, Juel, & Graves, 2004). The basic components of direct explanation of strategies include an explicit description of the strategy, teacher and/or student modeling, collaborative use of the strategy, guided practice, and independent use of the strategy (Duke & Pearson, 2002). Teachers should be mindful and resolve to vary their approaches to teaching word meanings based on the nature of the target words (Graves, 2009; Stahl & Nagy, 2006), for "words differ in nature, ranging from concrete nouns like *peninsula* that are easily represented by visual images to densely conceptual terms like *democracy* that require a great deal of knowledge-building to understand" (Manyak et al., 2014, p. 15).

**Teach word-learning strategies.** This component speaks directly to the notion that "teaching word-learning strategies has some special importance because it provides students with powerful tools that they can use to become independent word learners - tools that they can use for a lifetime" (Graves, Schneider, & Ringstaff, 2017, p.533). Thirteen word-for-word responses spoke to the use of a combination of word learning strategies from the open-ended teacher survey question, *Students in my classroom (content area) learn the vocabulary they need to know by:*. Two exemplars are "Concept squares, Text readings, Looping review game, Word Wall" (37) and "Multiple avenues-models, diagrams, discussion, notes, brainstorms, exploring Latin/Greek roots, flashcards or foldables, reading text, etc." (3). Here, the teacher chooses to provide students with several strategies by which to develop to discipline-specific vocabulary (Memo, 9/24/17). Refer to Table 4.27 in Appendix D for all responses.

Four open-ended questions regarding instructional practice were included in the teacher survey. These include *I select words to teach by:*, *I develop student understanding of vocabulary in my classroom (content area) by:*, *The sources that are the most influential on vocabulary instruction in my classroom are (Check all that apply.)*, and *Additional Comments*. Twelve word-for-word responses spoke to the use of a combination of word learning strategies from these prompts; (refer to Table 4.28 in Appendix D for all responses). Two exemplars are "concept mapping, word 'dissection', compare/contrast, writing conclusions and explanations, examples/non-examples, word relationships/hierarchies" (Survey, 4/28/14) and "I try to use a variety of methods: knowledge rating scales, reading an article and finding a fixed number of words and their

definitions embedded in the article, worksheets, and the review methods listed above"
(Survey, 4/27/14).

The semi-structured interview participants also spoke to the use of a combination
of word learning strategies in their respective interviews. The first of two exemplars is, "I
really have a combination of tools the students are using. More and more are using
flashcards - either a digital version or traditional flashcard. Some students are using the
Frayer Model. Some students just write down terms in their notebook and use that to
study" (Rick, Interview, 5/20/14). In this situation, the teacher provides students with the
components of a vocabulary acquisition strategy (Memo, 9/24/17), and purposefully
reminds students of the importance of acquiring and developing discipline-specific terms
with the aid of instructional tools and/or strategies (Memo, 9/24/17). In the second
exemplar, "I still use the VVWA cards. Concept Maps." (Mark, Interview, 5/14/14), the
teacher identifies one or more instructional strategies (e.g. VVWA, Frayer model). These
seem to be purposefully selected in order to aid in the comprehension of discipline-
specific terms (Memo, 10/1/17). Refer to Table 4.29 in Appendix D.

**Visual Connections Improve Comprehension**

The third theme that emerged is *Visual connections to discipline-specific terms*
*improves student comprehension*. Researchers have noted the importance of supporting
children's use of visuals to enhance understanding of the ideas presented in informational
text (Carney & Levin, 2002; McTigue & Flowers, 2011). As it pertains to this study,
visual connections include pictures, photographs, slides, films, charts, or other visual
materials offered by the teacher as a graphic illustration of a vocabulary term. This is
consistent with the division of visual connections (Bertin, 1983; Goodman, 1968; Vekiri,

2002), into two large categories: pictorial representations (e.g. paintings and drawings) and graphic representations (i.e. graphs and diagrams).

Ten responses from the Teacher Survey open-ended question (beliefs section), *Students in my classroom (content area) learn the vocabulary they need to know by:* contributed to this theme. Two exemplars include: "Watching demos and I refer to the correct names of the tools. Short quizzes for proper tool identification. Drawers have labels to help return correct tool to the correct storage place. Videos with pictures of equipment" (Survey, 4/28/14), and "Visual Aids in the classroom" (Survey, 4/29/14). See Table 4.30 in Appendix D for all responses.

The instructional practice section of the teacher survey included three open-ended questions and one checklist item: *I select words to teach by:*, *I develop student understanding of vocabulary in my classroom (content area) by:*, *The sources that are the most influential on vocabulary instruction in my classroom are (Check all that apply.)*, and *Additional Comments*. Two exemplars that illustrate the theme, *Visual connections to discipline-specific terms improves student comprehension* are provided here. One, "Students create a visual with the word, definition, draw a picture to illustrate the word . . . Students make a foldable visual with the definition and the word, . . ." (Survey, 4/25/14). Two, "Demonstrations, Labs, PPT, Videos, . . ." (Survey, 4/29/14). Refer to Table 4.31 in Appendix E for all related responses.

Three responses from the participants' semi-structured interviews illustrate this theme as well. One, "Well, I'm hoping... the best way... umm... Here's my gut feeling in that. Anything visual that we do - a lot of role playing, posters, ... yeah" (Mark, Interview, 5/14/14). Two, "I still use the VVWA cards. Concept Maps" (Mark, Interview,

5/14/14). Three, "We put out things on the lab tables and look at them" (Dan, Interview, 5/21/14).

## Assertion 2

Assertion two, ***Teachers draw from their classroom and within-district experiences.***

**Selecting Words for Instruction: Teacher Experience**

The first theme that emerged within this assertion was *Teacher experience (discipline-specific words and previous students' difficulties) drives the selection of words for instruction*. Lortie (1975) demonstrated that teachers' models of teaching are strongly affected by their own experience as students or teachers. In fact, one of the most crucial factors that shapes teacher knowledge and growth is their on-the-job training and experience. Through the experimentation with various pedagogical techniques in the classroom, "teachers amass a catalogue of knowledge about what works and what does not work" (Oleson & Hora, 2013, p. 3). Kolb (1984) referred to this type of knowledge is as experiential learning, while Shulman (1987) characterized such experiences as craft knowledge that comes with the wisdom of practice. In sum, teacher decisions are guided by "a coherent set of personal beliefs and a repertoire of first-hand experience, and teacher use these theories eclectically, that is, individual teacher decisions do not wholly abide by one or the other, but in fact a combination of these beliefs and experience" (Zhang & Yang, 2017, p. 40).

**Word selection requires important instructional decisions.** Selecting words to teach requires important and considerable teaching decisions. Useful approaches for selecting vocabulary have been largely fourfold. Several authors have suggested using

lists when selecting words to teach (Biemiller, 2009; Coxhead, 2000; Gardner & Davies, 2013; Graves & Sales, 2012; Hiebert, 2012; Marzano, 2004). Hiebert and Cervetti (2012) discussed different approaches for teaching vocabulary for each genre (narrative and informational). (Beck, McKeown, & Kucan, 2002, 2008, 2013; Kucan, 2012) suggested that there are three tiers of words and that attention should be most focused on Tier II. Tier II words are those that have "high utility for mature language users and are found across a variety of domains" (Beck et al., 2013, p. 9). The Selecting Words for Instruction from Texts (SWIT) model (Graves, 2014) includes three types of vocabulary instruction: (1) Powerful Instruction on specific words whose meanings are complex and essential to text comprehension (Beck et al., 2002, 2008 , 2013); (2) Brief Explanations of words that have clear-cut definitions (Baumann et al., 2009, 2012); and (3) Students Inferring Meanings from context and from morphological cues (Baumann, Edwards, Boland, & Font, 2012).

**Word selection survey data.** I took the following exemplar from the open-ended question, *Students in my classroom (content area) learn the vocabulary they need to know by:* from the beliefs section of the teacher survey. Respondent 20 stated, "I choose terms that will be used throughout the unit through lectures, reading, videos and homework. The intent is that they are familiar with the term and then can put it into context when discussing that content in class" (Survey, 4/28/14).

Four open-ended questions in the teacher survey that pertain to instructional practice included *I select words to teach by:*, *I develop student understanding of vocabulary in my classroom (content area) by:*, *The sources that are the most influential on vocabulary instruction in my classroom are (Check all that apply.)*, and *Additional*

*Comments*. Three exemplars are provided here: (a) "I look for words that are relevant and have a direct connection to the content, skill, technology that I am training on. I select the words that are critical for understanding and applying the instructional strategy with technology" (Survey, 4/25/14); (b) "words that I have come across over the years of teaching that students commonly don't know" (Survey, 4/25/14); "Pre-reading and selecting words that I know from my experience will be challenging and that are important / relevant for them to comprehend the readings" (Survey, 4/25/14). See Table 4.32 in Appendix D for all attributed responses.

**Word selection: Semi-structured interview data.** The semi-structured interviews contributed several pieces of data to the theme *Teacher experience drives the selection of words for instruction*. Two exemplars include: (a) "Well, the process is I select vocab terms that I think are going to help kids understand the concepts. That's about as simple and complicated as it gets" (Mark, Interview, 5/14/14) and (b) "I uh kind of use a combination of prior knowledge words. The concepts and the words from units that students have struggled with. I use prior knowledge from geographic concepts and models from prior years that students have struggled with to determine my selections" (Rick, Interview, 5/20/14). In this case, the teacher explains that the process for selecting terms to teach is teacher-dependent. Each of the discipline-specific words chosen seem to have been due to teacher perception of importance, difficulty, usefulness, and/or development of conceptual understanding (Memo, 10/1/17). See Table 4.33 in Appendix D for all of the responses.

**Selecting Words for Instruction: Influence of Textbooks**

Theme two supports the assertion that ***Teachers draw from their classroom and within-district experiences***, for *Textbooks are viewed as a resource as it pertains to selecting words for instruction.*

**Textbook definition.** A textbook is defined as a book that is used as a standard source of information for formal study of a subject and an instrument for teaching and learning. Some aspects of textbooks include: a course syllabus (the authors have made decisions regarding scope and sequence), unit word lists, a set of visuals, activities, readings, a basis for student assessment, supporting materials (e.g. teacher's guide, worksheets), and consistency between levels if a textbook series sequence is followed (Graves, 2000). Textbooks are often thought of as texts that are used as the basis (or partial basis) of a course of study. In this study, textbooks were named as a factor when teachers select words for instruction; however, they were not the number one influence.

**Influence of textbooks: Teacher survey data.** I analyzed the data from the four open-ended questions regarding instructional practice found in the teacher survey, and recorded this insight. The teacher notes that one instructional practice for selecting words is to consult the word lists found in the textbook; these are put together by the textbook company and are generally found at the outset of sections and/or subsections in the textbook (Memo 32, 10/1/17). Three exemplars illustrate this theme include: "Checking the vocabulary words in the lessons of the textbook" (Survey, 4/27/14), "using the book word bank in each chapter and adding my own if necessary" (Survey, 4/26/14), and "key words from each chapter" (40). See Table 4.34 in Appendix E for all responses.

**Influence of textbooks: Semi-structured interviews data.** Additionally, all three case study participants spoke directly to their level of reliance on textbooks as a factor for vocabulary selection in their semi-structured interviews. Mark stated, "I might seek assistance from the textbook - the publisher - what do they think is important. Supplementary materials - you know - I might look at what vocab is presented there. [So], Umm...standards. College board. Colleagues. And then textbooks" (Interview, 5/14/14). Dan claimed, "Depending upon what we do, some of our words come more from a textbook" (Interview, 5/21/14). And finally, Rick explained, "Uh, let's see, I would say uh, textbooks and prior years' students. For example, a um, geographic concept of cultural diffusion is a vocabulary word that students in the past have struggled with, and so I spend more time with this concept" (Interview, 5/20/14). In each case, the teacher notes that one instructional practice for selecting words is to consult the word lists found in the textbook. (Memo, 10/1/17). These lists are put together by the textbook company and are generally found at the outset of sections and/or subsections in the textbook.

**Instructional Support for Teachers: Collegial Collaboration**

Theme three, *With-in district, collegial collaboration is the number one source for learning to teach vocabulary*, supports the assertion that ***Teachers draw from their classroom and within-district experiences.*** Collaboration refers to cooperative action(s); collaboration is not a task to complete; it's an ongoing process. Over 30 years ago, Lieberman (1986) stated: "Contexts, needs, talents and commitments differ, but one thing appears to be constant: school cannot improve without people working together" (p. 6). Collegiality refers to the quality of the relationships among staff members in a school

district. Teachers who comprise departmental, horizontal, vertical, building-wide, and/or district-wide teams are encouraged to work together and to solve problems. Professional Learning Communities (PLCs) allow opportunity for collaboration; teachers may connect with their colleagues in order to actively learn about and reflect on their respective practices. Provided sufficient time and frequency, teachers can engage in professional work time that is mutually beneficial, use shared resources, work to increase student achievement, and advance their own teaching skills, knowledge, and beliefs (Mitchell & Sackney, 2009).

**Colleagues: Teacher survey data.** While I analyzed the data from the four open-ended questions regarding instructional practice found in the teacher survey, I recorded: The teacher identifies collegial discussion (e.g. department members, PLC, staff meeting) as that which meaningfully supports the professional development of word learning and teaching strategies (Memo, 10/1/17). This is supported by these three exemplars: (a) "State standards, agreement among colleagues who teach [the] same subject concurrently, professional experience" (Survey, 4/29/14), (b) "Curriculum development with peers and myself" (Survey, 4/30/14), and "Colleagues/PLC, . . . Conferences I attend and local networking sessions" (Survey, 4/29/14).

As a part of the survey, teachers were provided with the prompt, *The sources that are most influential on vocabulary instruction in my classroom are:* and a checklist from which respondents were asked to *Check all that apply* (refer to the Teacher Survey instrument in Appendix A). Twenty-eight of the 41 (68.3%) respondents selected "Colleagues/PLC," and 21 of the 41, (51%) claimed "Professional Development

(workshops)" as influential sources. These two categories represented two of the three highest totals selected by all respondents: PLC (28), Textbooks (22), and PD/W (21).

**Colleagues: Semi-structured interview data.** Additionally, all three case study participants offered insights regarding the importance of colleagues as a factor in their semi-structured interviews. Mark stated, "Informal discussion with colleagues" (Interview, 5/14/14). And Rick explained, "Several sources - district personnel . . . Generally, I look for these within the district" (Interview, 5/20/14). Refer to Table 4.35 in Appendix D for the all of the responses. Collegial collaboration seems to be a crucial factor, for the teacher identifies collegial discussion (e.g. department members, PLC, staff meeting) as that which meaningfully supports the professional development of word learning and teaching strategies (Memo, 10/1/17).

**Instructional Support for Teachers: District Professional Development**

The fourth theme that emerged within the assertion ***Teachers draw from their classroom and within-district experiences*** was, *District professional development is the preferred professional approach for learning vocabulary instructional strategies*. Professional development generally refers to ongoing learning opportunities available to teachers and other education personnel through their schools and districts. It provides opportunities for staff members to learn more about effective instructional strategies, technology integrations, and curriculum design. According to the Minnesota Department of Education (2016)

> The fundamental purpose of staff development is to improve student learning. The
> intent of the legislation is that districts and schools implement a site-based process
> for both educational goals and staff development opportunities that will best help

meet these goals. Providing teachers and other school district staff with individual and professional organizational growth and development opportunities prepares them to provide excellent educational experiences for students and ultimately helps achieve the fundamental purpose of improving student learning." (p. 1)

**Professional development: Teacher survey data.** When I analyzed the data from the four open-ended questions regarding instructional practice found in the teacher survey, I recorded three memos: (a) The teacher expresses a desire for district-led staff development that is focused on word learning instructional strategies (Memo, 10/1/17), (b) The teacher chooses to attend professional development workshops and/or read professional texts on the subject of selecting and instructing vocabulary terms (Memo, 10/1/17), and (c) The teacher articulates a desire for district-level (e.g. teaching and learning department, curriculum director) to identify and provide words for instruction. This request may be truly sought after or merely mentioned" (Memo, 10/1/17). Three exemplars illustrate this theme: (a) "Curriculum development with peers and myself" (Survey, 4/30/14), (b) "Professional Development (workshops), Working with reading specialists in our school" (Survey, 4/26/14), and "It would be nice to add to staff development, opportunities for teachers to take credit bearing classes at the high school related to best practice strategies, such as reading and vocabulary" (Survey, 4/28/14). Refer to Table 4.36 in Appendix E for all responses.

To reiterate, respondents were asked to select, *The sources that are most influential on vocabulary instruction in my classroom are:* from a checklist and *Check all that apply* (refer to Appendix A). Twenty-eight of the 41 (68.3%) of the respondents

selected "Colleagues/PLC," and 21 of the 41, (51%) claimed "Professional Development (workshops)" as influential sources.

        **Professional development: Semi-structured interview data.** All three case study participants articulated that district professional development is the preferred professional approach for learning vocabulary instructional strategies. Mark stated, "Some guy at the middle school. I have a three-ring binder . . . Most of what I've done with vocabulary has come from work at the middle school" (Interview, 5/14/14). Rick explained, "Well I always look for new ideas in instruction, content reading instruction - professional development opportunities. Generally, I look for these within the district. Cost is a factor when looking at these opportunities. I also know we have quality resources here" (Interview, 5/20/14). It seems clear Rick consciously decides to attend professional development workshops and/or read professional texts on the subject of selecting and instructing vocabulary terms (Memo, 10/1/17). And Dan offered, "Workshops would be great. What can we do to strengthen vocab?" (Interview, 5/21/14). Refer to Table 4.37 in Appendix D for the all of the responses. Two key takeaways emerged from this data set. One, teachers express a desire for district-led staff development that is focused on word learning instructional strategies (Memo, 10/1/17). Two, teachers desire a member of district-level personnel (e.g. teaching and learning department, curriculum director) to identify and provide words for instruction (Memo, 10/1/17). It seems important to consider whether this request is truly sought after or if it is merely mentioned.

**Conclusion**

Reviews of research on vocabulary instruction stress the limited effectiveness of instruction that focuses narrowly on dictionary definitions and support instruction that presents words in a variety of contexts, provides multiple exposures, and promotes students' active processing of new meanings (Beck, McKeown, & Kucan, 2013; Stahl & Fairbanks, 1986).

Now, I turn my attention to the participant cases in Chapter Five. There, I define a case study and describe each of the three participant cases. I then discuss participant beliefs and instructional practices. I follow that with an analysis of the semi-structured interviews and participant observations, then I discuss two assertions based on the case data. Finally, I provide a summary, discuss takeaways, and offer future considerations.

**Chapter Five**

In this chapter, I define a case study; then I describe each of the three participant cases. After describing the participants, I discuss participant beliefs, self-reported instructional practices, and self-reported sources of instructional practice. Next, I analyze the semi-structured interviews and participant observations. Finally, I discuss two assertions based on the case data.

**Case Studies**

Case study research can use both quantitative and qualitative methods (Merriam, 2009). However, in regards to qualitative case studies, methods that take priority must be those that are aimed at generating inductive reasoning and interpretation rather than testing hypotheses. Three distinctive attributes of the case study method include: particularistic (focus on a particular situation, event, program, or phenomenon); descriptive (yield of a rich, thick description of the phenomenon under study); heuristic (illumination of the reader's understanding of the phenomenon under study).

**Definitions.** In order to delve deeper into the phenomena at work in regards to teacher conceptualization and implementation of vocabulary instruction in science, social studies, and technical subjects classrooms, I purposefully selected three cases. Merriam (1998) defined a qualitative case study as, "an intensive, holistic description and analysis of a single instance, phenomenon, or social unit" (p. 21). Merriam's (1998) articulation includes the following components: conduct a literature review, construct a theoretical framework, identify a research problem, craft and hone the research questions, and purposively select the sample.

Merriam's (1998) perspective on case studies requires a constructivist approach; that is, the researcher must assume reality is constructed through meanings and understandings that are developed through social interactions and experiences. Based on the purpose and conditions of the study, I designed it to include multiple cases that reflect ordinary, unique, and varied aspects of this phenomenon through multiple sources of evidence in an effort to triangulate the data. I purposely selected cases based on the research purpose and question, and for what my intensive analysis might reveal about this topic of interest.

Bromley (1996) explained that case studies aim to get as close to the subject of interest as possible, in part through observation in natural settings and in part through access to subjective factors. As context (e.g. social, organizational) is significant to understanding each case and the phenomenon overall, I observed and interviewed participants in their respective classrooms in order to maintain the natural environment from which the data was drawn. My aim was to provide a rich holistic description to informs my understanding of "the case as a phenomenon of some sort occurring in a bounded context" (Merriam, 1998, p. 27).

**Participant Selection.** Each of the three cases was purposefully selected as an intensity sample; these were information-rich cases - neither extreme nor deviant - of the phenomenon of interest. I constructed a table that included the two assertions their themes (three and four respectively for a total of seven). I then reevaluated the responses from the confidence, beliefs, and instructional practice sections of the survey and placed the corresponding items in the table by participant. As I was looking for information-rich cases, I selected the three that were most representative of the seven themes (see Tables

4.38, 4.39, 4.40, & 4.41 in Appendix D); these three were the only participants whose responses were evidenced in six or more of the seven of the themes.

**Dan** (all names are pseudonyms)**.** Dan is a middle school science teacher; he has been teaching for 24 years in the same position. On the confidence self-assessment, Dan selected 6/7 for vocabulary instruction and selecting words for instruction, and 4/7 for strategies for teaching vocabulary. These results indicate that Dan is confident in selecting words to teach and vocabulary instruction, but less confident about strategies for teaching vocabulary.

Dan repeatedly articulated a desire for district-level staff aid/intervention even though his reported confidence level for instruction and selecting words for instruction were both self-reported as 6/7. In multiple instances, Dan stated that repetition is the method he prefers in developing vocabulary understanding in his science classroom. In addition, he noted that word selection and instructional choices rested on his decision-making alone: "It's pretty much me."

To the prompt, *Students in my classroom (content area) learn the vocabulary they need to know by* Dan wrote that he provides "Exposure to vocab in assignments and labs," and "Lots of repetition of terms used throughout the unit." Additionally, he provides fill-in-the-blank worksheets so students can complete "Notes with new vocab" which involves "Usually a packet of worksheets using the words multiple times" as well as "Labs with the vocab words in them."

After having completed this step, I asked Dan to provide a description of his instructional practices as it relates to the development of vocabulary comprehension. To the first open-ended question *I select words to teach by* Dan explained that he selects

"what words are important to teach the topic or in the case of my class, the topic itself is almost always new vocabulary." which he then rephrased as "What vocabulary is important to understand the topic." To the second open-ended question, *I develop student understanding of vocabulary in my classroom (content area) by* Dan explained that his efforts are based on "Repetition and drill." He explained, "Demonstrating the use of vocabulary in instructing students; using the vocabulary not just for the one unit, but using that vocabulary throughout the course of the year-long class" (is my goal). To the third question, *The sources that are most influential on vocabulary instruction in my classroom are*, Dan claimed three sources: the textbook, his undergraduate program studies (which occurred 24 years prior), and his "Personal experience with education."

Dan's interview data revealed three themes. One, the teacher and his/her professional experience bears the responsibility for selecting the terms that will be taught. Two, repetition is the key to word learning. And three, somewhat contradictory to the first, Dan believes district-level personnel should provide discipline-specific word lists for instruction.

**Mark.** Mark is a high school science teacher who has 26 years of experience. Mark spent the majority of these years at the middle school level, and is now in the completion of his sixth year in his current position. On the confidence self-assessment Mark selected 4/7 for both vocabulary instruction and strategies for teaching vocabulary; whereas he chose 6/7 for selecting words for instruction. These results indicate that Dan is confident in selecting words to teach, but less confident about vocabulary instruction and strategies for teaching vocabulary.

Mark, seemingly both self-deprecating and sincere, was not self-assured in this area of instruction. He has attempted to infuse several vocabulary instructional strategies into his teaching methods over the years, most of which have been an outgrowth of within-district professional development and regular departmental collegial connections. Also weighing on his decision-making is his vast teaching experience at both the middle and high school levels. To the prompt, *Students in my classroom (content area) learn the vocabulary they need to know by*, Mark penned "Reading Text, Discussion, Role Playing, and Teaching Word Parts."

After having completed this step, I asked each participant to provide a description of instructional practices as it relates to the development of vocabulary comprehension. To the first open-ended question *I select words to teach by* Mark described his word selection approach as a response to three questions, "Does the word represent an idea that is important to understanding the concept?," "Does the word represent a specific part/structure necessary for understanding?," and, "Does the word thread through multiple topics/concepts?" To the second open-ended question, *I develop student understanding of vocabulary in my classroom (content area) by* Mark outlined his approach as one that encompasses, "Providing students opportunities to write and discuss using the vocabulary, provide description to students, ask students to generate analogies, and word/picture associations." The third question provided the prompt, *The sources that are most influential on vocabulary instruction in my classroom are*, Mark indicated that he relies solely on "Colleagues/PLC." This may have been due to the school district's emphasis on weekly PLC meetings throughout the course of the year; it also may have stemmed from department (content area) instructional planning and academic

conversations during these PLC times (and beyond) in regards to scope and sequence.

Mark's interview data held that his professional experience drives word selection for instruction. His interview data also supports that textbook word lists are a last resort in terms of selecting words to teach. Mark also believes that students best learn words by creating graphic (visual) images.

**Rick.** Rick began his teaching career as a middle school social studies teacher, after which he moved to the high school level where he has now completed 10 consecutive years in his current position. On the confidence self-assessment, Rick selected 5/7 for vocabulary instruction, 6/7 for selecting words for instruction, and 4/7 for strategies for teaching vocabulary. These results indicate that Rick is confident in selecting words to teach, though his confidence diminishes as he considers vocabulary instruction and again concerning strategies for teaching vocabulary.

Rick has extensive teaching experience at both the middle and high school levels. He self-reported explicitly teaching vocabulary and supporting instructional strategies to develop literacy in his academic discipline. His efforts at individualization via electronic technology and self-selected strategy employment to promote content understanding in his hybrid course is unique across the respondents. This is interesting, since Rick self-reported strategies for teaching vocabulary as 4/7.

To the prompt, *Students in my classroom (content area) learn the vocabulary they need to know by*, Rick explained that students learn via the use of "Reflective journaling using apps on their device or notebook using the Frayer model."

After having completed this step, I asked each participant to provide a description of instructional practices as it relates to the development of vocabulary comprehension.

To the first open-ended question *I select words to teach by*, Rick described his process as

"Identifying words I believe students are unfamiliar with based on state geography

standards and my experience in teaching the subject matter for several years." The second

open-ended question, *I develop student understanding of vocabulary in my classroom

(content area) by*, Rick discussed his change in instructional practice, for it has directly

affected the manner in which he aims to develop student understanding of the requisite

content vocabulary. He stated, "As I am using a new instructional method in which

students are working through content at an individualized pace this is new to me. I have

taught students several methods for working with new vocabulary from the traditional

3x5 note card, to digital vocabulary tools such as StudyBlue and Quizlet, to using the

Frayer Model." To the third question, *The sources that are most influential on vocabulary

instruction in my classroom are*, Rick selected "Colleagues/PLC" which also may have

been due to the school district's emphasis on weekly PLC meetings and/or stemmed from

department (content area) instructional planning and academic conversations during these

PLC times (and beyond) in regards to scope and sequence. In addition, Rick utilizes the

textbook's recommendations, his graduate coursework, professional development

opportunities, and relevant professional journal articles.

Rick's responses to the semi-structured interview prompts also support teacher

experience as that which drives word selection, including those that are conceptual in

nature. His data supported two additional themes: students learn words best when a

combination of word learning strategies are used, and word learning strategies must be

explicitly taught.

**Cross-case Displays and Analyses**

Below, I display cross case results to highlight the similarities and differences across cases. These are organized by the survey self-report data.

**Beliefs self-assessment**. Table 5.1 illustrates the held beliefs of the case study participants in regard to vocabulary instruction at the time of the survey.

Table 5.1
*Cross-case Display: Beliefs Self-Assessment*

| Beliefs Self-Assessment | Dan | Mark | Rick |
|---|---|---|---|
| It is important to dedicate a regular portion of classroom lessons to vocabulary instruction. | Disagree | Strongly Agree | Agree |
| It is important to provide repeated exposure to new words in multiple contexts. | Agree | Strongly Agree | Agree |
| It is important to allow sufficient practice to support word learning. | Agree | Agree | Agree |
| It is important to give sufficient opportunities to use new vocabulary in a variety of contexts (e.g. reading, writing, discussion). | Agree | Agree | Agree |
| It is important to provide students with strategies to foster independent word learning. | Agree | Agree | Strongly Agree |

**Instructional practices self-assessment.** Each of the participants' responses from the teacher survey section as it pertains to instructional practice is provided in Table 5.2.

Table 5.2
*Cross-Case Display: Instructional Practice*

| Instructional Practice | Dan | Mark | Rick |
|---|---|---|---|
| I dedicate a portion of classroom lessons to vocabulary instruction. | Agree | Disagree | Agree |
| I provide repeated exposure to new vocabulary words in multiple contexts. | Agree | Agree | Disagree |
| I allow sufficient practice to support vocabulary word learning. | Disagree | Disagree | Agree |
| I give sufficient opportunities to use new vocabulary in a variety of contexts (e.g. reading, writing, discussion). | Disagree | Disagree | Agree |
| I provide students with strategies that foster independent word learning. | Agree | Disagree | Agree |

The third question provided the prompt, *The sources that are most influential on vocabulary instruction in my classroom are* and a checklist from which respondents were asked to *Check all that apply*. The only source shared across all three cases was Colleagues/PLC which was consistent with all respondents, as 28/41 claimed to utilize PLC groups as a primary source. This may have been due to the school district's emphasis on weekly PLC meetings throughout the course of the year; it also may have stemmed from department (content area) instructional planning and academic conversations during these PLC times (and beyond) in regard to scope and sequence. Dan, Mark, and Rick's data also indicated the absence of administrative influence as it pertains to selecting words for instruction.

Dan and Rick both selected textbooks as an influential source on vocabulary instruction. This seemed consistent with the Teacher Survey data, as 22/41 claimed to utilize textbooks for this purpose. Dan claimed that three additional sources round out his influences (see Table 5.3), only one of which - the textbook - was common to Rick. In

contrast to Rick, Dan draws from his undergraduate program studies (which occurred 24 years prior), and his "Personal experience with education." Rick, on the other hand, utilizes his graduate coursework, professional development opportunities, and relevant professional journal articles. Of the three case studies, Mark was the only one who indicated that he relies solely on the PLC construct.

**Semi-Structured Interviews Analysis Strategy**

After I analyzed the information from each of these three participant's survey responses, I scheduled the semi-structured interviews and conducted them in the respondents' classrooms. All interviews occurred at 7:30am (prior to the beginning of the school day) on the following dates: Mark's was May 14, 2014, Rick's was May 20, 2014, and Dan's was held on May 21, 2014. Of these three, only Dan was able to schedule his interview prior to the first observation, whereas Rick and Mark's observations took place the same morning as their second observations.

In order to analyze the contents of the three semi-structured interviews, I employed a protocol design by O'Brien (2017). This process contained four steps, the first two were vertical (within case) and the last two were horizontal (across cases). For step one, I examined one case (teacher) one question at a time. Before moving on to subsequent questions, I analyzed each according to what each participant seemed to be saying and I jotted down key themes. This step was a vertical within-case analysis that utilized a general inductive analysis (Corbin & Strauss, 2014; Miles & Huberman, 1984). I read the transcript of each interview one at a time (vertically) line by line, multiple times to sense patterns, develop codes, reduce codes to key codes, and then to develop

themes; I also generated memos related to possible broad themes. I then added exemplars from the interviews to support each theme.

In step two, I conducted a deductive/inductive analysis vertical reading within each interview (case). I read interview themes with attention to each question/prompt, and for each response by question/prompt from the interview guide; then, I listed key themes in order from the first question/prompt to the end of the interview.

In step three, I shifted to a horizontal (cross-case analysis) inductive analysis in order to articulate what I found answer by answer. I read the interviews from the three cases horizontally with no attention to the question/prompts as theme organizers. I performed a constant comparative analysis of themes across the interviews with attention to redefining, merging, eliminating, and consolidating themes. Based on the analyses in steps one and two, I listed dominant themes based on evidence from the corpus of interview data along with data exemplars that I deemed best represented the corpus of evidence for each theme.

The fourth and final step was a horizontal (cross-case) deductive/inductive analysis in which I read each interview with attention focused on patterns within questions across cases. I then listed key themes for responses to each question/prompt from the interview guide in order from the first question/prompt on to the end of the interview. Then I undertook a constant comparative analysis of themes across the interviews. I subjected each to the question: Does this fit, or is it something new? Then I listed the most salient theme for each question, and I accompanied each with at least one data exemplar I deemed to best represent each theme.

**Semi-Structured Interview Cross-Case Analysis Displays**

The information in the following six tables contains exemplar verbatim responses

from the three case study participants as well as a step one analysis of each item. This

layout first aided my vertical analysis and then my horizontal analysis.

Table 5.4 displays participants' response to the first item in the interview:

***Describe your process of selecting vocabulary words for instruction*** (see Table 5.4).

Table 5.4
*Case Studies: Word Selection Process*

| Dan | Mark | Rick |
|---|---|---|
| "Well let's see, I look at the subject matter we are going to teach. I look at, What are some words that are going to be hard to understand? Like birds, What are some words like gizzard, crop, fledgling. These might be hard. Depending upon what we do, some of our words come more from a textbook. Once in a while we will do notes, but I teach them throughout the unit." | "Well, the process is I select vocab terms that I think are going to help kids understand the concepts. That's about as simple and complicated as it gets. I might seek assistance from the textbook - the publisher - what do they think is important. Supplementary materials - you know - I might look at what vocab is presented there." | "I uh kind of use a combination of prior knowledge words. The concepts and the words from units that students have struggled with. I use prior knowledge from geographic concepts and models from prior years that students have struggled with to determine my selections." |

Dan's experience drives the selection of words for instruction; he noted, "I look at

the subject matter we are going to teach. I look at, what are some words that are going to

be hard to understand? ..." (Interview, 5/21/14). Dan also relies on words to be selected

for instruction from what the textbook provides. Mark's strongest determinant of the

words he selects for instruction is his teaching experience. He stated, "Well, the process

is I select vocab terms that I think are going to help kids understand the concepts"

(Interview, 5/14/14). He viewed the textbook as a contributor to the process as well. Rick

explained that his professional experience drives word selection and instruction; he also

claimed to leverage previously learned concepts.

Table 5.5 displays responses to Question #2: ***Who or what informs your decision-making process for the words you select?*** See Table 5.5 below.

Table 5.5
*Case Studies: Informants*

| Dan | Mark | Rick |
|---|---|---|
| "It's pretty much me. We've never had a science person come in and say, 'This is what you will teach.' I'd like someone to come in and, say, in a unit on evolution, 'These are the terms you should teach.' This is stuff that we've never had, this kind of review, especially now that standards are evolving. I'd like to see Jane or someone come in and say, 'These are the things you should teach.' You know, making sure that we are covering what needs to be covered. I'd like to see the Teaching and Learning people come down and say, 'This is what we should teach; I'd have no problem with that.' | "Umm… standards. College board. Colleagues. And then textbooks." | "Uh, let's see, I would say uh, textbooks and prior years' students. For example, a um, geographic concept of cultural diffusion is a vocabulary word that students in the past have struggled with, and so I spend more time with this concept." |

Dan's comment, "It's pretty much me" (Interview, 5/21/14), reinforced his position that his experience teaching in his discipline is the main driver in his decision-making process. His response also included a call for and/or a reliance on district-level personnel for selecting words for instruction. Mark provided a hierarchy of resource consultation that informs his choices. The first was "standards," followed by referring to the Advanced Placement (AP) "College board," then "Colleagues. And then textbooks" (Interview, 5/14/14). Rick explained that both "textbooks and prior years' students" (Interview, 5/20/14) inform his decision-making. He noted that previous experience with student learning of course concepts is vital in this regard, which is illustrated by this response, "For example, a um, geographic concept of cultural diffusion is a vocabulary word that students in the past have struggled with, and so I spend more time with this

concept" (Interview, 5/20/14).

Table 5.6 displays the responses to question three: ***How do students in your content area best learn the terms they need to know?*** See Table 5.6 below.

Table 5.6
*Case Studies: Student Learning*

| Dan | Mark | Rick |
|---|---|---|
| "Experience. We do a lot of hands on things. Arthropods, insects, crustaceans. We put out things on the lab tables and look at them. We give out a list of words that they look up in the textbook. We've done some concept squares, like someone taught us. You know, where we say, 'Here's four things, so what goes with that?' Or, 'Here's a term, so what's four things that goes with the term?' Sometimes T-charts... Sometimes we will do vocabulary games like Bingo. I guess it is a variety of ways." | "On their own. No (chuckles at his comment). Well... Hmmm... Well, I'm hoping... the best way... umm... Here's my gut feeling in that… Anything visual that we do - a lot of role playing, posters, ... yeah." | "I really have a combination of tools the students are using. More and more are using flashcards - either a digital version or traditional flashcard. Some students are using the Frayer Model. Some students just write down terms in their notebook and use that to study." |

Dan claimed multiple experiences with the words is crucial to learning content area terms. While he noted that a lot of "hands on things" are undertaken, his list includes two distinct items. One is visual/auditory association: "We put out things on the lab tables and look at them," "Bingo," and "We give out a list of words that they look up in the textbook." The second is student writing: "concept squares" and "sometimes T-charts" (Interview, 5/21/14). Dealing with and creating visual images best describe Mark's mindset about how students best learn the terms they need to know. He relies on, "Anything visual that we do - a lot of role playing, posters, ...yeah" (Interview, 5/14/14). Rick's belief about how students best learn terms in his content area focused on instructional strategies, "I really have a combination of tools the students are using." The strategies he described are writing focused, "flashcards - either a digital version or

traditional flashcard. Some students are using the Frayer Model. Some students just write

down terms in their notebook and use that to study" (Interview, 5/20/14).

In item four, displayed in Table 5.7, case study participants responded to the

statement: ***Describe the ways in which you teach vocabulary in your classroom.***

Table 5.7
*Case Studies: Instructional Approaches*

| Dan | Mark | Rick |
|-----|------|------|
| "I basically find words that I think are going to be important and I just use them a lot. I use them in conversation. Every time I say it, I feel like they get closer to understanding it. A lot of repetition. I keep just throwing it at 'ya." | "Umm...how would you say, just basic definition. Not just define the word, it's you have to know the word in order to answer the questions. What would that be? application? Application of the term, yeah. I still use the VVWA cards. Concept Maps." | "I teach them various tools. I encourage them to use the tools for learning; they use the tools they've been taught. The Frayer model, the StudyBlue or Quizlet Apps. I use formative assessments to check comprehension and vocabulary. At least once a week we will do a check-in quiz on vocabulary words." |

Dan stated his professional experience is a key selection contributor: "I basically

find words that I think are going to be important." The ways in which he teaches

vocabulary is highly dependent on the use of repetition: "I just use them a lot. I use them

in conversation. Every time I say it, I feel like they get closer to understanding it. A lot of

repetition. I keep just throwing it at 'ya" (Interview, 5/21/14). Mark cited the use of two

specific instructional strategies that aid in his instruction, "I still use the VVWA cards."

and "Concept Maps." Student application of the terms is of central importance for Mark;

he explained he wants students to "Not just define the word;" rather, "it's you have to

know the word in order to answer the questions" (Interview, 5/14/14). Rick explained

that strategies - "The Frayer model, the StudyBlue, or Quizlet Apps" -  must be explicitly

taught. Rick elaborated, "I teach them various tools. I encourage them to use the tools for

learning; they use the tools they've been taught." He also discussed his weekly use of "formative assessments to check comprehension and vocabulary" (Interview, 5/20/14).

Table 5.8 displays responses to interview question five: ***Where did you learn about these ways to teach vocabulary?*** (see Table 5.8).

Table 5.8
*Case Studies: Instructional Background Knowledge*

| Dan | Mark | Rick |
|---|---|---|
| "Trial and error. I've never been formally taught vocab and vocab methods. Other than talking with Brian. Brian would be a sounding board. I'd talk to him and then I'd use some things and Joe would use less. We are trying to throw a lot of things at kids. I think if we slowed down and had maybe 10 units with 10 words per unit. You know, if we said, 'You have to learn these,' that might be better. But we introduce them to a lot of stuff, and that is what we want too. So that someday, they might think back and say, 'I recognize that from... or I know that has something to do with…' I consider us an introductory course where kids are just getting their feet wet with a lot of topics. When I was a kid, I had a teacher who was like that. She introduced us to a lot of things, and man, when I got to my first BIO class in college, I was prepared because I had been introduced to a lot when I first took Life Science." | "Some guy at the middle school. I have a three-ring binder. Good archaic stuff. Most of what I've done with vocabulary has come from work at the middle school or the lame stuff, you know, we do in our traditional classrooms. 'Right there,' you know, 'here it is.'" | "Several sources - district personnel. Digital tools from a TIES workshop. I have read some literacy books through classes I have taken." |

Dan explained his knowledge base for teaching vocabulary stems most prominently from his professional experience and approach to teaching Science: "Trial and error. I've never been formally taught vocab and vocab methods. But we introduce them to a lot of stuff, and that is what we want too. So that someday, they might think back and say, 'I recognize that from... or I know that has something to do with…'. I consider us an introductory course where kids are just getting their feet wet with a lot of topics." He added that colleagues do play a part, "Brian would be a sounding board. I'd talk to him and then I'd use some things" (Interview, 5/21/14). Collegial collaboration has

provided the lion's share of Mark's instructional base. Specifically, he noted, "Most of what I've done with vocabulary has come from work at the middle school." This was expressed as his professional experience. He further explained he has drawn from, "Some guy at the middle school" and "a three-ring binder" (Interview, 5/14/14). This comment was expressed in relation to a "traditional classroom;" it speaks to the manner in which Mark was taught and his pre-service (student teaching) experience (Memo, 9/26/17). Rick has drawn from a variety of sources to learn about teaching vocabulary. One is within the school district - "district personnel", and the other two are outside of the district, "Digital tools from a TIES workshop. I have read some literacy books through classes I have taken" (Interview, 5/20/14).

Finally, question six, with responses displayed in Table 5.9, asked participants to provide insights on ***What professional opportunities might be of the greatest help to you in this area?*** (see Table 5.9).

Table 5.9
*Case Studies: Professional Support Opportunities*

| Dan | Mark | Rick |
|---|---|---|
| "Workshops would be great. What can we do to strengthen vocab? Or Jane come down and say, 'These are the terms that kids need to know, or least be exposed to a lot at this level.'" | "Informal discussion with colleagues." | "Well I always look for new ideas in instruction, content reading instruction - professional development opportunities. Generally, I look for these within the district. Cost is a factor when looking at these opportunities. I also know we have quality resources here." |

Dan identified district-level professional development as potentially of the greatest aid to him in vocabulary instruction. "Workshops would be great." [You know] "What can we do to strengthen vocab?" In addition, Dan claimed to desire a receive a district mandate of sorts: "Or Jane come down and say, 'These are the terms that kids

need to know, or at least be exposed to a lot at this level'" (Interview, 5/21/14). Mark again noted collegial conversation as the preferred helpful professional opportunity as it concerns vocabulary. Opportunities Rick cited as the most help to him as those that are solely those within the district. "Generally I look for these within the district. Cost is a factor when looking at these opportunities. I also know we have quality resources here" (Interview, 5/20/14). Apparently, district personnel and professional development greatly influences his use of instructional strategies.

As a result, the vertical reading I performed within each interview (step two), several themes emerged for each participant. Dan's interview data revealed three themes. One, the teacher and his/her professional experience bears the responsibility for selecting the terms that will be taught. Two, repetition is the key to word learning. And three, somewhat contradictory to the first, Dan believes district-level personnel should provide discipline-specific word lists for instruction. Mark held that professional experience drives word selection for instruction; his interview data also supports that textbook word lists are a last resort in terms of selecting words to teach. Mark also believes students best learn words by creating graphic (visual) images. Rick's responses to the semi-structured interview questions/prompts also support teacher experience as that which drives word selection, including those that are conceptual in nature. His data supported two additional themes: students learn words best when a combination of word learning strategies are used, and word learning strategies must be explicitly taught.

In step three, I shifted to a horizontal (cross-case) inductive analysis in order to articulate answer by answer findings. Three themes emerged as it pertains to question one. First, *The teacher is responsible for selecting words for instruction*. This was mostly

strongly supported by Mark's statement, "Well, the process is I select vocab terms that I think are going to help kids understand the concepts" (Interview, 5/14/14). Second, *Textbooks can be used as a resource for selecting words for instruction*. Per Mark, "I might seek assistance from the textbook - the publisher - what do they think is important" (Interview, 5/14/14). Three, *Words with which students have previously struggled drives the selection of words for instruction*. Rick explained, "I use prior knowledge from geographic concepts and models from prior years that students have struggled with to determine my selections."

As for question two, the only theme that emerged was that *While textbooks are a factor in selecting words for instruction, they are not the primary influence*. To this point, Dan claimed, "It's pretty much me" (Interview, 5/21/14). and Mark responded, "Umm...standards. College board. Colleagues. And then textbooks" (Interview, 5/14/14).

In regards to question three, ***How do students in your content area best learn the terms they need to know?***, the responses elicited two themes. One, *Students must repeatedly interact with discipline-specific terms in order to acquire them* (add them to their respective operating lexicons). Dan bookended his response as he stated, "Experience. We do a lot of hands on things. . . I guess it is a variety of ways" (Interview, 5/21/14). Two, *Visual connections to words improves student comprehension of discipline-specific terms*. Mark noted, "Anything visual that we do - a lot of role playing, posters, ... yeah" (Interview, 5/14/14).

Question four asked the participants to ***Describe the ways in which you teach vocabulary in your classroom***. Dan noted reliance on his professional experience; Mark

cited the use of two instructional strategies; and Rick described explicitly taught strategies. As such, question four revealed no cross-case themes.

Question five revealed that *In-district, collegial collaboration serves as the number one source for learning to teach vocabulary*. Rick offered, "Several sources - district personnel" (Interview, 5/20/14), and Mark paralleled that having stated, "Some guy at the middle school. I have a three-ring binder" (Interview, 5/14/14).

Finally, per question six, the respondents provided evidence that *District professional development is the preferred professional approach for word learning strategies*. Rick's explanation reflected this best having stated, "Generally I look for these within the district. Cost is a factor when looking at these opportunities. I also know we have quality resources here" (Interview, 5/20/14).

**Classroom Observations**

I constructed the teacher observation schedule and pertinent details, then I sent an email to each participant on April 30, 2014. As a courtesy reminder, I placed a follow-up phone call and sent an additional email to each respondent one day prior to each observation. Dan's observations took place on May 21 and May 27, 2014. Mark's took place on May 1 and May 14, 2014. Rick's observations took place on May 7 and May 20, 2014. I member-checked each of the observations in as short a turn-around time as was possible. See Table 5.10 in Appendix E for the data on participants, the observations (dates, class hours, and times), and the corresponding member-check times.

I recorded field notes of all verbal statements and questions offered by each of the case study teachers during each of the observations by hand. At the same time, I audio

recorded each observation in order to further verify the field notes of the teacher talk that was utilized to support student comprehension (acquisition and application).

Several important considerations were in constant interplay throughout the observation process. First, I consistently questioned whether or not there was something I was hearing or seeing play out or not play out. I constantly compared the survey and the semi-structured interview responses to the observations to determine how they might relate. Once a relationship was established, I selected exemplars that might stand in support of a particular assertion. The use of the teacher observations to elaborate on the teacher survey data findings was necessary and helpful. For example, the subsets of repetition, word learning strategies, and selecting words for instruction with text each had clear exemplars. See Table 5.11 in Appendix E for the Dedoose descriptors I employed to analyze the teacher observations.

In the following section, I present the two assertions introduced in Chapter 4; they are supported here by the memos created during the analysis of the observational data. For each assertion, I list the themes and subthemes that support it. Each of the tables referenced later in this chapter contain all of the evidentiary excerpts I identified in the analysis of the teacher observations. In each table, the first column indicates the participant identification number, the second column has the observation number, the third column provides the excerpt number that was linked to the corresponding memo, and the fourth column contains the verbatim teacher exemplars obtained during the teacher observations. Refer to Appendix E for each table in its entirety.

**Assertion 1: Limited Repertoire of Instructional Approaches**

*Teachers rely on a limited repertoire of instructional approaches in order to teach the discipline-specific terms students need to know.*

**Repetition is Key to Vocabulary Acquisition**

*Repetition is the key to student acquisition of discipline-specific vocabulary.* Repetition pertains to the frequency of exposure to targeted vocabulary words. The underlying tenet is as teachers increase the number of exposures to their discipline-specific vocabulary, the likelihood that students will understand and remember new words' meanings and frequently use them increases. Teacher observations indicated a distinct reliance on the sheer volume of utterances of discipline-specific terms. However, vocabulary instruction does not solely mean repetition or drill of the word; rather, it is the provision of repeated exposures across a variety of contexts that creates the potential for words to become known (Beck et al., 2002; Graves, 2016; Townsend et al., 2018).

**Exposure to discipline-specific terms.** One component of repetition is exposure to discipline-specific terminology to some extent or another. I believe this to be a "natural" occurrence; that is, part of the content delivery rather than the employment of a strategy or the use of a context clue to foster comprehension. Repetition by exposure is the idea that if students frequently hear a term, the likelihood that it will be understood increases. Here are two exemplars that pertain to repetition through discipline-specific exposure. One is from Dan, "Anybody heard of chromosomes before? We want to know what a gene is before we form a chromosome - or talk about it" (Fieldnotes, 5/27/14). The second is from Rick, "We are going to do a culture check-in for this unit. Journals on

culture are available for your usage" (Fieldnotes, 5/7/14). See Table 5.12 in Appendix E for all responses.

**Repetition via restatement.** Another component of repetition is teacher repetition of a discipline-specific term via simple restatement. This does not seem to include reframing, contextualized supports, or the like (Memo, 9/23/17). All evidentiary excerpts that pertain to repetition through restatement can be found in Table 5.13 in Appendix E. Two exemplars include: "Voltage gated channels, what are voltage gated channels?" (Mark, Fieldnotes, 5/1/14), and "How many countries or states are there in the world?" (Rick, Fieldnotes, 5/20/14).

**Repetition via acronym.** A third component of repetition is the vast number of discipline-specific terms that teachers choose to reference as acronyms instead of employing the whole term. For a variety of reasons, acronyms are regularly utilized in instructional delivery (e.g. time, pace of instruction, teacher familiarity). Yet, I wondered how repetition of discipline-specific terms via the substitution of their respective acronyms impacts disciplinary-literacy, specifically comprehension of discipline-specific terminology (Memo, 9/23/17). Two exemplars from Mark's observations include: "ATP produced the potential energy" (Fieldnotes, 5/1/14) and "What makes STR useful in DNA testing? It's in the same place in the chromosome" (Fieldnotes, 5/14/14). See Table 5.14 in Appendix E for all responses that pertain to acronym repetition.

**Repetition via a question.** Similar to these restated occurrences are those that involve that pose questions to students. As it pertains to this study, the teacher includes one or more discipline-specific vocabulary terms as part of a question. This practice seems to be common and directly linked to activating background knowledge (Memo,

9/23/17). This instructional decision does not predominantly involve a context clue or visual images; rather, it seems to be largely an auditory experience (Memo, 9/23/17). That is, the terms are solely spoken aloud by the teacher. The use of words within question may contribute to increased exposure to the terms, though said exposure(s) may not be meaningful (Memo, 9/23/17). Three exemplars are provided here. Rick asked, "Why is this question not hierarchical?" (Fieldnotes, 5/7/14). Mark asked, "Why do we need free nucleotides?" (Fieldnotes, 5/14/14). And Dan posed three consecutive questions: "What did we say about the nucleus a long time ago? What does the nucleus do for the cell? What is the nucleus to a cell?" (Fieldnotes, 5/27/14). See Table 5.15 in Appendix E for all responses.

Similar to these restated occurrences are those that employ an extended sequence of teacher talk that illustrates the teacher's use of repetition. Dan stated the following to his students, "DNA is actually called the code of life. Because the DNA is gonna sorta tell you what you are going to become. We all have DNA. We all basically are made up of the same stuff. We are all made up of the same four chemical compounds" (Fieldnotes, 5/27/14). In this particular exemplar, the teacher uses a casual register (e.g. gonna sorta) and adds a small bit of information about the code (Memo, 9/26/17).

**Pronouns and Antecedents**

Included here are the instructors' repeated use of and interchange of pronouns and antecedents in which the antecedents in question are domain-specific vocabulary terms.

**Definition and concerns.** Briefly, a pronoun is a word that can be used in place of a noun (person, place, thing, or idea) or a noun phrase. Concerning pronouns, they must agree in both number and person, be consistently singular or plural (depending on

the number of the antecedent), be consistent in one person (first, second or third) throughout an entire sentence, and refer specifically to their antecedent(s). It is important to keep in mind that pronouns are not simply replacement nouns, for many pronouns never replace a noun (Teschner & Evans, 2007). Also, a pronoun that is clearly linked to a noun phrase that precedes or succeeds it is called known as bound (Koffi, 2010). The word or phrase to which these linked nouns or noun phrases refer are known as antecedents.

Two recurrent pronoun and antecedent issues include antecedents that are either missing or placed far from their corresponding pronouns and ambiguous antecedents which concerns the multitude of pronouns that are commonly used in reading, speaking, and listening which leaves students to the work of correctly matching them to their proper antecedents.

**Discipline-specific term replacement.** One component, whether purposeful or for instructional ease, is teacher replacement of a given discipline-specific word with a pronoun. I wondered how much this reduces the number of exposures to a discipline-specific term. I also wondered whether this decision ultimately reduces comprehension of discipline-specific terms, as it may become increasingly difficult to trace pronouns back to their respective antecedents, for it places a larger demand on operating memory (Memo, 9/23/17). Provided here are two exemplars of a teacher using pronouns to replace a discipline-specific term. One, "DNA stores our genetic code. What does DNA do? It tells what we are and who we can become. It defines us: the size of your feet, the size of your nose, and things like that…" (Dan, Fieldnotes, 5/27/14). Similarly, Mark stated, "It's

ARA in its environment" (Fieldnotes, 5/1/14). See Table 5.16 in Appendix E for all examples.

**Cohesion.** Another component that concerns pronouns and antecedents deals with cohesion. According to Zwiers (2014) a text has cohesion when its ideas are logically linked to one another. In expository texts, most paragraphs contain a main idea supported by several connected sentences that include examples and explanations. Cohesive devices also link ideas together (Halliday & Hasan, 1976); these devices include referents, conjunctions, prepositions, synonyms, pronouns, and verb selection. While the use of pronouns is common in dialogue, the use of a pronoun in each of these excerpts is exceedingly difficult to trace back to the noun it replaced. This may or may not have an effect on the comprehension of discipline-specific terms. (Memo, 9/23/17). Here are two exemplars from the teacher observations. Mark stated, "When it did, it opened and it released 3 positive charges. So, the potassium bond, without ATP, because of the interaction it dumps two positives" (Fieldnotes, 5/1/14). During Dan's observations, I recorded: "That's supposed to make a simple molecule. I don't how this guy came up with it. I mean, he puts it together and all of a sudden, it's a double helix. I don't know how he came up with it" (Fieldnotes, 5/27/14). See Table 5.17 in Appendix E for all responses.

**Demonstrative pronouns.** Another item that concerns pronouns is teacher utilization of demonstrative pronouns: *this, that, these,* or *those* in place of a discipline-specific term. A demonstrative pronoun is a pronoun that is used to point to something specific within a sentence; these pronouns can indicate items in space or time, and they can be either singular or plural. I wondered if students are able to effectively trace these back to the specific disciplinary term they replace (Memo, 9/23/17). This occurred four

times during the teacher observations (see Table 5.18 in Appendix E). Here is one exemplar from Mark's observations: "Magic number for animal cells (circling -55,000), things take off. The voltage gate opens, sodium channels open; this is the magic number, the flood of sodium" (Fieldnotes, 5/1/14).

**Pronoun predominance.** Pronoun Predominance concerns repetition and teacher reliance on pronouns. I wondered, as a disciplinary specialist, whether teachers tend to commonly replace discipline-specific terms with pronouns with increasing frequency (Memo, 9/26/17). That is, does any "specialist" tend to more regularly replace TIER II and TIER III terms with pronouns due to their over-familiarity with the discipline? And, consequently, what impact might that have on student learning, if the students hear the discipline-specific terms more often than not via a pronoun-antecedent relationship? Additionally, what impact might the distance of the extension have? (Memo, 9/26/17). This refers to the number of times the pronoun is used prior to the reconnection with a given term. Here is one from Dan's observations: "Look at DNA. How many of you have heard of DNA before? How many of you have heard of it? Raise your hand if you have heard of it before. Where have you heard it? Where? Where have you heard it besides in Science?" (Fieldnotes, 5/27/14). See Table 5.19 in Appendix E for the complete list.

## Nominalization

Nominalization refers to the occasions when verbs, processes, and other parts of speech are turned into nouns. Matthews (2014) defined nominalization as "any process by which a noun or a syntactic unit with the functions of a noun phrase is derived from any other kind of unit" (para. 1). Nominalization describes the derivation of a noun from another kind of grammatical element (Matthews, 2014); typically, this is evidenced via

the transformation of a verb into a noun. Fang (2004) articulated this process as an event, a process, a description, or a procedure that is represented by a verb, an adjective, or an adverb is subsequently converted into an abstract thing and becomes represented by a noun. Nominalizations predominantly increase sentence length and increase the noun-to-verb ratio; conversely, when nominalizations are changed back to action verbs, the number of words needed to communicate the idea is often decreased.

**Nominalization of verbs and adjectives.** Nominalizations of verbs and adjectives are ubiquitous in both academic and professional discourse in English (Hinkel, 2002). Fang and Schleppegrell (2008) added that nominalization "typically involves synthesis, condensation, abstraction, and technicalization of the language of everyday life" (p. 24). According to Kazemian et al. (2013), they provide condensation (condensing entire processes into one word), objectivity (removing the need to use persons or personal pronouns), and technicality (the construction of technical terminology). Essentially, "the teacher converts another part of speech into a noun (as in changing the adjective 'highly' into 'the highly' or the verb 'specialize' into 'specialization'), or the teacher converts another part of speech into a noun phrase (e.g. changing 'he teaches' into 'his teaching'). I wondered whether or not this practice is purposeful, coincidental, or both (Memo, 9/23/17). I then considered whether or not it may be due to 'being an insider' (one who is highly literate within the discipline), one's adeptness with language, or a simple occurrence (Memo, 9/23/17).

**Nominalization: Teacher observations.** During the observations, I noted several instances of nominalization in Mark's classroom. Here is one exemplar: "DNA Polymerase. We are going to polymerize - in other words - we are going to add, well, we

can only add nucleotides to the three-prime end" (Fieldnotes, 5/14/14). See Table 5.20 in Appendix E for all related responses.

Similarly, teachers pose questions to activate background knowledge, then provide the answer using a recognizable disciplinary acronym (e.g. DNA). Teachers may then convert a noun into a verb prior to converting it back into a noun (Memo, 9/27/17). One exemplar I observed in Mark's classroom was "Who's the builder? DNA Polymerase. We are going to polymerize - and we can only add nucleotides to the three-prime end. DNA polymerase is an enzyme" (Fieldnotes, 5/14/14).

### Assertion 2: Use a Combination of Word Learning Strategies

The second assertion is ***Students learn best when a combination of word learning strategies are used.*** "Word-learning strategies are mental processes that a learner employs when he or she comes across an unknown word while reading" (Graves et al., 2017, p. 534). Multiple occurrences illustrate teacher enactment of word learning strategies; that is, the instructor employs the use of context to help determine an unknown word's meaning, teaches word parts, and/or uses dictionaries. Two additional strategy-related items contained within this assertion include teacher employed classroom strategies for interactive learning to develop vocabulary and the use of visuals.

**Context, Metaphor, and Language Supports**

As it pertains to context clues, Robb (2015) explained that teachers must model how to use context to figure out the meanings of unfamiliar words and then provide opportunities for students to practice. Discovering the meanings words using context clues ensures "that students will pinpoint the word's meaning as it's used in the text" (p. 1). Graves (2009) stressed the idea that "one size does not fit all" with regard to teaching

word meanings, for words differ in nature. They range from concrete nouns (e.g. archipelago, beaker) that are easily represented with visual images to densely conceptual terms (e.g. culture, density) that require much time and energy in order to build sufficient knowledge to understand and utilize. Neuman and Wright (2013) contended that teachers should engage in activities that build word and world knowledge through content area learning and facilitate discussions using challenging vocabulary.

**Context clues.** Teachers, whether consciously or otherwise, often employ contextualized clues (e.g. synonym clue, definition clue) in order to develop comprehension of content terminology (Memo, 9/23/17). Three exemplars are provided. Mark asked his class, "What is the basic anatomy of a neuron (nerve cell)?" (Fieldnotes, 5/1/14). Rick stated, "A common error for this question was hierarchical. Hierarchical is the diffusion to places of power or authority" (Fieldnotes, 5/7/14). Rick also explained, "They need to live somewhere. We call that territoriality; there are defined boundaries" (Fieldnotes, 5/20/14). See Table 5.23 in Appendix E for all responses.

Teachers also seem to intentionally develop discipline-specific term comprehension by repeating a term and using a context clue (Memo, 9/23/17). For example, "In an ethnic religion a person moves or relocates and brings their religion with them. Christianity is contagious diffusion, but it is not an ethnic religion" (Rick, Fieldnotes, 5/7/14). See Table 5.24 in Appendix E for all related responses.

**Metaphor.** Another instructional strategy teachers use to support word learning is the incorporation of metaphor. The teacher provides a metaphor to directly compare a likely known noun to a discipline-specific term. This strategy may be consciously applied, or perhaps it is part of the teacher's instruction at this point in time due to

discipline familiarity (Memo, 9/23/17). One exemplar is, "Magic number for animal cells (circling -55,000), things take off. The voltage gate opens, sodium channels open; this is the magic number, the flood of sodium" (Mark, Fieldnotes, 5/1/14). See Table 5.25 in Appendix E for all related responses.

Similarly, teachers may state a Tier III (discipline-specific) word, provide several of its features/components, then follow these two items with the use of a metaphor. This metaphor provides an insightful, approachable connection to the term in question (Memo, 9/26/17). For example, in Dan's second observation, I recorded, "DNA is inside the nucleus of the cell. It is well-protected. It has a cell membrane, a cytoplasm, a nuclear membrane and right inside here you have DNA. What did we say about the nucleus a long time ago? What does the nucleus do for the cell? What is the nucleus to a cell? It's the command center, the control center; it tells us what to do, what you're going to look like and so forth" (Fieldnotes, 5/27/14).

**Language supports.** In some cases, the teacher will either provide or confirm information that adds to the understanding of a discipline specific term. When this takes place, it either happens all in one instance (one short or lengthy explanation) or the teacher will disperse the information over several statements/lines of dialogue (Memo 21, 9/25/17). Two exemplars include: "They have certain rights and national government has certain rights. Why do we have this division of power? Separate components can have a greater say in making their own laws" (Rick, Fieldnotes, 5/20/14), and "DNA fragments of known sizes, the sizes on the ladders are in kilobase base pairs. These are the known lengths kilobases. 1,000 base pairs, so, which is the approximate size of the fragment?" (Dan, Fieldnotes, 5/27/14). See Table 5.26 in Appendix E for all responses in this regard.

Teachers will also support word learning by deciding to include a TIER II or TIER III term that is part of a process or concept. For example, Mark stated, "Action Potential: I've put up there the two factors starting with resting potential" (Fieldnotes, 5/1/14). I wondered whether or not the term "factors" was clearly understood or if the term was part of the assumed knowledge base on behalf of the teacher. (Memo, 9/24/17). It is possible this term may have been previously developed to a certain extent.

One final way these teachers supported vocabulary development is through their description of a related subset of information that includes one or more discipline-specific terms. Such examples might begin with transition words/discourse markers; for example, "There are other…" or "A related situation/case/idea is..." (Memo, 9/24/17). Based on my analysis, these seem to be largely unplanned; whereas, the teacher may be seizing a serendipitous moment to achieve an AHA moment (Memo, 9/24/17). Perhaps the instructional choice to address vocabulary in this manner builds on previous knowledge or is an interesting case. It also may be employed by teachers in order to clarify a concept or an aspect of a discipline-specific term (Memo, 9/24/17). One exemplar is from Rick's observations: "What is one country that is not recognized by other states? TAIWAN. Taiwan is a small island off the coast of China. They believe that they are a country. China doesn't. China has military might, enough to say, "Enough of this nonsense" (Fieldnotes, 5/20/14). See Table 5.27 in Appendix E for all responses in this regard.

**Classroom Strategies for Interactive Learning: Vocabulary**

Even though much has been learned about effective vocabulary instruction over the last several decades, and despite the fact that many teachers cite vocabulary

instruction as an important instructional component (Cassidy & Cassidy, 2005/2006), it appears that teachers do not always incorporate best practices into their own instruction. Flanagan and Greenwood (2007) explained it this way; "Often, because they have no framework for guiding their instructional decisions, anything goes. And anything often devolves into one-size-fits-all instruction—one size for the time involved, one size for the words, one size for the method of instruction, and one size for the students" (p. 238).

This apparent dearth of vocabulary strategy use to develop student understanding is a disappointing contrast to Alvermann et al. (2013) who declared, "Given the pressures of extensive curricula, limited time, and a wide range of student abilities, teachers need vocabulary strategies that can yield the greatest benefit in student learning with the least cost in planning and instructional time" (p. 278). Yet, there remains some hope for optimism in regards to teacher use of strategies to develop student understanding of vocabulary.

**Prompting.** My observations revealed evidence that teachers prompt students to use specific strategies. One exemplar provided here is from Rick's classroom observations, "What is the most recent tool we've explored to support learning the terms?" (Fieldnotes, 5/7/14). Here, the teacher prompts students to think about strategies that may prove to be of use in the acquisition of discipline-specific terms (Memo, 9/24/17). See Table 5.28 in Appendix E for all related examples.

**Strategy naming.** My observations also revealed evidence that teachers name specific strategies to support student acquisition of discipline-specific vocabulary. One exemplar provided here is from Rick's classroom when he stated, "Another digital tool called Quizlet is something some of you might be using as well" (Fieldnotes, 5/7/14).

Undoubtedly, there is a distinct difference between naming a strategy, providing its components, and providing instruction as to the application of a given strategy. In this case, the teacher names a strategy, but provides no further information as to its components or use. (Memo, 9/24/17). See Table 5.29 in Appendix E for all examples.

**Strategy components.** My observations also revealed evidence that teachers will provide students with the components of a vocabulary acquisition strategy to support their acquisition of discipline-specific vocabulary (Memo, 9/24/17). One exemplar provided here is from Rick's classroom. He stated, "Right...Frayer Model. This is the tool that uses a definition, characteristics, example, and picture. Remember you have options here that include a picture or example/non-example" (Fieldnotes, 5/7/14). In this case, the teacher provides instruction as to components of a strategy and goes on to provide user options (Memo, 9/24/17). See Table 5.30 in Appendix E for all examples.

**Teacher support.** The classroom observations also revealed evidence that teachers do support student word learning via verbal reminders. One exemplar provided here is from Rick's classroom: "Please note, I am encouraging you again to use your tools to really learn these words. You see, your understanding of the terms is important. You need to be able to define it. Give an example… Give an example… Define - provide a definition" (Fieldnotes, 5/7/14). In this case, the teacher purposefully reminds students of the importance of acquiring and developing discipline-specific terms (Memo, 9/24/17). See Table 5.31 in Appendix E for all examples.

**Visual Connections**

*Visual connections to discipline-specific terms improves student comprehension.* The importance of visuals to enhance understanding of the ideas presented in

informational text (Carney & Levin, 2002; McTigue & Flowers, 2011) was briefly described and illustrated in Chapter Four. Reporting on recent findings regarding the strong connection between the provision of visuals and student comprehension, Wolsey et al. (2015) claimed, "The fact that they had to locate a visual image for the word made them think of how the word is understood" (p. 455).

The classroom observations revealed evidence that teachers provide visuals to comprehend vocabulary. As it pertains to this study, visual connections include pictures, photographs, slides, films, charts, or other visual materials offered by the teacher as a graphic illustration of a vocabulary term. The teacher constructs an image (e.g. hypothetical, role playing) and the students themselves or objects throughout the classroom (including presentation materials) are used in order to develop comprehension of discipline-specific terms.

**Imagery.** The teacher supports comprehension of a discipline-specific term by providing a mental image, figure, or likeness (a figurative illustration). This could be an effortful attempt to help students "see" relationships or processes in the development of discipline-specific vocabulary understanding (Memo, 9/23/17). One exemplar in this regard is from Rick's classroom. He stated, "Becoming a country or a state is similar to forming a club. When you make your own club, you might do so even without being recognized by anyone. First, you decide who is in and who is out - not in the club. You'll probably want friends, a club name, a place you meet. This is kind of like becoming your own country. You'll need boundaries and a population and you must be recognized by other states" (Fieldnotes, 5/20/14). This type of support could be attributed to teacher familiarity with the content and/or teacher consideration of the student population. For

example, the choice of imagery may stem from students' grade in school or prerequisite knowledge for content understanding (Memo, 9/23/17). See Table 5.32 in Appendix E for all examples.

**Image Constructions.** The teacher constructs an image through a hypothetical situation or role playing. This could be another attempt to help students visualize relationships or processes as they develop discipline-specific vocabulary understanding (Memo, 9/23/17). One exemplar in this regard is from Mark's classroom. He explained, "An electric current then allows fragments to move through this gel. If we scattered desks throughout the room, and had students move from one side to another, they would navigate it pretty easily. If I asked you to join with your group and move together, you would move slower" (Fieldnotes, 5/14/14). This type of support directly involves students, classroom objects, or the like, for they are concretely utilized to support comprehension of a discipline-specific term. For example, Student A represents "x;" as Student A … (Memo, 9/23/17). See Table 5.33 in Appendix E for all examples.

**Graphs, Charts, & Tables.** Teachers do employ the use of a visual aid in the form of a graph, chart, or table in combination alongside their use of a discipline-specific term. This could be another means by which teachers help students visualize relationships or processes as they develop discipline-specific vocabulary understanding (Memo, 9/23/17). One exemplar in this regard is from Mark's classroom: "Charge diffusion. Negative end at a positive. What part of the DNA is negative? The phosphate runs to the positive end, the red end, which is actually green in the diagram here. An electric current then allows fragments to move through this gel" (Fieldnotes, 5/14/14). It is unclear if these visual aids support comprehension of the respective terms or if they simply provide

data from which students can draw to complete certain classroom exercises (Memo, 9/23/17). See Table 5.34 in Appendix E for all examples.

## Summary, Takeaways, and Future Considerations

To conclude, I first summarize literacy in the content areas, then I summarize content vocabulary and its possibilities within instructional practice. Next, I discuss two important takeaways from the study. I wrap up this chapter with future considerations.

## Content Area Literacy Summation

Bean, Readence and Baldwin (2008) defined content area literacy as the level of reading and writing skill that is necessary to read, comprehend, and react to appropriate instructional materials in a given discipline. Alvermann, Gillis, and Phelps (2013) defined content literacy as the ability to use reading and writing for the acquisition of new content in a given discipline. Vacca, Vacca, and Mraz (2016) suggested literacy has come to represent a synthesis of language, thinking, and contextual practices through which people make and communicate meaning.

One of the many factors that influence readers' abilities to make meaning from texts is their knowledge of the words in those texts, and the role of knowledge and domain-specific vocabulary in reading comprehension is well known (Alexander & Jetton, 2000; Larson, 2017). Numerous studies conducted over the last century have documented a strong relationship between vocabulary knowledge and comprehension. Among the findings are that the size of one's vocabulary is one of the strongest predictors of one's reading comprehension (Beck, Perfetti, & McKeown, 1982; Cain & Oakhill, 2011; Quinn, Wagner, Petscher, & Lopez, 2015; Ricketts, Nation, & Bishop, 2007). Thus, vocabulary is not an isolated skill. Readers, writers, speakers, and listeners access

their existing schema about words and phrases to understand and convey coherent messages in what Thorndike (1917) referred to as "a cooperation of many forces" (p. 232).

## Vocabulary and Instructional Practice Summation

Secondary content area texts are constructed in "complex nominal syntax with technical and abstract vocabulary and clause structure that often reasons clause-internally" (Schleppegrell, 2004, p. 136). As a result of the language of science, social studies, and technical subjects focus on things and their relationships, reading and learning present significant learning challenges to adolescent learners. As Fang (2012) noted, the everyday language that serves adolescents quite well in their daily lives simply "does not suffice for comprehending, challenging, and composing the kinds of texts that present information in science, mathematics and history at the secondary level" (p. 36). In fact, many students who have been deemed successful readers in the early grades will struggle to read and write the particular types of texts that they encounter in the disciplines, and thus require literacy instruction to support their learning (Vacca et al., 2016). An important goal, then, should be to support student understanding via the ways that language choices made by scientists, historians, and other academic writers actively construct disciplinary knowledge. In the content areas, new words and concepts are central to instruction. According to Ogle et al. (2016), declared, students have to be both interested in and knowledgeable about words and how they work as their encounters with vocabulary become increasingly content-specific. As a result, students need to learn specific meanings, understand the terms when they hear and read them, use them

correctly in both oral and written communication, and remember them over time (Blachowicz & Fisher, 2000).

This requires both recognition and response on behalf of educators' decision-making processes. The content areas involved in this study - science, social studies, and technical subjects - provided an opportunity to leverage three of the six tasks involved in learning new words: learning new meanings for familiar words, new terms for familiar concepts, and new words for new concepts (Graves, 1987, 2006, 2014). Fortunately, the aforementioned content areas can provide opportunities to clarify and develop the meanings of known words which, with sufficient efficacious instruction, can move words into students' expressive (productive) vocabularies.

### Two Important Takeaways

I delved deeper into the professed beliefs and practices content area teachers have about vocabulary instruction, and I had two important takeaways.

**Sufficiency and Variety**

First, while making time to develop word knowledge has proven beneficial (Richardson, Morgan, & Fleener, 2009), sufficient instructional time and variety of instructional practice are simply not provided in content area classrooms. Critical to instructional decision-making are the beliefs teachers hold about what students should learn and how they should learn (Fang, 2014; Pourdavood & Lui, 2017). As for these secondary teachers, their beliefs about vocabulary instruction to develop disciplinary literacy are situated within their knowledge about teaching and learning. As such, their beliefs were evident in their instructional planning and observed practices. According to Fang (2012), the "traditional emphasis on vocabulary and fluency in secondary reading

instruction is, while important, woefully inadequate in addressing the new challenges of secondary content-area texts" (p. 63), for not only do difficulties exist in vocabulary, grammar, and language patterns, but also language varies from one content area to another. Studies of teachers' beliefs about vocabulary indicate that they realize its importance to understanding content and content texts, and that teachers do in turn allocate time toward vocabulary instruction. However, as Greenwood (2004) claimed, "The good intentions of conscientious teachers concerning traditional vocabulary instruction have often had pernicious side effects" (p. 34). The instruction that is provided often does not address the complexity of word knowledge (Blachowicz & Fisher, 2000) which in turn is required to comprehend the numerous, often conceptually rich, domain-specific vocabulary.

Stahl and Nagy (2006) discussed several reasons that make vocabulary instruction particularly challenging; among them are teachers' necessity to understand the nature of words and words' meanings, knowledge concerning guidelines for selecting words for instruction, and knowledge of various approaches for supporting students' vocabulary learning. Blachowicz and Fisher (2010) proclaimed that students need teachers who teach core content area vocabulary directly. While the participants involved in this study claimed to do this very thing, unfortunately, the overwhelming majority continue to typically employ one of two approaches for vocabulary instruction: a definitional approach described by Ogle and Blachowicz (2002) or a contextualized approach (Herman & Dole, 2005).

**Definitional approach.** In the definitional approach, which remains widely prevalent today, students are provided with a word list and then must look up and record

the corresponding definitions found in a text's glossary or in a dictionary. As the predominance of studies reveal that processing word meanings actively during instruction has a greater impact on comprehension than more passive approaches, such as being told the definitions of words (Wright & Cervetti, 2016), teachers must be cautioned against the overuse of hunting down and writing definitions or listening to teacher explanation. The reliance on this definitional approach can turn students off to learning new words, and it does not result in better comprehension or learning.

**Contextualized approach.** When utilizing the contextualized approach, teachers employ sentences (often those provided by the publisher and found in the teacher's edition) to introduce vocabulary before students read an assigned text. Kibby (1995) argued that this type of vocabulary instruction is sometimes called concept development or teaching meaning vocabulary and is the essence of all instruction aimed at assisting students when learning new things or concepts, along with the words that signify the particular things.

**Comparison of definitional and contextualized approaches.** In both cases, teachers arrange vocabulary instruction such that student time and energy is dedicated to searching for words' denotations or determining word meanings from context. Unfortunately, while studies suggest that the provision of any further information about words' meanings have the potential to help students build knowledge about words over time (Nagy & Herman, 1987), both approaches are dependent on the sufficiency of students' background knowledge about a given topic to choose correct definitions or to use the context of the sentence to determine the correct meanings (Blachowicz & Fisher, 2014).

**Beliefs and Knowledge: A Central Role**

Two, beliefs and knowledge play a central role in how teachers organize and plan lessons as well as how they conceptualize approaches to vocabulary instruction. Moje (2015) noted that secondary classrooms have historically been structured to revolve around a classroom culture defined by the teacher's beliefs about the nature of knowledge, learning and instruction within a specific academic discipline, and past school experiences. Thornton (1989) contended that teachers act as gatekeepers; they control both the content and the use of instructional strategies. These curricular-instructional decisions are "ecological in character…part of an interactive system of beliefs and contextual factors" (p. 9). According to Johnson (1994) educational research on teachers' beliefs share three basic assumptions: "(1) Teachers' beliefs influence perception and judgment. (2) Teachers' beliefs play a role in how information on teaching is translated into classroom practices. (3) Understanding teachers' beliefs is essential to improving teaching practices and teacher education programs" (p. 439).

**Beliefs influence perception and judgment.** To the first point, Buchmann (1987) explained that the decisions that content area teachers make about what to teach and how to teach it may be largely influenced by their beliefs. As Richards, Gallo, and Renandya (2001) pointed out, teacher beliefs form part of the process of understanding the manner in which teachers go about conceptualizing their work.

**Teacher beliefs and classroom practices.** To the second (and perhaps most important) point, as beliefs help guide individuals' interactions and interpretations of the world, the same can be said about the beliefs a teacher might have regarding teaching and learning and the instructional decisions that might result (Kagan, 1992; Pajares, 1992).

Ernest (1989) pointed out that despite the types and amounts of knowledge that teachers may hold, it is their beliefs that are more likely to dictate their actions in the classroom, and these "many beliefs about teaching, learning, learners, and subject matter may serve as personal impediments to change pervade the culture of schools" (Borko & Putnam, 1996, p. 90).

   **Understanding teachers' beliefs.** Understanding teachers' beliefs and knowledge of discipline specific literacy instruction are paramount to their instructional decision-making and ultimately their instructional practices. Pajares (1992) suggested that when teachers are confronted with new knowledge, they process and interpret that knowledge and decide whether or not that knowledge aligns with their beliefs. Not surprisingly, teachers tend to hold to their beliefs when presented with new or more accurate knowledge, whether or not their existing beliefs are correct. If content area teachers perceive literacy instruction (of which vocabulary instruction is an integral component) to be completely "external to their academic disciplines—a set of generic teaching strategies imposed on them from the outside—they will be unlikely to embrace it fully or to make it truly integral to their teaching" (Heller and Greenleaf, 2007, p. 26).

   **Beliefs summation.** All content areas have specialized vocabulary and provide a context in which students may have multiple exposures to words and concepts over time. On the contrary, basal series in elementary schools (reading programs) generally skip from topic to topic and are not intended to coherently build cumulative domain knowledge. While words suggested for vocabulary instruction in the teacher's manual may be essential to understanding a given text, the vast majority only require a superficial understanding of the word to construct meaning. This contributes to a low level of need

for students to remember the word over time (Blachowicz & Fisher, 2000), which is simply not the case in the content areas. One significant challenge in learning discipline-specific (technical) vocabulary words lies in understanding "the hierarchies of relationships among the words" (Fang, 2012, p. 48). If students do not have the opportunity to learn subject area concepts and vocabulary, their word knowledge and capacity to read a broader range of texts will be further diminished. As Draper (2008) noted, students who have content knowledge must also have the skills that are related to using content area texts to communicate, participate, and learn. Therefore, at the secondary level, a large corpus of vocabulary remains crucial, because learners are increasingly required to define and use challenging academic words. What can no longer be afforded is the resistance to teaching domain-specific and general academic vocabulary to levels of robust comprehension and utility.

**Future Considerations**

Across all disciplines, language is key in disciplinary learning and demands our instructional attention. Simply, it is difficult to engage in key cognitive activities unless students know the vocabulary that allows for the transformation of what could be empty processes into meaningful participatory structures (Bravo & Cervetti, 2008). To become literate in a given discipline involves learning the content that is associated with it. Yet, how language is used and how meaning is constructed through language varies greatly across the disciplines.

Content area literacy and disciplinary literacy practices are useful to promote learning in various subject-matter areas (Dunkerly-Bean & Bean, 2016); however, one important component in both views is vocabulary. The main purpose of vocabulary

instruction is to enhance and support reading comprehension; this spans across grade levels and disciplines. So, content vocabulary must be taught within the context of building knowledge, for word meanings do not exist in isolation (Nagy, 2005). This is important, for teachers' and students' vocabulary practices contribute to disciplinary learning. As such, vocabulary instruction must be mindful of the necessary depth and empowerment it provides to the reading, writing, speaking, and listening occurrences in the written and verbal messages found in the disciplines. Without this understanding of their contributions to meaning, words and phrases are nothing more than a nonsensical string of sounds or letters.

Additionally, vocabulary is simply not an isolated skill; readers, writers, speakers, and listeners marshal what they know about words and phrases to understand and convey coherent messages. Therefore, developing teachers' knowledge and instructional practices in this regard is an important component of disciplinary literacy instruction at the secondary level. Blachowicz and Fisher (2000) pointed out that when teachers attempt to apply the general research findings of vocabulary instruction to specific classroom contexts, "teaching vocabulary becomes not a simple process of teaching words but one of teaching particular words to particular students for a particular purpose" (p. 517). This perspective is continuous with Vacca, Vacca, and Mraz's (2016) comparison of the uniqueness of vocabulary in a particular content area to the fingerprints of a human being.

Although the research on vocabulary instruction provided highly useful principles and methods, there remains a lack of framework to convey specific "where the rubber meets the road" questions. To this point, when working with content area teachers,

general principles of vocabulary instruction have been proven to be helpful, though insufficient, to support content area teachers move from theory to practice. What teachers need is two-fold. One, they must participate in activities that foster critical reflection on their instructional practices. Teachers must have opportunities to learn and reflect on new instructional strategies and ideas in the context of their practices (Borko & Putnam, 1996). Two, they must be allotted time to develop the requisite subject matter knowledge. This is important, for their attitudes and beliefs about literacy instruction in the disciplines can be changed when teachers are provided with opportunity to learn how to incorporate discipline specific literacy instruction (Torgesen et al., 2007; Biancarosa & Snow, 2006; NRP, 2000). The resultant recognition of disciplinary ways of using language is crucial for "one cannot fully comprehend the texts of a specific discipline - where disciplinary knowledge is produced, stored, transmitted, and evaluated - without having a sense of how the discipline organizes through language" (Fang, 2012, p. 36).

Word learning is a complicated process. It requires giving students a variety of opportunities to connect new words to related words, analyze word structure, understand multiple meanings, and use words actively in authentic ways. As the research examined herein suggests, middle and high-school students must be provided with multifaceted instruction on the use of context clues and morphology, as well as multiple, meaningful opportunities to actively use new words (Ford-Connors & Paratore, 2015).

The goal of vocabulary instruction should be to build operating disciplinary lexicons as well as to develop independent word learning strategies that can empower students for lifelong learning. Since disciplinary learning involves students in developing content knowledge, teachers must provide students with ongoing support so that students

are capable of accessing knowledge in discipline specific classes (Jenkins, 2018). This requires passion for words and language, student immersion in language, and well-thought-out, varied, and intentional direct instruction (Bromley, 2007).

Work that remains to be explored falls along the line of working with teachers to create environments in which students are motivated to learn domain-specific and general academic vocabulary. Contexts such as this help teachers directly build student capacity to be successful learners within and across disciplines.

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Appendix A

**Content Area Teacher Survey**

**Educational History**

Which best describes your primary teaching assignment this year?
Mark (X) ONE box.

- □ Art
- □ Language Arts/English
- □ Math
- □ Science
- □ Social Studies
- □ Technology Education

Which ONE best describes your grade level assignment?

- □ Middle School (grades 6-8)
- □ High School (grades 9-12)

How long have you been teaching? _____ years

How long have you been teaching in your current position? _____ years

I would be willing to discuss my answers to this survey in a brief interview.
- □ Yes
- □ No

**Confidence Self-Assessment**

For each prompt, CIRCLE the number that best describes your knowledge base.
Choose a number from 1 – 7; 1 = Low, 4 = Average, 7 = High.

| CONFIDENCE SELF-ASSESSMENT | Low | Avg. | High |
|---|---|---|---|
| Vocabulary Instruction | 1 2 3 4 5 6 7 | | |
| Selecting Vocabulary Words for Instruction | 1 2 3 4 5 6 7 | | |
| Strategies for Teaching Vocabulary | 1 2 3 4 5 6 7 | | |

**Beliefs Self-Assessment**

Read each statement below.  Indicate your level of agreement with each statement by circling ONE of the indicators (SD, D, A, SA).

SD = Strongly Disagree, D = Disagree, A = Agree, SA = Strongly Agree

| BELIEFS SELF-ASSESSMENT | LEVEL OF AGREEMENT | | | |
|---|---|---|---|---|
| It is important to dedicate a regular portion of classroom lessons to vocabulary instruction. | SD | D | A | SA |
| It is important to provide repeated exposure to new words in multiple contexts. | SD | D | A | SA |
| It is important to allow sufficient practice to support word learning. | SD | D | A | SA |
| It is important to give sufficient opportunities to use new vocabulary in a variety of contexts (e.g. reading, writing, discussion). | SD | D | A | SA |
| It is important to provide students with strategies to foster independent word learning. | SD | D | A | SA |

Students in my classroom (content area) learn the vocabulary they need to know by:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

**Instructional Practice**

Read each statement below.  Indicate your level of agreement with each statement by circling ONE of the indicators (N = Never, S = Sometimes, F = Frequently, A = Always).

| INSTRUCTIONAL PRACTICE | FREQUENCY | | | |
|---|---|---|---|---|
| | Never | Sometimes | Frequently | Always |
| I dedicate a regular portion of classroom lessons to vocabulary instruction. | N | S | F | A |
| I provide repeated exposure to new words in multiple contexts. | N | S | F | A |
| I allow sufficient practice to support vocabulary word learning. | N | S | F | A |
| I give sufficient opportunities to use new vocabulary in a variety of contexts (e.g. reading, writing, discussion). | N | S | F | A |
| I provide students with strategies that foster independent word learning. | N | S | F | A |

I select words to teach by:

_____

_____

_____

_____

_____

I develop student understanding of vocabulary in my classroom (content area) by:

_____

_____

_____

_____

_____

The sources that are the most influential on vocabulary instruction in my classroom are (Check all that apply.)

- □ Administration
- □ Colleagues/PLC
- □ Pre-service/Undergraduate coursework
- □ In-service/Graduate coursework
- □ Professional Development (Workshops)
- □ Professional Journals
- □ Textbooks
- □ Other _____

Please provide any further comments that you wish to add below.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for your time and consideration.

Appendix B

**Content Area Teacher Semi-Structured Interview**

Participant _____

1. Describe your process of selecting vocabulary words for instruction.

2. Who or what informs your decision-making process for the words you select?

3. How do students in your content area best learn the terms they need to know?

4. Describe the ways in which you teach vocabulary in your classroom.

5. Where did you learn about these ways to teach vocabulary?

6. What professional opportunities might be of the greatest help to you in this area?

Additional prompts to support the questions listed above include:
- Where did you learn about _____?
- Please provide 2-3 specific examples.
- Please provide a recent example.

Appendix C

**Dedoose Data Descriptors**

*Dedoose Descriptors: Teacher Survey: Quantitative Data*

| Descriptor Name | Memo | Type | List Data |
|---|---|---|---|
| ID | Teacher ID Number | Number | |
| First | First Name | Text | |
| Teaching Assignment | Primary Teaching Assignment FY 2013-14 | List | Art, FACS, Health, Music, Science, Social Studies, Technology Education |
| Grade Level | Grade Level Assignment HS (9-12) or MS (6-8) | List | HS (9-12), MS (6-8) |
| Years Taught | Years in Teaching | Number | |
| Years Position | Years in Current Position | Number | |
| Confidence Instruction | Confidence Self-Assessment Vocabulary Instruction | List | 0, 1, 2, 3, 4, 5, 6, 7 |
| Confidence Word Selection | Confidence Self-Assessment Selecting Words for Instruction | List | 0, 1, 2, 3, 4, 5, 6, 7 |
| Confidence Teaching Strategies | Confidence Self-Assessment Strategies for Teaching Vocabulary | List | 0, 1, 2, 3, 4, 5, 6, 7 |
| Beliefs Instruction | Beliefs - Importance of dedicating a regular portion of classroom lessons to vocabulary instruction | List | Strongly Agree, Agree, Disagree, Strongly Disagree |
| Beliefs Repeated Exposure | Beliefs - Importance of provision of repeated exposure to new words in multiple contexts | List | Strongly Agree, Agree, Disagree, Strongly Disagree |
| Beliefs Sufficient Practice | Beliefs- Importance of sufficient practice to support word learning | List | Strongly Agree, Agree, Disagree, Strongly Disagree |
| Beliefs Contextual Opportunities | Beliefs - Importance of sufficient opportunities to use new vocabulary in a variety of contexts | List | Strongly Agree, Agree, Disagree, Strongly Disagree |
| Beliefs Strategy Provision | Beliefs - Importance of provision of strategies to foster independent word learning | List | Strongly Agree, Agree, Disagree, Strongly Disagree |

| Descriptor Name | Memo | Type | List Data |
|---|---|---|---|
| Instructional Time | Instructional Practice - Dedication of a portion of classroom lessons to vocabulary instruction | List | Strongly Agree, Agree, Disagree, Strongly Disagree |
| Instructional Exposure | Instructional Practice - Provision of repeated exposure to new vocabulary words in multiple contexts. | List | Strongly Agree, Agree, Disagree, Strongly Disagree |
| Instructional Sufficient Practice | Instructional Practice - Provision sufficient practice to support vocabulary word learning. | List | Strongly Agree, Agree, Disagree, Strongly Disagree |
| Instructional Contextual Opportunities | Instructional Practice - Provision of sufficient opportunities to use new vocabulary in a variety of contexts | List | Strongly Agree, Agree, Disagree, Strongly Disagree |
| Instructional Strategy Provision | Instructional Practice - Provision of strategies to foster independent word learning. | List | Strongly Agree, Agree, Disagree, Strongly Disagree |

Dedoose Data Descriptors

*Dedoose Descriptors: Teacher Survey: Qualitative Data*

| Descriptor Name | Memo | Type |
|---|---|---|
| ID | Teacher ID Number | Number |
| First | First Name | Text |
| Student Learning | Students learn the content area vocabulary by: | Text |
| Selecting Words to Teach | Selection of Words to Teach Basis | Text |
| Developing Understanding | Development of student understanding of vocabulary in my content area | Text |
| Sources | Most influential sources on vocabulary instruction in my classroom | Text |
| Additional | Additional Comments | Text |

Dedoose Data Descriptors

*Dedoose Descriptors for Semi-Structured Interviews*

| Descriptor Name | Memo | Type | List Data |
|---|---|---|---|
| ID | Teacher ID Number | Number | |
| First | First Name | Text | |
| Teaching Assignment | Primary Teaching Assignment FY 2013-14 | List | Science, Social Studies |
| Course | Content Area Specific Branch | List | APBio, HumanGeo, Biology |
| Hour | Class Period | List | 1, 2, 3, 4 |
| Date | Date of Teacher Observation | Date | |
| Item | Teacher Talk Item Number Per Observation | Number | |
| Teacher Talk | Actual Words Spoken by the Teacher during the Observation | Text | |

Appendix D

Chapter 4: Teacher Survey Analysis Tables

Table 4.1
*Participants: Content Area Teaching Assignments*

|  | Art | FACS | Health | Music | Science | Social | TechEd |
|---|---|---|---|---|---|---|---|
| Total Teachers | 4 | 4 | 1 | 3 | 12 | 15 | 2 |
| Middle School | 2 | 1 | 0 | 0 | 5 | 6 | 1 |
| High School | 2 | 3 | 1 | 3 | 7 | 9 | 1 |
| Average Years of Experience Teaching | 24 | 24.8 | 36 | 20.7 | 18.2 | 19.5 | 17 |
| Average Years in Current Position | 8.5 | 16.5 | 31 | 11.7 | 12.8 | 13.5 | 8 |

Table 4.2
*Participants' Confidence Self-Assessment by Content Area*

| Confidence | Confidence - Vocabulary Instruction | Confidence - Selection of Words for Instruction | Confidence - Strategies for Teaching Vocabulary |
|---|---|---|---|
| All Responses | 5.17 | 5.59 | 4.66 |
| Science (12) | 5.33 | 6.17 | 4.75 |
| Social Studies (15) | 4.87 | 5.27 | 4.47 |
| Art (4) | 5.75 | 6.25 | 5.50 |
| FACS (4) | 5.75 | 5.75 | 5.25 |
| Health (1) | 4.00 | 6.00 | 4.00 |
| Music (3) | 5.67 | 4.33 | 4.33 |
| Tech Ed (2) | 4.00 | 4.50 | 3.50 |
| Tech Subjects (14) | 5.03 | 5.37 | 4.52 |

Table 4.3
*Participants' Beliefs Self-Assessment*

| Beliefs Self-Assessment | SD | D | A | SA |
|---|---|---|---|---|
| 1.  It is important to dedicate a regular portion of classroom lessons to vocabulary instruction. | 1 | 2 | 29 | 9 |
| 2.  It is important to provide repeated exposure to new words in multiple contexts. | 1 | 1 | 21 | 18 |
| 3.  It is important to allow sufficient practice to support word learning. | 1 | 1 | 29 | 10 |
| 4.  It is important to give sufficient opportunities to use new vocabulary in a variety of contexts (e.g. reading, writing, discussion). | 1 | 1 | 25 | 14 |
| 5.  It is important to provide students with strategies to foster independent word learning. | 1 | 2 | 24 | 14 |

Table 4.4
*Participants' Beliefs Self-Assessment by Content Area*

| Beliefs (SA=4; A=3; D=2; SD=1) | Instruction Time Dedication | Repetition in Multiple Contexts | Importance of Sufficient Practice | Importance Sufficiency to Employ | Importance of Strategy Provision |
|---|---|---|---|---|---|
| All Responses | 3.12 | 3.37 | 3.17 | 3.27 | 3.24 |
| Science (12) | 3.08 | 3.67 | 3.33 | 3.42 | 3.33 |
| Social Studies (15) | 3.20 | 3.27 | 3.07 | 3.33 | 3.40 |
| Art (4) | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 |
| FACS (4) | 3.25 | 3.50 | 3.50 | 3.50 | 3.25 |
| Health (1) | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| Music (3) | 3.00 | 3.00 | 3.00 | 2.67 | 2.67 |
| Tech Ed (2) | 3.00 | 3.50 | 3.00 | 3.00 | 3.00 |
| Tech Subjects (14) | 3.20 | 3.35 | 3.25 | 3.18 | 3.13 |

Table 4.5

*Participants' Instructional Ways by Content Area*

| Ways | Respondents | Science | Social Studies | Technical Subjects |
|------|-------------|---------|----------------|--------------------|
| 1 | 1 | 1 | 0 | 0 |
| 2 | 7 | 1 | 3 | 3 |
| 3 | 16 | 1 | 8 | 7 |
| 4 | 5 | 2 | 1 | 2 |
| 5 | 7 | 3 | 2 | 2 |
| 6 | 3 | 3 | 0 | 0 |
| 7 | 1 | 0 | 1 | 0 |
| 10 | 1 | 1 | 0 | 0 |

Table 4.6

*Students Learn the Words They Need to Know By*

| Category | Sample Associated Responses (ID#) |
|---|---|
| Instructional Strategies | • "Reflective journaling using apps on their device or notebook using the Frayer model." (29)<br>• "Word exercises: definition, synonyms, antonyms, constructing sentences, illustrations." (7)<br>• "Drawing pictures, Acting out words, Making Taboo Cards" (12) |
| Application: Demos, Labs | • "They are expected to find out their meaning to be able to successfully complete the product. If they don't understand the vocab., they will not have a good product to eat." (35)<br>• "Exposure to vocab in assignments and labs. . . Labs with the vocab words in them." (9)<br>• "Using what they learn in labs and applying words to their daily life." (36) |
| Teacher Directed | • "Visual Aids in the classroom" (32)<br>• "Lots of repetition of terms used throughout the unit. Notes with new vocab, Usually, a packet of worksheets using the words multiple times. . . continued use of words throughout the year." (9)<br>• "Latin roots, prefixes and suffixes & word families" (25)<br>• "We go through them together on the board, they write them down, they are used in the reading. They then should use them in the assignment to reinforce them." (30) |
| Student Driven | • "Reading, research, presentations, vocabulary exercises, and writing" (2)<br>• "Asking, Researching, Figuring it out from the context it is used" (21)<br>• "Reading the words in the textbook., Practice saying the words., Writing them in sentences., Writing reflections." (18)<br>• "Looking at the words used in context in the Social Studies book. " (8)<br>• "Students also read terms in text and other source documents." (14) |

Table 4.7
*Receptive and Productive Language: Students Learn the Words They Need to Know By*

| Receptive & Productive Language | SCI | SOC | TECH | ALL |
|---|---|---|---|---|
| READ | 23 | 18 | 20 | 61 |
| WRITE | 37 | 22 | 23 | 82 |
| SPEAK | 7 | 9 | 3 | 19 |
| VIEW | 15 | 8 | 10 | 33 |
| LISTEN | 26 | 23 | 17 | 66 |
| TOTAL | 108 | 80 | 73 | 261 |

Table 4.8
*Students Learn the Words They Need to Know By (by Content Area)*

| Student Learning | SCI | SOC | TECH | ALL |
|---|---|---|---|---|
| Instructional Strategies | 15 | 11 | 5 | 31 |
| Application | 11 | 7 | 8 | 26 |
| Teacher Directed | 17 | 13 | 13 | 43 |
| Student Driven | 9 | 17 | 17 | 48 |
| TOTAL | 52 | 48 | 43 | 148 |

Table 4.9
*Participants' Instructional Practice Self-Assessment*

| Instructional Practice | SD | D | A | SA |
|---|---|---|---|---|
| 1.  I dedicate a portion of classroom lessons to vocabulary instruction. | 0 | 6 | 33 | 2 |
| 2.  I provide repeated exposure to new vocabulary words in multiple contexts. | 0 | 6 | 28 | 7 |
| 3.  I allow sufficient practice to support vocabulary word learning. | 0 | 12 | 26 | 3 |
| 4.  I give sufficient opportunities to use new vocabulary in a variety of contexts (e.g. reading, writing, discussion). | 1 | 10 | 27 | 3 |
| 5.  I provide students with strategies that foster independent word learning. | 2 | 8 | 28 | 3 |

Table 4.10

*Participants' Instructional Practice Self-Assessment by Content Area*

| Instructional Practice (SA=4; A=3; D=2; SD=1) | Instruction Time Dedication | Repetition in Multiple Contexts | Importance of Sufficient Practice | Importance Sufficiency to Employ | Importance of Strategy Provision |
|---|---|---|---|---|---|
| All Responses | 2.90 | 3.02 | 2.78 | 2.76 | 2.78 |
| Science (12) | 2.75 | 3.25 | 2.67 | 2.75 | 2.83 |
| Social Studies (15) | 3.07 | 2.87 | 2.60 | 2.93 | 2.73 |
| Art (4) | 3.00 | 3.25 | 3.50 | 2.50 | 3.00 |
| FACS (4) | 3.00 | 3.25 | 3.25 | 2.75 | 3.00 |
| Health (1) | 3.00 | 3.00 | 2.00 | 2.00 | 3.00 |
| Music (3) | 2.33 | 2.33 | 2.67 | 2.33 | 2.33 |
| Tech Ed (2) | 3.00 | 3.00 | 3.00 | 3.00 | 2.50 |
| Tech Subjects (14) | 2.87 | 2.97 | 2.88 | 2.52 | 2.77 |

Table 4.11

*Sources of Influence: "I select words to teach by:"*

| # Basis Given | Responses | Science | Social Studies | Technical Subjects |
|---|---|---|---|---|
| 1 | 14 | 3 | 5 | 6 |
| 2 | 18 | 6 | 7 | 5 |
| 3 | 6 | 3 | 1 | 2 |
| 4 | 2 | 0 | 2 | 0 |
| 5 | 1 | 0 | 0 | 1 |

Table 4.12

*Selection of Words to Teach Categories*

| SWIT Category | Sample Associated Responses (ID#) |
|---|---|
| Words included in content area learning targets | <ul><li>"focus on essential learning components and based on that I select words" (19)</li><li>"Pertaining to content area" (6)</li><li>"Ones that connect with the content/context of the lesson or unit that I teach" (31)</li></ul> |
| Reviewal of current content area research | <ul><li>"current research in the field" (3)</li></ul> |
| Reviewal of course materials (e.g. worksheets, labs): | <ul><li>"Previewing all classroom readings and materials for potential vocabulary obstacles" (14)</li><li>"text I am using (newspaper, textbook, magazine article)" (28)</li><li>"the words that present themselves in the recipes and articles we read to support classroom content" (35)</li></ul> |
| Words included in department generated curriculum | <ul><li>"Academic Vocabulary for Art Department" (22)</li><li>"Based on music we are working on (curriculum)" (32)</li><li>"main topics in my curriculum."(36)</li><li>"Curriculum development with peers and myself" (37)</li></ul> |
| Words found in previously taken exams | <ul><li>"AP, I look at previous exams." (17)</li><li>"Reviewing prior established assessments for terms and their various contexts." (14)</li></ul> |
| Words repeated in and/or transferable to other contexts | <ul><li>"Does the word thread through multiple topics/concepts?" (24)</li></ul> |
| Words found in content area academic standards | <ul><li>"Terms that I know will be on the unit test and/or are found in the state standards." (33)</li><li>"Identifying words that I believe students are unfamiliar with based on state geography standards" (29)</li><li>"2009 Mn Science standards" (26)</li></ul> |
| Words based on teacher beliefs and/or experience | <ul><li>"Professional experience" (34)</li><li>"Words that I believe are noteworthy to understand the meaning of the content" (4)</li><li>"words that I have come across over the years of teaching that students commonly don't know." (10)</li></ul> |

Table 4.12 (continued)
*Selection of Words to Teach Categories*

| SWIT Category | Sample Associated Responses (ID#) |
|---|---|
| Words to be used in tests | ● "Terms that I know will be on the unit test and/or are found in the state standards." (33)<br>● "Also by words that will be on their unit tests." (27)<br>● "what they will be assessed on" (28) |
| Key, bolded, or highlighted words found in the textbook | ● "key words from each chapter" (40)<br>● "Terms that are bold faced in a text that the students will be reading" (33)<br>● "terms indicated in the textbook"<br>● "highlighted words in the textbook" (4)<br>● "using the book word bank in each chapter and adding my own if necessary" (16) |

Table 4.13
*Selection of Words to Teach Categories by Content Area*

| Content | CLT | CCR | CMT | CUR | PEX | REP, TRN | STN | TBel/ TExp | Test | Text | TOT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 12 | 1 | 8 | 16 | 2 | 1 | 14 | 9 | 5 | 13 | 81 |
| Science (12) | 2 | 1 | 2 | 6 | 0 | 1 | 6 | 3 | 1 | 2 | 24 |
| Social Studies (15) | 1 | 0 | 3 | 3 | 2 | 0 | 6 | 4 | 1 | 10 | 30 |
| Art (4) | 3 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 7 |
| FACS (4) | 4 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 10 |
| Health (1) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| Music (3) | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Tech Ed (2) | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| Technical Subjects (14) | 9 | 0 | 3 | 7 | 0 | 0 | 2 | 2 | 3 | 1 | 27 |

Table 4.14

*I develop student understanding of vocabulary in my classroom by (Content Area):*
*Frequency*

| Ways | Participants | Science | Social Studies | Tech Ed |
|---|---|---|---|---|
| 1 | 5 | 1 | 2 | 2 |
| 2 | 9 | 3 | 2 | 4 |
| 3 | 10 | 1 | 6 | 3 |
| 4 | 8 | 2 | 3 | 3 |
| 5 | 6 | 3 | 1 | 2 |
| 7 | 1 | 1 | 0 | 0 |
| 8 | 1 | 0 | 1 | 0 |
| 12 | 1 | 1 | 0 | 0 |

Table 4.15

*I develop student understanding of vocabulary in my classroom by:*

| Development | Sample Associated Responses (Participant ID) |
|---|---|
| Instructional Strategies | <ul><li>"Making flip-books for words with definitions; make notecards with words and definitions; use words in concept web or create concept webs; do reinforcement with crossword puzzles" (16)</li><li>"concept mapping, word 'dissection', compare/contrast, . . ., examples/non-examples, word relationships/hierarchies" (25)</li><li>"I have taught students several methods for working with new vocabulary from the traditional 3 x 5 notecard, to digital vocabulary tools such as StudyBlue and Quizlet, to using the Frayer Model." (29)</li></ul> |
| Application: Demos, Labs | <ul><li>"Demonstrating and having students demonstrate. They learn by 'doing'" (19)</li><li>"Use in practice / performing the meaning of " (41)</li><li>"Defining words during classroom presentations or discussing definitions that students discovered during their studies." (33)</li><li>"Usage in projects they work on" (11)</li></ul> |
| Teacher Directed | <ul><li>"Multiple examples" (23)</li><li>"calling attention to words in lectures" (5)</li><li>"Daily repetition and exposure is used in question of the day" (4)</li><li>"listening, exposure to terms in sample questions" (14)</li><li>"Repetition and drill; Demonstrating the use of vocabulary in instructing students" (9)</li><li>"using a notebook to record the words and their definitions from the glossary" (38)</li></ul> |
| Student Driven | <ul><li>"Reading articles with the words included. Writing sentences with the vocabulary words." (18)</li><li>"Write definitions, read them in context, and formally assess them just to name a few." (31)</li><li>"reading an article and finding a fixed number of words and their definitions embedded in the article." (27)</li></ul> |

Table 4.16
*I develop student understanding of vocabulary in my classroom by: Receptive &
Productive*

| Receptive/Productive Language | SCI | SOC | TECH | ALL |
|---|---|---|---|---|
| READ | 17 | 15 | 16 | 48 |
| WRITE | 32 | 24 | 11 | 67 |
| SPEAK | 7 | 8 | 16 | 31 |
| VIEW | 5 | 1 | 11 | 17 |
| LISTEN | 15 | 15 | 17 | 47 |
| TOTAL | 76 | 63 | 71 | 210 |

Table 4.17
*I develop student understanding of vocabulary in my classroom by: (by Content Area)*

| Category of Development | SCI | SOC | TECH | ALL |
|---|---|---|---|---|
| Instructional Strategies | 14 | 7 | 3 | 24 |
| Application | 6 | 7 | 14 | 27 |
| Teacher Directed | 23 | 20 | 14 | 57 |
| Student Driven | 9 | 15 | 10 | 34 |
| TOTAL | 52 | 49 | 41 | 142 |

Table 4.18
*Most Influential Sources on Vocabulary Instruction in My Classroom*

| Sources | Number | Percentage of Educators |
|---|---|---|
| Administration | 2 | 4.9% |
| Colleagues/PLC | 28 | 68.3% |
| Preservice/Undergraduate Coursework | 6 | 14.6% |
| In-service/Graduate Coursework | 14 | 34.1% |
| Professional Development (workshops) | 21 | 51.2% |
| Professional Journals | 9 | 22% |
| Textbooks | 22 | 53.7% |
| Other | 6 | 14.6% |

Table 4.19

*Most Influential Sources on Vocabulary Instruction in My Classroom by Content Area*

| Content Area | Admn | Coll./ PLC | PreS/ UGrd | InS/ Grd | PD & Wksp | Pro. Jour. | Text-books | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| All Responses | 2 | 28 | 6 | 14 | 21 | 9 | 22 | 5 | 107 |
| Science (12) | 0 | 9 | 3 | 4 | 6 | 4 | 7 | 2 | 35 |
| Social Studies (15) | 2 | 12 | 1 | 4 | 6 | 3 | 10 | 1 | 39 |
| Art (4) | 0 | 3 | 2 | 2 | 2 | 0 | 1 | 1 | 11 |
| FACS (4) | 0 | 1 | 0 | 2 | 2 | 0 | 2 | 1 | 8 |
| Health (1) | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 4 |
| Music (3) | 0 | 2 | 0 | 0 | 3 | 1 | 0 | 0 | 6 |
| Technical Ed (2) | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 4 |
| Tech. Subjects (14) | 0 | 7 | 2 | 6 | 9 | 2 | 5 | 2 | 33 |

Table 4.20

*Additional Comments: Most Influential Sources on Vocabulary Instruction*

| Content Area | S APP | CC D | SD-BK | T MD | M of STN | PRN | REP | Req PD | R of DV | TC | TRF | TOT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL (11/41) | 2 | 1 | 3 | 3 | 2 | 1 | 2 | 4 | 3 | 4 | 1 | 26 |
| Science (5/12) | 0 | 0 | 3 | 1 | 1 | 0 | 1 | 1 | 2 | 2 | 0 | 11 |
| Social Studies (3/15) | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 6 |
| Art (1/4) | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4 |
| FACS (2/4) | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 5 |
| Tech Subjects (3/14) | 2 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 9 |

Table 4.21

*Additional Comments: Most Influential Sources on Vocabulary Instruction by Content Area*

| "Additional Comments" | SCI | SOC | TECH | ALL |
|---|---|---|---|---|
| Instructional Influence | 10 | 4 | 6 | 20 |
| Teacher Request | 1 | 2 | 3 | 6 |
| Total | 11 | 6 | 9 | 26 |

Table 4.22

*Additional Comments: Most Influential Sources on Vocabulary Instruction by Content Area*

| Category | Sample Associated Responses (ID#) |
|---|---|
| Instructional Influence | ● "The physical application and modeling in art seems to help in retention of the vocabulary" (22)<br>● "I always feel I could do a better job with vocabulary IF I had students for a longer period. I work and try hard though with the amount of time I have students.... to incorporate new vocabulary words." (19)<br>● "We struggle to find the time to fit in more strictly vocab related activities into our schedule because of the quantity of curriculum that we are asked to cover." (9)<br>● "Most students I teach have little or no prior knowledge or content with Earth Science, therefore their knowledge and usage of vocabulary is minimal at best." (37)<br>● "It is a challenge to dedicate the time vocabulary deserves within the constraints of teaching the new standards." (8) |
| Teacher Request | ● "it is also important for content teachers to continue to get training on how to deal with vocabulary in the classroom. Without continuous training (1 a year or once every other year), other "important" things eventually take the place of "vocabulary" work." (33)<br>● "I have gone to staff development workshops or mini-sessions that have been really helpful" (16)<br>● "It would be nice to add to staff development, opportunities for teachers to take credit bearing classes at the high school related to best practice strategies, such as reading and vocabulary." (28) |

Table 4.23

*Evidentiary Warrant by Occurrence - Teacher Survey & Semi-Structured Interviews*

| Theme | Coded Excerpts | Number of Participants |
|---|---|---|
| Repetition is the key to student acquisition of discipline-specific vocabulary. | 229 | 20 |
| Students learn best when a combination of word learning strategies are used. | 122 | 26 |
| Visual connections to discipline-specific terms improves student comprehension. | 38 | 25 |
| Teacher experience (discipline-specific words and previous students' difficulties) drives the selection of words for instruction. | 21 | 16 |
| Textbooks are viewed as a resource as it pertains to selecting words for instruction. | 20 | 20 |
| Within district, collegial collaboration is the number one source for learning to teach vocabulary. | 69 | 32 |
| District professional development is the preferred professional approach for learning vocabulary instructional strategies. | 45 | 33 |

Table 4.24

*Evidentiary Warrant by Data Type*

| Theme | Teacher Survey | Semi-Structured Interviews | Teacher Observations |
|---|---|---|---|
| Repetition is the key to student acquisition of discipline-specific vocabulary. | 17 | 12 | 200 |
| Students learn best when a combination of word learning strategies are used. | 25 | 8 | 89 |
| Visual connections to discipline-specific terms improves student comprehension. | 20 | 3 | 15 |
| Teacher experience (discipline-specific words and previous students' difficulties) drives the selection of words for instruction. | 13 | 8 | N/A |
| Textbooks are viewed as a resource as it pertains to selecting words for instruction. | 16 | 4 | N/A |

Table 4.24 (continued)
*Evidentiary Warrant by Data Type*

| Theme | Teacher Survey | Semi-Structured Interviews | Teacher Observations |
|---|---|---|---|
| Within district, collegial collaboration is the number one source for learning to teach vocabulary. | 59 | 10 | N/A |
| District professional development is the preferred professional approach for learning vocabulary instructional strategies. | 36 | 9 | N/A |

Table 4.25
*Teacher Survey: Students in my classroom learn the vocabulary they need to know by:*

| Date | ID | Teacher Survey: Beliefs: Evidentiary Excerpt |
|---|---|---|
| 4/29/14 | 23 | Repetition in rehearsal, lessons and written work. |
| 4/25/14 | 32 | Everyday music rehearsals |
| 4/30/14 | 41 | Repetition; practice in performance; |
| 4/30/14 | 9 | Exposure to vocab in assignments and labs. Lots of repetition of terms used throughout the unit . . . continued use of words throughout the year. |
| 4/26/14 | 14 | Introduction to properly defined terms followed by repeated use of the term in various formats (direct instruction, embedded terms in sample questions, small group review of topic with specific and proper use of terms). |
| 4/28/14 | 17 | Repetition, discussion, assessment. |
| 4/28/14 | 7 | Repeated exposure |

Table 4.26

*Teacher Survey: Instructional Practice*

| Date | ID | Teacher Survey: Instructional Practice: Evidentiary Excerpt |
|------|-----|------------------------------------------------------------|
| 4/29/14 | 6 | Frequent use and student use |
| 4/25/14 | 32 | Everyday music rehearsals |
| 5/2/14 | 1 | Repeated exposure |
| 4/30/14 | 9 | Repetition and drill; . . . Using the vocabulary not just for the one unit, but using that vocabulary throughout the course of the year-long class. |
| 4/25/14 | 4 | Daily repetition and exposure is used in question of the day and writing responses. |
| 4/27/14 | 10 | Consistent review and quizzes on definitions and application. |
| 4/28/14 | 17 | Repetition, reading, discussion |
| 4/25/14 | 31 | Having students interact with the terms several times throughout the lesson. |
| 4/28/14 | 22 | The physical application and modeling in art seems to help in retention of the vocabulary. Students have a concrete process (i.e. incising their pottery, or incising their scratch art disk), an actual physical demonstration to apply the word. I think this is helping them internalize the vocabulary, and retain it to transfer to other contexts in art. (Physical demo/action + repetition). |
| 4/29/14 | 37 | I really try to expose vocabulary and concepts multiple times and in multiple ways to work the students towards mastery. |

Table 4.27

*Teacher Survey: Beliefs: Word Learning Strategies*

| Date | ID | Teacher Survey: Beliefs: Word Learning Strategies: Exemplars |
|------|-----|--------------------------------------------------------------|
| 4/25/14 | 3 | Multiple avenues- models, diagrams, discussion, notes, brainstorms, exploring latin/greek roots, flashcards or foldables, reading text, etc. |
| 4/25/14 | 16 | -Making flip-books for words with definitions<br>-make notecards with words and definitions<br>-use words in concept web or create concept webs<br>-Reading for context in book or articles |
| 4/25/14 | 24 | Reading Text, Discussion, Role Playing, Teaching Word Parts |
| 4/28/14 | 25 | compare and contrast; Latin roots, prefixes and suffixes & word families;<br>concept mapping, example/non-example |
| 4/29/14 | 27 | Reading articles and textbook and defining words. They are given the opportunity to choose different methods of reviewing vocabulary words before tests: concept squares, acrostics, word pictures, concept and mind maps, games. |
| 4/29/14 | 37 | Concept squares, . . . Text readings, Looping review game, Word Wall . . . |
| 4/25/14 | 4 | Reading non-fiction text to answer questions; Making foldable study guides; incorporating vocabulary words in writing responses |
| 4/29/14 | 8 | Doing various activities with them- vocab squares, flip books... |
| 4/27/14 | 10 | flashcards, Quizlet, . . . application activities |
| 4/25/14 | 12 | Drawing pictures, Acting out words, Making Taboo Cards, Reading/Using/ Reviewing definitions before they read from various classroom material |
| 4/29/14 | 13 | Pictowords, xwords, chart: picture, definition, use in a sentence |
| 4/28/14 | 29 | Reflective journaling using apps on their device or notebook using the Frayer model. |
| 4/28/14 | 7 | Word exercises: definition, synonyms, antonyms, constructing sentences, illustrations. |

Table 4.28

*Teacher Survey: Beliefs: Word Learning Strategies*

| Date | ID | Teacher Survey: Instructional Practice: Word Learning Strategies: Exemplars |
|---|---|---|
| 4/25/14 | 3 | Multiple avenues like models, diagrams, discussion, notes, brainstorms, exploring Latin/Greek roots, flashcards or foldables, reading text |
| 4/25/14 | 16 | introducing word parts and prefixes, suffixes, and root words, . . . Making flip-books for words with definitions; make notecards with words and definitions; use words in concept web or create concept webs; Reading for context in books or articles. |
| 4/25/14 | 24 | Ask students to generate analogies, Word/picture associations |
| 4/28/14 | 25 | concept mapping, word 'dissection', compare/contrast, writing conclusions and explanations, examples/non-examples, word relationships/hierarchies |
| 4/29/14 | 27 | I try to use a variety of methods: knowledge rating scales, reading an article and finding a fixed number of words and their definitions embedded in the article, worksheets, and the review methods listed above. |
| 4/25/14 | 36 | I use vocabulary squares and high interest readings. |
| 4/29/14 | 37 | Concept squares, Text readings, Looping review game, Word Wall |
| 4/25/14 | 4 | Students create a visual with the word, definition, draw a picture to illustrate the word and apply the word by using it in their own writing, Students make a foldable visual with the definition and the word, Cornell notes |
| 4/25/14 | 12 | Having students write, draw, act, look up and discuss vocabulary words. |
| 4/28/14 | 29 | I have taught students several methods for working with new vocabulary from the traditional 3 x 5 notecard, to digital vocabulary tools such as StudyBlue and Quizlet, to using the Frayer Model. |
| 4/29/14 | 27 | I recognize the importance of learning vocabulary words, but struggle to incorporate sufficient time and variety in my vocabulary instruction. |
| 4/26/14 | 14 | Well established, research based, and flexible teaching strategies for vocabulary are badly needed! I know I can be more effective in their instruction and thus student learning of difficult content. |

Table 4.29

*Semi-Structured Interviews: Word Learning Strategies*

| Date | ID | Semi-Structured Interview: Word Learning Strategies: Exemplars |
|------|-----|------------------------------------------------------------------|
| 5/14/14 | 24 | Q4. "I still use the VVWA cards. Concept Maps." |
| 5/20/14 | 29 | Q3. "I really have a combination of tools the students are using. More and more are using flashcards - either a digital version or traditional flashcard. Some students are using the Frayer Model. Some students just write down terms in their notebook and use that to study." |
| 5/20/14 | 29 | Q4. "I teach them various tools. I encourage them to use the tools for learning; they use the tools they've been taught. The Frayer model, the StudyBlue or Quizlet Apps." |
| 5/21/14 | 9 | Q3. "We've done some concept squares, like someone taught us. You know, where we say, 'Here's four things, so what goes with that?' Or, 'Here's a term, so what's four things that goes with the term?' Sometimes T-charts... Sometimes we will do vocabulary games like Bingo. I guess it is a variety of ways." |

Table 4.30

*Teacher Survey: Students in my classroom learn the vocabulary they need to know by:*

| Date | ID | Teacher Survey: Beliefs: Visual Connections: Exemplars |
|------|-----|-------------------------------------------------------|
| 4/30/14 | 39 | Watching demos and I refer to the correct names of the tools. Short quizzes for proper tool identification. Drawers have labels to help return correct tool to the correct storage place. Videos with pictures of equipment. |
| 4/27/14 | 18 | Labeling diagrams. |
| 4/25/14 | 32 | Visual Aids in the classroom |
| 4/25/14 | 3 | Multiple avenues- models, diagrams . . . |
| 4/25/14 | 16 | -Making flip-books for words with definitions<br>-Doing (a) presentation or project that require(s) them to use the words properly whether written or verbal. |
| 4/29/14 | 27 | They are given the opportunity to choose different methods of reviewing vocabulary words before tests: concept squares, acrostics, word pictures, concept and mind maps, games. |
| 4/29/14 | 37 | . . . Word Wall, . . . daily warm-ups |
| 4/29/14 | 8 | Doing various activities with them- vocab squares, flip books... |
| 4/25/14 | 12 | . . ., Drawing pictures, Acting out words, . . . |
| 4/29/14 | 13 | Pictowords, xwords, chart: picture, definition, use in a sentence, . . . |

Table 4.31

*Teacher Survey: Instructional Practices: Visual Connections*

| Date | ID | Teacher Survey: Instructional Practice: Visual Connections: Exemplars |
|------|-----|----------------------------------------------------------------------|
| 4/25/14 | 32 | Visual Aids in the classroom |
| 4/25/14 | 3 | Multiple avenues like models, diagrams, . . . flashcards or foldables, . . . |
| 4/25/14 | 16 | questioning things they have read or seen like a movie - . . . Doing a variety of things like presentations or writing a paper, or doing a project using the words . . . Making flip-books for words with definitions; . . . |
| 4/25/14 | 24 | Word/picture associations |
| 4/25/14 | 26 | . . . Demonstrations, Labs, PPT, Videos, . . . |
| 4/29/14 | 37 | . . . Word Wall, . . . daily warm-ups |

Table 4.31 (continued)

*Teacher Survey: Instructional Practices: Visual Connections*

| Date | ID | Teacher Survey: Instructional Practice: Visual Connections: Exemplars |
|------|-----|---------------------------------------------------------------------|
| 4/25/14 | 4 | Students create a visual with the word, definition, draw a picture to illustrate the word . . . Students make a foldable visual with the definition and the word, . . . |
| 4/25/14 | 12 | Having students write, draw, act, . . . |
| 4/28/14 | 29 | I have taught students several methods for working with new vocabulary from the traditional 3 x 5 notecard, to digital vocabulary tools such as StudyBlue and Quizlet, to using the Frayer Model. |
| 4/28/14 | 22 | The physical application and modeling in art seems to help in retention of the vocabulary. Students have a concrete process (i.e. incising their pottery, or incising their scratch art disk), an actual physical demonstration to apply the word. I think this is helping them internalize the vocabulary, and retain it to transfer to other contexts in art. (Physical demo/action + repetition). |

Table 4.32

*Teacher Survey: Instructional Practice: Word Selection*

| Date | ID | Teacher Survey: Instructional Practice: Teacher Experience: Exemplars |
|------|-----|----------------------------------------------------------------------|
| 4/28/14 | 19 | planning with the end in mind. Example: focus on essential learning components and based on that I select words. |
| 4/25/14 | 28 | My objectives, . . . Most important the relevance of material to enhance their lives after they leave school and what is needed in the workplace and their personal lives to be successful adults. |
| 4/30/14 | 9 | what words are important to teach the topic or in the case of my class, the topic itself is almost always new vocabulary. |
| 4/25/14 | 24 | Does the word represent an idea that is important to understanding the concept? Does the word represent a specific part/structure necessary for understanding? Does the word thread through multiple topics/concepts? |
| 4/25/14 | 34 | State standards, agreement among colleagues who teach same subject concurrently, professional experience |
| 4/25/14 | 4 | Words that I believe are noteworthy to understand the meaning of the content |
| 4/27/14 | 10 | words that I have come across over the years of teaching that students commonly don't know. |
| 4/25/14 | 12 | 2. Pre-reading and selecting words that I know from my experience will be challenging and that are important / relevant for them to comprehend the readings |
| 4/28/14 | 29 | Identifying words that I believe students are unfamiliar with based on state geography standards and my experience in teaching the subject matter for several years. |
| 4/25/14 | 33 | Terms that I know will be on the unit test and/or are found in the state standards. |
| 4/28/14 | 7 | I look for words that are relevant and have a direct connection to the content, skill, technology that I am training on. I select the words that are critical for understanding and applying the instructional strategy with technology. |
| 4/29/14 | 37 | Most students I teach have little or no prior knowledge or content with Earth Science, therefore their knowledge and usage of vocabulary is minimal at best. I really try to expose vocabulary and concepts multiple times and in multiple ways to work the students towards mastery. |

Table 4.33
*Semi-structured Interviews: Word Selection*

| Date | ID | Semi-Structured Interview: Teacher Experience: Exemplars |
|------|-----|----------------------------------------------------------|
| 5/14/14 | 24 | Q1."Well, the process is I select vocab terms that I think are going to help kids understand the concepts. That's about as simple and complicated as it gets." |
| 5/20/14 | 29 | Q1. "I uh kind of use a combination of prior knowledge words. The concepts and the words from units that students have struggled with. I use prior knowledge from geographic concepts and models from prior years that students have struggled with to determine my selections." |
| 5/20/14 | 29 | Q2. "Uh, let's see, I would say uh, textbooks and prior years' students. For example, a um, geographic concept of cultural diffusion is a vocabulary word that students in the past have struggled with, and so I spend more time with this concept." |
| 5/21/14 | 9 | Q1. "Well let's see, I look at the subject matter we are going to teach. I look at, What are some words that are going to be hard to understand. Like birds, What are some words like gizzard, crop, fledgling. These might be hard." |
| 5/21/14 | 9 | Q2. "It's pretty much me. We've never had a science person come in and say, 'This is what you will teach.'" |
| 5/21/14 | 9 | Q4. "I basically find words that I think are going to be important and I just use them a lot. " |

Table 4.34
*Teacher Survey: Textbooks*

| Date | ID | Teacher Survey: Instructional Practice: Textbooks: Exemplars |
|------|-----|---|
| 4/25/14 | 28 | My objectives, national standards, what they will be assessed on, text I am using (newspaper, textbook, magazine article). |
| 4/27/14 | 18 | Checking the vocabulary words in the lessons of the textbook. |
| 5/2/14 | 1 | Relating them to the content. |
| 4/29/14 | 15 | Reviewing MN state standards and selected course curriculum materials. |
| 4/25/14 | 16 | using the book word bank in each chapter and adding my own if necessary. |
| 4/29/14 | 27 | The unit we are studying. Also, by words that will be on their unit tests. |
| 4/29/14 | 37 | Textbook references (bolded text) |
| 4/25/14 | 4 | highlighted words in the textbook |
| 4/29/14 | 8 | The curriculum. |
| 4/25/14 | 12 | 1. Using the standards and various textbooks to pick out the words that are crucial for Social Studies |
| 4/29/14 | 13 | Textbook content |
| 4/26/14 | 14 | Previewing all classroom readings and materials for potential vocabulary obstacles. |
| 4/25/14 | 33 | Terms that are bold faced in a text that the students will be reading. |
| 5/5/14 | 38 | key words from the chapters |
| 5/5/14 | 40 | key words from each chapter |
| 4/25/14 | 16 | I actually use a vocabulary practice sheet from our book company sometimes. |

Table 4.35
*Semi-structured Interviews: Colleagues*

| Date | ID | Semi-Structured Interview: Colleagues: Exemplars |
|---|---|---|
| 5/14/14 | 24 | Q2. "Umm...standards. College board. Colleagues. And then textbooks." |
| 5/14/14 | 24 | Q5. "Some guy at the middle school. I have a three ring binder. Good archaic stuff. Most of what I've done with vocabulary has come from work at the middle school . . ." |
| 5/14/14 | 24 | Q6. "Informal discussion with colleagues" |
| 5/20/14 | 29 | Q5. "Several sources - district personnel." |
| 5/20/14 | 29 | Q6. "Generally, I look for these within the district." |
| 5/21/14 | 9 | Q2. "I'd like someone to come in and, say, in a unit on evolution, 'These are the terms you should teach.' This is stuff that we've never had, this kind of review, especially now that standards are evolving. I'd like to see Jane or someone come in and say, 'These are the things you should teach.' You know, making sure that we are covering what needs to be covered." |
| 5/21/14 | 9 | Q5. "Trial and error. I've never been formally taught vocab and vocab methods. Other than talking with Brian. Brian would be a sounding board. I'd talk to him and then I'd use some things and Joe would use less. We are trying to throw a lot of things at kids . . . But we introduce them to a lot of stuff, and that is what we want too. So that someday, they might think back and say, 'I recognize that from... or I know that has something to do with….'" |
| 5/21/14 | 9 | Q6. "Or Jane come down and say, 'These are the terms that kids need to know, or least be exposed to a lot at this level.'" |

Table 4.36

*Teacher Survey: Instructional Practice: District PD*

| Date | ID | Teacher Survey: Instructional Practice: District PD: Exemplars |
|---|---|---|
| 4/29/14 | 37 | Curriculum development with peers and myself |
| 4/25/14 | 28 | Professional Development (workshops), Conferences I attend and local networking sessions |
| 4/25/14 | 16 | Professional Development (workshops), Working with reading specialists in our school |
| 4/26/14 | 14 | Well established, research based, and flexible teaching strategies for vocabulary are badly needed! I know I can be more effective in their instruction and thus student learning of difficult content. |
| 4/25/14 | 28 | It would be nice to add to staff development, opportunities for teachers to take credit bearing classes at the high school related to best practice strategies, such as reading and vocabulary. Marlee Eret offered a class here, through Hamline, at the high school that about 15 people took and then we applied what we learned in our classes and shared our experiences. It was a wonderful, convenient, networking opportunity. |
| 4/25/14 | 16 | I have gone to staff development workshops or mini-sessions that have been really helpful from M. Eret. READING strategies are VERY important! Vocab is a skeleton to build on and the test are jammed packed with the use of these words to apply concepts. I always say science is hard because it is a foreign language that we need to learn and apply AT THE SAME TIME. |
| 4/25/14 | 33 | I know vocabulary is important, but it is also important for content teachers to continue to get training on how to deal with vocabulary in the classroom.<br>Without continuous training (1 a year or once every other year), other "important" things eventually take the place of "vocabulary" work. |

Table 4.37
*Semi-structured Interviews: District Professional Development*

| Date | ID | Semi-Structured Interview: District PD: Exemplars |
|------|-----|---------------------------------------------------|
| 5/14/14 | 24 | Q5. "Some guy at the middle school. I have a three-ring binder. Good archaic stuff. Most of what I've done with vocabulary has come from work at the middle school or the lame stuff, you know, we do in our traditional classrooms. 'Right there,' you know, 'here it is.'" |
| 5/20/14 | 29 | Q5. "Several sources-district personnel. Digital tools from a TIES workshop. I have read some literacy books through some classes I have taken." |
| 5/20/14 | 29 | Q6. "Well I always look for new ideas in instruction, content reading instruction - professional development opportunities. Generally, I look for these within the district. Cost is a factor when looking at these opportunities. I also know we have quality resources here." |
| 5/21/14 | 9 | Q2. "We've never had a science person come in and say, "This is what you will teach." I'd like someone to come in and, say, in a unit on evolution, "These are the terms you should teach." This is stuff that we've never had, this kind of review, especially now that standards are evolving. I'd like to see Jane or someone come in and say, 'These are the things you should teach.' You know, making sure that we are covering what needs to be covered. I'd like to see the Teaching and Learning people come down and say, 'This is what we should teach.' I'd have no problem with that." |
| 5/21/14 | 9 | Q6. "Workshops would be great. What can we do to strengthen vocab? Or Jane come down and say, 'These are the terms that kids need to know, or least be exposed to a lot at this level.'" |

Table 4.38
***Assertion 1: Teachers rely on a limited repertoire of instructional approaches***.
*Theme 2: Repetition is the key to successful student acquisition of discipline-specific vocabulary.*

| ID | **Beliefs:** It is important to provide repeated exposure to new words in multiple contexts. | **Practices:** I provide repeated exposure to new vocabulary words in multiple contexts. | **Beliefs, Practices, & Additional Comments:** Open-Ended Prompt Responses |
|---|---|---|---|
| 1 | Agree | Agree | Repeated exposure |
| 2 | Strongly Disagree | Agree | |
| 3 | Strongly Agree | Strongly Agree | |
| 4 | Agree | Disagree | Daily repetition and exposure is used in question of the day and writing responses |
| 5 | Disagree | Agree | Teacher use of words; quiz and calling attention to words in lectures |
| 6 | Agree | Agree | Frequent use and student use |
| 7 | Strongly Agree | Agree | Repeated exposure; Multiple contexts; Properly defining, giving multiple examples, addressing misconceptions, allowing participants to ask clarifying questions. |
| 8 | Strongly Agree | Agree | |
| 9 | Agree | Agree | Repetition and drill; Exposure to vocab in assignments. Lots of repetition of terms used throughout the unit. Usually a packet of worksheets using the words multiple times. continued use of words throughout the year. |
| 10 | Strongly Agree | Agree | Using vocabulary in conversation. Verbally reviewing. Consistent review and quizzes on definitions |
| 11 | Agree | Agree | |
| 12 | Agree | Agree | |
| 13 | Strongly Agree | Agree | |
| 14 | Agree | Agree | Introduction to properly defined terms followed by repeated use of the term in various formats (direct instruction, embedded terms in sample questions, small group review of topic with specific and proper use of terms). |
| 15 | Strongly Agree | Agree | |
| 16 | Agree | Agree | I verbally ask for definitions during lectures and note taking |

| | | | |
|---|---|---|---|
| 17 | Strongly Agree | Agree | Repetition, discussion, assessment; Repetition, reading, discussion |
| 18 | Strongly Agree | Agree | Writing and defining vocabulary words. Telling a classmate the words and practicing the words with a classmate. |
| 19 | Strongly Agree | Agree | practice |
| 20 | Agree | Strongly Agree | I hand out a list of terms that will be used in the unit on the first day and have them define the words and then take a quiz a couple of days later. I choose terms that will be used throughout the unit through lectures, reading, videos and homework. |
| 21 | Agree | Agree | |
| 22 | Strongly Agree | Strongly Agree | Repetition in class |
| 23 | Agree | Agree | Repetition in rehearsal, lessons and written work. Multiple examples |
| 24 | Strongly Agree | Agree | Providing students opportunities to write and discuss using the vocabulary, Provide description to students |
| 25 | Strongly Agree | Strongly Agree | |
| 26 | Strongly Agree | Agree | |
| 27 | Agree | Disagree | |
| 28 | Agree | Agree | |
| 29 | Agree | Disagree | |
| 30 | Agree | Disagree | We go through them together on the board, they write them down, they are used in the reading. They then should use them in the assignment to reinforce them. As described above...Try to have them write them down, discuss them, and then use them in assignments. |
| 31 | Strongly Agree | Agree | Having students interact with the terms several times throughout the lesson. Write definitions, read them in context, and formally assess them just to name a few. |
| 32 | Agree | Disagree | Everyday music rehearsals |
| 33 | Agree | Agree | Defining words during classroom presentations or discussing definitions that students discovered during their studies. Seeing and hearing words during presentations and class discussion. |
| 34 | Strongly Agree | Strongly Agree | |
| 35 | Agree | Agree | |
| 36 | Strongly Agree | Strongly Agree | |

| | | | |
|---|---|---|---|
| 37 | Strongly Agree | Agree | I really try to expose vocabulary and concepts multiple times and in multiple ways to work the students towards mastery. |
| 38 | Agree | Agree | keeping a notebook, recording words and their definitions from the glossary, reading, listening to video |
| 39 | Strongly Agree | Strongly Agree | |
| 40 | Agree | Agree | Discussion, reading, listening to lecture |
| 41 | Agree | Disagree | Repetition; practice in performance |

Table 4.39
***Assertion 1: Teachers rely on a limited repertoire of instructional approaches***.
*Theme 2: Students learn best when a combination of word learning strategies are used.*

| ID | Beliefs: It is important to provide students with strategies to foster independent word learning. | Practices: I provide students with strategies that foster independent word learning. | Beliefs, Practices, & Additional Comments: Open-Ended Prompt Responses |
|---|---|---|---|
| 1 | Agree | Agree | |
| 2 | Strongly Disagree | Agree | |
| 3 | Strongly Agree | Agree | Multiple avenues- models, diagrams, discussion, notes, brainstorms, exploring Latin/Greek roots, flashcards or foldables, reading text, etc. |
| 4 | Agree | Disagree | |
| 5 | Agree | Agree | |
| 6 | Agree | Agree | |
| 7 | Agree | Agree | |
| 8 | Agree | Disagree | Looking at the words used in context in the Social Studies book. vocab squares, flip books |
| 9 | Agree | Agree | |
| 10 | Agree | Agree | |
| 11 | Agree | Disagree | |
| 12 | Strongly Agree | Strongly Agree | |
| 13 | Strongly Agree | Agree | |
| 14 | Strongly Agree | Disagree | |
| 15 | Disagree | Agree | |
| 16 | Strongly Agree | Strongly Agree | use words in concept web or create concept webs; introducing word parts and prefixes, suffixes, and root words |
| 17 | Agree | Disagree | |
| 18 | Strongly Agree | Agree | |
| 19 | Strongly Agree | Agree | |
| 20 | Agree | Agree | |
| 21 | Agree | Agree | Figuring it out from the context it is used |
| 22 | Strongly Agree | Agree | |
| 23 | Agree | Agree | |
| 24 | Agree | Disagree | Teaching Word Parts; Ask students to generate analogies, Word/picture associations |

| | | | |
|---|---|---|---|
| 25 | Strongly Agree | Agree | Latin roots, prefixes and suffixes; concept mapping, word 'dissection', compare/contrast, writing conclusions and explanations, examples/non-examples, word relationships/hierarchies |
| 26 | Agree | Disagree | |
| 27 | Strongly Agree | Agree | choose different methods of reviewing vocabulary words before tests: concept squares, acrostics, word pictures, concept and mind maps, games. |
| 28 | Agree | Agree | |
| 29 | Strongly Agree | Strongly Agree | I have taught students several methods for working with new vocabulary from the traditional 3 x 5 notecard, to digital vocabulary tools such as StudyBlue and Quizlet, to using the Frayer Model. |
| 30 | Agree | Agree | |
| 31 | Strongly Agree | Agree | |
| 32 | Disagree | Strongly Disagree | |
| 33 | Strongly Agree | Strongly Disagree | |
| 34 | Agree | Disagree | |
| 35 | Agree | Agree | |
| 36 | Strongly Agree | Agree | I use vocabulary squares. |
| 37 | Agree | Agree | Concept squares, Looping review game |
| 38 | Agree | Agree | |
| 39 | Agree | Agree | |
| 40 | Agree | Agree | |
| 41 | Agree | Agree | |

Table 4.40

***Assertion 1: Teachers rely on a limited repertoire of instructional approaches***.

*Theme 3: Visual Connections to discipline-specific terms improves student comprehension.*

| ID | Beliefs, Practices, Instructional Practice: Open-Ended Prompt Responses |
|----|---|
| 1 | |
| 2 | presentations |
| 3 | |
| 4 | Students create a visual with the word, definition, draw a picture to illustrate the word and apply the word by using it in their own writing, Students make a foldable visual with the definition and the word |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | Exposure to vocab in labs. Labs with the vocab words in them. |
| 10 | |
| 11 | |
| 12 | Notes, Drawing pictures, Acting out words, Making Taboo Cards |
| 13 | Pictowords; chart: picture, definition, use in a sentence |
| 14 | |
| 15 | I also make sure to include the correct terms when it comes to laboratory experiences. Providing labs. |
| 16 | |
| 17 | |
| 18 | Labeling diagrams. |
| 19 | demonstrating (showing what they have learned through creative cutting techniques), drawing; demonstrating and having students demonstrate; My subject area lends itself naturally to be "fun" with vocab terms since it is a hands on interactive foods and nutrition curriculum. |
| 20 | |
| 21 | |
| 22 | Class Game/Demonstration; Re-Teach via image-to-word examples; The physical application and modeling in art seems to help in retention of the vocabulary. Students have a concrete process (i.e. incising their pottery, or incising their scratch art disk), an actual physical demonstration to apply the word. |
| 23 | |
| 24 | Role Playing |
| 25 | |
| 26 | Demos, Labs, PPT, Videos, Notes etc |
| 27 | |
| 28 | |
| 29 | Reflective journaling using apps on their device or notebook using the Frayer model. |

| 30 | |
|----|---|
| 31 | |
| 32 | Visual Aids in the classroom |
| 33 | |
| 34 | |
| 35 | |
| 36 | |
| 37 | |
| 38 | |
| 39 | Learning the names of the kitchen tools by using the tools. Watching demos and I refer to the correct names of the tools. Short quizzes for proper tool identification. Drawers have labels to help return correct tool to the correct storage place. Videos with pictures of equipment. |
| 40 | |
| 41 | |

Table 4.41
***Assertion 2: Teachers draw from their classroom and within-district experiences***.
*Themes 1-4: Teacher Experience, Textbooks, Colleagues/PLC, District PD*

| ID | **Theme 1:** Teacher experience (discipline-specific words and previous students' difficulties) drives the selection of words for instruction. | **Theme 2:** Textbooks are viewed as a resource as it pertains to selecting words for instruction. | **Theme 3:** Within district, collegial collaboration is the number one source for learning to teach vocabulary. | **Theme 4:** District professional development is the preferred professional approach for learning vocabulary instructional strategies. |
|---|---|---|---|---|
| 1 | | | Colleagues/ PLC | Professional Development (workshops) |
| 2 | | | Colleagues/ PLC | |
| 3 | | Textbooks | | Professional Development (workshops) |
| 4 | highlighted words in the textbook words that students note are difficult or unfamiliar Words that I believe are noteworthy to understand the meaning of the content | | Colleagues/ PLC | |
| 5 | | | | |
| 6 | Self-exploration in the art field. | Textbooks; text I am using (newspaper, textbook, magazine article) | Colleagues/ PLC | Professional Development (workshops), local networking sessions; It would be nice to add to staff development, opportunities for teachers to take credit bearing classes at the high school related to best practice strategies, such as reading and vocabulary. Marlee Eret offered a class here, through Hamline, at the high school that |

| | | | | |
|---|---|---|---|---|
| | | | | about 15 people took and then we applied what we learned in our classes and shared our experiences. It was a wonderful, convenient, networking opportunity. |
| 7 | I look for words that are relevant and have a direct connection to the content, skill, technology that I am training on. I select the words that are critical for understanding and applying the instructional strategy with technology. | Textbooks | | |
| 8 | | Textbooks | | |
| 9 | Personal experience in education; what words I think are important to teach the topic | Checking the vocabulary words in the lessons of the textbook. Textbooks | Colleagues/ PLC | Professional Development (workshops) |
| 10 | words I have come across over the years of teaching that students commonly don't know. | | Colleagues/ PLC | Professional Development (workshops) |
| 11 | | | Colleagues/ PLC | Professional Development (workshops) |
| 12 | Pre-reading and selecting words that I know from my experience will be challenging and that are important / relevant or them to comprehend the readings | | | Professional Development (workshops) |
| 13 | | | Colleagues/ PLC | Professional Development (workshops) |
| 14 | | textbooks, Textbooks | Colleagues/ PLC | |

| | | | | |
|---|---|---|---|---|
| 15 | | Textbooks | Colleagues/ PLC | |
| 16 | | Textbooks | Colleagues/ PLC | Professional Development (workshops) |
| 17 | | using the book word bank in each chapter, Textbooks | Working with reading specialists in our school | Professional Development (workshops); I have gone to staff development workshops or mini-sessions that have been really helpful from M. Eret. |
| 18 | | | Colleagues/ PLC | |
| 19 | | | Colleagues/ PLC | Professional Development (workshops) |
| 20 | | | | |
| 21 | | Textbooks | Colleagues/ PLC | Professional Development (workshops) |
| 22 | | | agreement among colleagues who teach same subject concurrently; Colleagues/ PLC | |
| 23 | | | | |
| 24 | Does the word represent an idea that is important to understanding the concept? Does the word represent a specific part/structure necessary for understanding? Does the word thread through multiple topics/concepts? | Textbook references (bolded text); Textbooks | Curriculum development with peers and myself; Colleagues/ PLC | Professional Development (workshops) |
| 25 | | | Colleagues/ PLC | |

| | | | | |
|---|---|---|---|---|
| 26 | | Textbooks; Perusing the reading assignments | | |
| 27 | | Textbooks | Colleagues/ PLC | |
| 28 | | terms indicated in the textbook; Textbooks | Colleagues/ PLC | |
| 29 | Identifying words that I believe students are unfamiliar with based on state geography standards and my experience in teaching the subject matter for several years. | Using the standards and various textbooks to pick out the words that are crucial for Social Studies | | Professional Development (workshops) |
| 30 | | Textbooks; Textbook content | Colleagues/ PLC | Professional Development (workshops) |
| 31 | | Previewing all classroom readings and materials for potential vocabulary obstacles. | Colleagues/ PLC | |
| 32 | | Textbooks | Colleagues/ PLC | Professional Development (workshops) |
| 33 | Terms that I know will be on the unit test and/or are found in the state standards. | Textbooks; Choosing words that are found in my curriculum, whether they are specific to that or just general terms that will be used. | Colleagues/ PLC | |
| 34 | professional experience | Textbooks | Colleagues/ PLC | Professional Development (workshops) |

| | | | | |
|---|---|---|---|---|
| 35 | | I typically use words that come along with the document-based questions I use and then I put them on the notes power point and go through them. | Colleagues/ PLC | |
| 36 | My standards and main topics in my curriculum. | Textbooks | Colleagues/ PLC | Professional Development (workshops) |
| 37 | | Terms that are bold faced in a text that the students will be reading. | | Professional Development (workshops) |
| 38 | | key words from the chapters; Textbooks | Colleagues/ PLC | |
| 39 | | key words from each chapter, important historical people and events; Textbooks | Colleagues/ PLC | |
| 40 | | | | Professional Development (workshops) |
| 41 | | Textbooks | | |

Appendix E

Chapter 5: Case Study Analysis Tables

Table 5.1
*Case Studies: Beliefs Self-Assessment*

| Beliefs Self-Assessment | Dan | Mark | Rick |
|---|---|---|---|
| It is important to dedicate a regular portion of classroom lessons to vocabulary instruction. | Disagree | Strongly Agree | Agree |
| It is important to provide repeated exposure to new words in multiple contexts. | Agree | Strongly Agree | Agree |
| It is important to allow sufficient practice to support word learning. | Agree | Agree | Agree |
| It is important to give sufficient opportunities to use new vocabulary in a variety of contexts (e.g. reading, writing, discussion). | Agree | Agree | Agree |
| It is important to provide students with strategies to foster independent word learning. | Agree | Agree | Strongly Agree |

Table 5.2
*Case Studies: Instructional Practice*

| Instructional Practice | Dan | Mark | Rick |
|---|---|---|---|
| I dedicate a portion of classroom lessons to vocabulary instruction. | Agree | Disagree | Agree |
| I provide repeated exposure to new vocabulary words in multiple contexts. | Agree | Agree | Disagree |
| I allow sufficient practice to support vocabulary word learning. | Disagree | Disagree | Agree |
| I give sufficient opportunities to use new vocabulary in a variety of contexts (e.g. reading, writing, discussion). | Disagree | Disagree | Agree |
| I provide students with strategies that foster independent word learning. | Agree | Disagree | Agree |

Table 5.3

*Case Studies: Influential Sources on Vocabulary Instruction*

| Influential Sources | Dan | Mark | Rick |
|---|---|---|---|
| Administration | | | |
| Colleagues/PLC | x | x | x |
| Preservice/Undergraduate Coursework | x | | |
| In-service/Graduate Coursework | | | x |
| Professional Development (workshops) | | | x |
| Professional Journals | | | x |
| Textbooks | x | | x |
| Other | x | | |

Table 5.4

*Case Studies: Word Selection Process*

| Dan | Mark | Rick |
|---|---|---|
| "Well let's see, I look at the subject matter we are going to teach. I look at, What are some words that are going to be hard to understand? Like birds, What are some words like gizzard, crop, fledgling. These might be hard. Depending upon what we do, some of our words come more from a textbook. Once in a while we will do notes, but I teach them throughout the unit." | "Well, the process is I select vocab terms that I think are going to help kids understand the concepts. That's about as simple and complicated as it gets. I might seek assistance from the textbook - the publisher - what do they think is important. Supplementary materials - you know - I might look at what vocab is presented there." | "I uh kind of use a combination of prior knowledge words. The concepts and the words from units that students have struggled with. I use prior knowledge from geographic concepts and models from prior years that students have struggled with to determine my selections." |
| Dan's experience drives the selection of words for instruction, as he noted, "I look at the subject matter we are going to teach. I look at, What are some words that are going to be hard to understand? What are some words like gizzard, crop, fledgling. These might be hard." Additionally, Dan relies on words to be selected for instruction from what the textbook provides, having stated, "Depending upon what we do, some of our words come more from a textbook." | The strongest determinant of the words that Mark selects for instruction was his teaching experience. He stated, "Well, the process is I select vocab terms that I think are going to help kids understand the concepts." He viewed the textbook ("I might seek assistance from the textbook - the publisher - what do they think is important) and "Supplementary materials - you know - I might look at what vocab is presented there" as contributors to this process as well. | Rick explained that his professional experience drives word selection or instruction ("The concepts and the words from units that students have struggled with. I use prior knowledge from geographic concepts and models from prior years that students have struggled with to determine my selections."). He also claimed to leverage previously learned concepts ("I uh kind of use a combination of prior knowledge words."). |

Table 5.5
*Case Studies: Informants*

| Dan | Mark | Rick |
|---|---|---|
| "It's pretty much me. We've never had a science person come in and say, 'This is what you will teach.' I'd like someone to come in and, say, in a unit on evolution, 'These are the terms you should teach.' This is stuff that we've never had, this kind of review, especially now that standards are evolving. I'd like to see Jane or someone come in and say, 'These are the things you should teach.' You know, making sure that we are covering what needs to be covered. I'd like to see the Teaching and Learning people come down and say, 'This is what we should teach; I'd have no problem with that.' | "Umm...standards. College board. Colleagues. And then textbooks." | "Uh, let's see, I would say uh, textbooks and prior years' students. For example, a um, geographic concept of cultural diffusion is a vocabulary word that students in the past have struggled with, and so I spend more time with this concept." |
| Dan's comment that, "It's pretty much me" reinforced his position and experience in it as the main driver in the decision-making process. This response also included a call for and/or a reliance on district-level personnel for selecting words for instruction. | Mark provided a hierarchy of resource consultation that informs his choices. The first was "standards." This was followed by referring to the Advanced Placement (AP) "College board," then "Colleagues. And then textbooks." | Rick explained that both "textbooks and prior years' students" informs his decision-making. He noted that previous experience with student learning of course concepts was vital in this regard ("For example, a um, geographic concept of cultural diffusion is a vocabulary word that students in the past have struggled with, and so I spend more time with this concept."). |

Table 5.6
*Case Studies: Student Learning*

| Dan | Mark | Rick |
|-----|------|------|
| "Experience. We do a lot of hands on things. Arthropods, insects, crustaceans. We put out things on the lab tables and look at them. We give out a list of words that they look up in the textbook. We've done some concept squares, like someone taught us. You know, where we say, 'Here's four things, so what goes with that?' Or, 'Here's a term, so what's four things that goes with the term?' Sometimes T-charts... Sometimes we will do vocabulary games like Bingo. I guess it is a variety of ways." | "On their own. No (chuckles at his comment). Well... Hmmm... Well, I'm hoping... the best way... umm... Here's my gut feeling in that… Anything visual that we do - a lot of role playing, posters, ... yeah." | "I really have a combination of tools the students are using. More and more are using flashcards - either a digital version or traditional flashcard. Some students are using the Frayer Model. Some students just write down terms in their notebook and use that to study." |
| Dan claimed that multiple experiences with the words was crucial to learning content area terms. While he noted that a lot of "hands on things" are undertaken, his list includes visual/auditory association ("We put out things on the lab tables and look at them," "Bingo," and "We give out a list of words that they look up in the textbook.") and student writing ("concept squares" and "sometimes T-charts"). | Dealing with and creating visual images best describe Mark's mindset about how students best learn the terms they need to know. He relies on, "Anything visual that we do - a lot of role playing, posters, ...yeah." | Rick's belief about how students best learn terms in his content area focused on instructional strategies ("I really have a combination of tools the students are using."). The strategies he described are writing focused ("flashcards - either a digital version or traditional flashcard. Some students are using the Frayer Model. Some students just write down terms in their notebook and use that to study."). |

Table 5.7

*Case Studies: Instructional Approaches*

| Dan | Mark | Rick |
|-----|------|------|
| "I basically find words that I think are going to be important and I just use them a lot. I use them in conversation. Every time I say it, I feel like they get closer to understanding it. A lot of repetition. I keep just throwing it at 'ya." | "Umm...how would you say, just basic definition. Not just define the word, it's you have to know the word in order to answer the questions. What would that be? application? Application of the term, yeah. I still use the VVWA cards. Concept Maps." | "I teach them various tools. I encourage them to use the tools for learning; they use the tools they've been taught. The Frayer model, the StudyBlue or Quizlet Apps. I use formative assessments to check comprehension and vocabulary. At least once a week we will do a check-in quiz on vocabulary words." |
| Dan stated his professional experience was a key selection contributor, "I basically find words that I think are going to be important," while the ways in which he teaches vocabulary is highly dependent on the use of repetition (I just use them a lot. I use them in conversation. Every time I say it, I feel like they get closer to understanding it. A lot of repetition. I keep just throwing it at 'ya."). | Mark cited the use of two specific instructional strategies that aid his instruction, "I still use the VVWA cards." and "Concept Maps." Application of the terms was of central importance, for Mark wanted students to "Not just define the word," rather, "it's you have to know the word in order to answer the questions." | Rick explained that strategies ("The Frayer model, the StudyBlue or Quizlet Apps") must be explicitly taught ("I teach them various tools. I encourage them to use the tools for learning; they use the tools they've been taught."). He also discussed his weekly use of "formative assessments to check comprehension and vocabulary." |

Table 5.8

*Case Studies: Instructional Background Knowledge*

| Dan | Mark | Rick |
|---|---|---|
| "Trial and error. I've never been formally taught vocab and vocab methods. Other than talking with Brian. Brian would be a sounding board. I'd talk to him and then I'd use some things and Joe would use less. We are trying to throw a lot of things at kids. I think if we slowed down and had maybe 10 units with 10 words per unit. You know, if we said, 'You have to learn these,' that might be better. But we introduce them to a lot of stuff, and that is what we want too. So that someday, they might think back and say, 'I recognize that from... or I know that has something to do with…' I consider us an introductory course where kids are just getting their feet wet with with a lot of topics. When I was a kid, I had a teacher who was like that. She introduced us to a lot of things, and man, when I got to my first BIO class in college, I was prepared because I had been introduced to a lot when I first took Life Science." | "Some guy at the middle school. I have a three-ring binder. Good archaic stuff. Most of what I've done with vocabulary has come from work at the middle school or the lame stuff, you know, we do in our traditional classrooms. 'Right there,' you know, 'here it is.'" | "Several sources - district personnel. Digital tools from a TIES workshop. I have read some literacy books through classes I have taken." |

Table 5.8 (continued)
*Case Studies: Instructional Background Knowledge*

| Dan | Mark | Rick |
|---|---|---|
| Dan explained that his knowledge base for teaching vocabulary stems most prominently from his professional experience and approach to teaching Science ("Trial and error. I've never been formally taught vocab and vocab methods." "But we introduce them to a lot of stuff, and that is what we want too. So that someday, they might think back and say, 'I recognize that from... or I know that has something to do with…' I consider us an introductory course where kids are just getting their feet wet with a lot of topics."). He added that colleagues do play a part ("Brian would be a sounding board. I'd talk to him and then I'd use some things"). | Collegial collaboration has provided the lion's share of Mark's instructional base. Specifically, he noted that "Most of what I've done with vocabulary has come from work at the middle school." This was expressed as his professional experience; rather he has drawn from, ""Some guy at the middle school" and "a three-ring binder." The comment related to "traditional classrooms" speaks to the manner in which he was taught and his pre-service (student teaching) experience. | Rick has drawn from a variety of sources to learn about teaching vocabulary. One is within the school district ("district personnel"), and the other two are outside of the district ("Digital tools from a TIES workshop. I have read some literacy books through classes I have taken."). |

Table 5.9

*Case Studies: Professional Support Opportunities*

| Dan | Mark | Rick |
|-----|------|------|
| "Workshops would be great. What can we do to strengthen vocab? Or Jane come down and say, 'These are the terms that kids need to know, or least be exposed to a lot at this level.'" | "Informal discussion with colleagues." | "Well I always look for new ideas in instruction, content reading instruction - professional development opportunities. Generally, I look for these within the district. Cost is a factor when looking at these opportunities. I also know we have quality resources here." |
| Dan identified district-level professional development ("Workshops would be great. What can we do to strengthen vocab?") and a district "commandment" ("Or Jane come down and say, 'These are the terms that kids need to know, or least be exposed to a lot at this level.'") as potentially of the greatest aid to him in vocabulary instruction. | Mark again noted collegial conversation as the preferred helpful professional opportunity as it concerns vocabulary. | Opportunities Rick cited that might be of most help to him were solely those within the district ("Generally I look for these within the district. Cost is a factor when looking at these opportunities. I also know we have quality resources here."). Apparently, district personnel and professional development greatly influences his use of instructional strategies. |

Table 5.10
*Case Studies: Observation Schedule*

| Participant | OB #1 | Class HR | TOD | Member Check | OB #2 | Class HR | TOD | Member Check |
|---|---|---|---|---|---|---|---|---|
| Dan | 5/21/14 | 1 | 8:20 am | 8:43 am | 5/27/14 | 1 | 8:20 am | 10:30 am |
| Mark | 5/1/14 | 3 | 10:14 am | 12:19 pm | 5/14/14 | 3 | 10:44 am | 12:19 pm |
| Mark | 5/1/14 | 4 | 11:12 am | 12:30 pm | 5/14/14 | 4 | 11:23 am | 12:19 pm |
| Rick | 5/7/14 | 1 | 8:53 am | 9:43 am | 5/20/14 | 1 | 8:10 am | 8:53 am |
| Rick | 5/7/14 | 2 | 9:49 am | 10:22 am | 5/20/14 | 2 | 9:50 am | 10:23 am |

Table 5.11
*Case Studies: Dedoose Descriptors: Teacher Talk*

| Descriptor Name | Memo | Descriptor Type | List Data |
|---|---|---|---|
| ID | Teacher ID Number | Number | |
| First | First Name | Text | |
| Teaching Assignment | Primary Teaching Assignment FY 2013-14 | List | Science, Social Studies |
| Course | Content Area Specific Branch | List | APBio, HumanGeo, Biology |
| Hour | Class Period | List | 1, 2, 3, 4 |
| Date | Date of Teacher Observation | Date | |
| Item | Teacher Talk Item Number Per Observation | Number | |
| Teacher Talk | Actual Words Spoken by the Teacher during the Observation | Text | |

Table 5.12

*Case Studies: Discipline-Specific Exposure: Repetition*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|-----|-------------------------------------------|
| 24 | 1 | 21-23 | ● Voltage potential says that there is a different potential across the membrane.<br>● ATP produced the potential energy.<br>● If you have potential energy, you have the potential to do work. That's the only way cells can do work. |
| 24 | 1 | 24-25 | ● Let's pick up at the sodium-potassium pump.<br>● Is there anything in there regarding the sodium-potassium pump? |
| 24 | 1 | 30-32 | ● Here's a graph of resting potential.<br>● When that opens up sodium ions go into the cell.<br>● Magic number for animal cells (circling -55,000), things take off. The voltage gate opens, sodium channels open; this is the magic number, the flood of sodium. |
| 24 | 2 | 33-36 | ● Action Potential, I've put up there the two factors starting with resting potential.<br>● You'll have signal transmission within.<br>● You'll have transmission between the neuron.<br>● How does it get the resting potential? |
| 24 | 2 | 37-38 | ● What would ATPs run in order to get negative in and positive out? a Sodium-Potassium pump<br>● 3 potassium out and 2 sodium in. If you release 3 outside and 2 inside then the inside of the cell… 70 millivolts, this is the resting potential number. That's when cells that are at resting potential are not stimulated. |
| 24 | 2 | 44-45 | ● What is a stimulus? pressure, stimulus<br>● Sensory neurons stimulated by pressure or touch... |
| 29 | 1 | 46 | We are going to do a culture check-in for this unit. Journals on culture are available for your usage. |
| 29 | 4 | 53-54 | ● First, we will start with the concept of COUNTRY. How many of you have seen this word before?<br>● In terms of countries, we'll just agree that there are about 200. |

Table 5.12 (continued)
*Case Studies: Discipline-Specific Exposure: Repetition*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 9 | 1 | 55-59 | ● MN Mammal Packets . . . Today, folks, we are going to spend one class period on Minnesota mammals.<br>● We are going to read an article on mammals. Tomorrow, we will have a video on mammals; then we will have a quiz on birds and mammals.<br>● So, we got Minnesota mammals today.<br>● All of the information about Minnesota mammals that you need to complete the packet is in the reading and the packet itself. There will be a quiz tomorrow, before that we will watch an Eyewitness video on mammals.<br>● I've got the Minnesota mammals packets. |
| 9 | 2 | 60-63 | ● Real quick before we start today with DNA; we're going to start something new today.<br>● Look at DNA. How many of you have heard of DNA before? How many of you have heard of it? Raise your hand if you have heard of it before. Where have you heard it? Where? Where have you heard it besides in Science?<br>● The nutty professor, right, where he makes the thing, where he makes the, what did the nutty professor do? So, he took DNA from somebody else. He changed his own DNA to make himself skinny.<br>● Alright, so this is DNA. Up on the left I think it's actual DNA on probably an electron microscope, you can't even see it. The one on the right is a model. |
| 9 | 2 | 64 | Next one: DNA is inside the nucleus of the cell. It is well-protected. It has a cell membrane, a cytoplasm, a nuclear membrane and right inside here you have DNA. What did we say about the nucleus a long time ago? What does the nucleus do for the cell? What is the nucleus to a cell? It's the command center, the control center; it tells us what to do, what you're going to look like and so forth. |
| 9 | 2 | 66-67 | ● SHAPE - double-helix, spiral, long together to form chromosomes. So, we're gonna take this DNA, and the DNA is gonna form a gene, and the gene then is going to form chromosomes.<br>● Anybody heard of chromosomes before? We want to know what a gene is before we form a chromosome - or talk about it. |

Table 5.12 (continued)
*Case Studies: Discipline-Specific Exposure: Repetition*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|---|---|---|---|
| 9 | 2 | 68 | Last thing on here, a French guy Chargraff - French guy, a guy from France, he came up with a rule. He said that if you take and look at this DNA, that this base Adenine - remember we have Adenine, Thymine, Cytosine, and Guanine - anyway that Adenine always pairs with Thymine. You have Adenine always pairs with Thymine. This will be important when we start to replicate the DNA. |
| 24 | 4 | 77 | DNA fragments of known sizes, the sizes on the ladders are in kilobase base pairs. These are the known lengths kilobases. 1,000 base pairs, so, which is the approximate size of the fragment? |
| 24 | 3 | 81 | There's a lot of different ways to get DNA. Sometimes the DNA does not have enough. A hair follicle - a very small amount of DNA. Analyzing and comparing the copied DNA from crime scenes and suspects. |

Table 5.13

*Case Studies: Discipline-Specific Exposure: Repetition: Restatement*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 1 | 1 | Voltage potential says that there is a different potential across the membrane. If you have potential energy, you have the potential to do work. That's the only way cells can do work. |
| 24 | 1 | 2 | What's true about the change inside the neuron vs. outside the neuron? |
| 24 | 1 | 3 | If you have potential energy, you have the potential to do work. That's the only way cells can do work. |
| 24 | 2 | 5 | Voltage gated channels, what are voltage gated channels? |
| 24 | 2 | 6 | What is a stimulus? pressure, stimulus |
| 29 | 3 | 7 | How many countries or states are there in the world? About 200 countries in the world today. |
| 9 | 1 | 8-9 | • MN Mammal Packets . . . Today, folks, we are going to spend one class period on Minnesota mammals.<br>• We are going to read an article on mammals. Tomorrow, we will have a video on mammals; then we will have a quiz on birds and mammals. |
| 9 | 2 | 10-11 | • Look at DNA. How many of you have heard of DNA before? . . .<br>• Alright, so this is DNA. Up on the left I think it's actual DNA on probably an electron microscope, you can't even see it. |
| 9 | 2 | 12 | Anybody heard of chromosomes before? We want to know what a gene is before we form of a chromosome - or talk about it. |
| 9 | 2 | 13-14 | • He said that if you take and look at this DNA, that this base Adenine - remember we have Adenine, Thymine, Cytosine, and Guanine - anyway that Adenine always pairs with Thymine. You have Adenine always pairs with Thymine. This will be important when we start to replicate the DNA.<br>• You may not remember them all this week, but if you can remember that A always pairs with T you are on your way. You have C always pairs with G. You have Adenine always pairs with Thymine. You have C always pairs with G. If you can remember these, then you have a pretty good handle on it. |
| 24 | 4 | 15 | If red blood cells don't have DNA, what component of blood contains DNA? White Blood Cells |

Table 5.13 (continued)
*Case Studies: Discipline-Specific Exposure: Repetition: Restatement*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 4 | 16-18 | <ul><li>There's a lot of different ways to get DNA. Sometimes there isn't enough DNA to test.</li><li>Examples of DNA Analysis - Thomas Jefferson. There was always speculation that he had fathered children with his mistress. In 1998 the DNA analysis supported it.</li><li>Copy, add a primer. In order to copy DNA, we have to have a primer to start. Why is that?</li></ul> |
| 24 | 4 | 19 | What are STRs? What is STR analysis? . . . Short Tandem Repeats - the noncoding region of our DNA. We used to call it Junk DNA, but now we know it functions in genes expression versus producing traits. |
| 24 | 4 | 20 | AGAT is a four-letter sequence; 4-6 that usually repeat. It is usually highly variable within a population. You and I are highly variable compared to each other. |
| 24 | 4 | 21 | There are 13 different STR in DNA profiling. These are 2 of the 13 STR. |
| 24 | 3 | 22 | There's a lot of different ways to get DNA. Sometimes the DNA does not have enough. A hair follicle - a very small amount of DNA - Analyzing and comparing the copied DNA from crime scenes and suspects. |

Table 5.14

*Case Studies: Discipline-Specific Exposure: Repetition: Acronyms*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 1 | 1 | It's ARA in its environment. |
| 24 | 1 | 2 | What's ARA again? |
| 24 | 1 | 4 | ATP produced the potential energy. |
| 24 | 1 | 5 | When they bond (T brings hands together) ATP! |
| 24 | 1 | 6 | Phosphates are cleaved off to create a ADP. |
| 24 | 1 | 7 | When it did, it opened and it released three positive charges. So the potassium bond, without ATP, because of the interaction it dumps two positives. |
| 24 | 2 | 8 | What would ATPs run in order to get negative in and positive out? |
| 9 | 2 | 9 | Look at DNA. How many of you have heard of DNA before? |
| 9 | 2 | 11 | Any of you watch, what is it called… CSI - Crime Scene Investigation? And maybe you've watched Law and Order and you've never heard 'em talk about DNA? |
| 9 | 2 | 12 | Well, they were able use DNA testing to run that DNA, the DNA that they found under the girl's fingernails. |
| 9 | 2 | 13 | DNA is actually called the code of life. Because the DNA is gonna sorta tell you what you are going to become. We all have DNA. |
| 9 | 2 | 14 | Next one: DNA is inside the nucleus of the cell. |
| 9 | 2 | 15 | This is the definition of DNA. Deoxyribonucleic Acid - DNA stores our genetic code. What does DNA do? |
| 9 | 2 | 16 | Two parts to DNA. |
| 24 | 4 | 18 | We're going to look at this DNA profiling. Where do we get DNA samples from? |
| 24 | 4 | 19 | If red blood cells don't have DNA, what component of blood contains DNA? White Blood Cells |
| 24 | 4 | 21 | PCR - Polymerase Chain Reaction |

Table 5.14 (continued)
*Case Studies: Discipline-Specific Exposure: Repetition: Acronyms*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|--------------------------------------------|
| 24 | 4 | 22 | How would you cut DNA? |
| 24 | 4 | 23 | In order to copy DNA, we have to have a primer to start. |
| 24 | 4 | 25 | What part of the DNA is negative? |
| 24 | 4 | 26 | DNA fragments of known sizes, the sizes on the ladders are in kilobase base pairs. |
| 24 | 4 | 27 | What are STRs? What is STR analysis? Because 99.9% of DNA is similar with each other, it doesn't prove that Earl didn't do it, but... Short Tandem Repeats - the noncoding region of our DNA. We used to call it Junk DNA, but now we know it functions in genes expression versus producing traits. |
| 24 | 4 | 28 | What makes STR useful in DNA testing? It's in the same place in the chromosome. |
| 24 | 4 | 29 | The two main properties of STR. Length and Location. If we know, we can use a restriction enzyme to cut them out. Cut them out, amplify them using PCR, then use a gel electrophoresis. |
| 9 | 2 | 30 | We're going to look at this DNA profiling. From your exposure to CSI… Isolate DNA from the crime scene and suspects. |
| 24 | 3 | 31 | There's a lot of different ways to get DNA. Sometimes the DNA does not have enough. A hair follicle - a very small amount of DNA. Analyzing and comparing the copied DNA from crime scenes and suspects. |
| 24 | 3 | 32 | Back to the steps in DNA profiling. We talked about what...red blood cells, semen, skin, lip prints, saliva. If you had just a few cells, it may not be enough. PCR - Polymerase Chain Reaction… Incredibly simple method for producing copies of DNA. |
| 24 | 3 | 34 | DNA polymerase is an enzyme. Where did the DNA polymerase we use come from? This DNA comes from a thermophilic bacteria, a heat loving bacteria, found in Old Faithful. This DNA works extremely well at hot temperatures. |
| 24 | 3 | 35 | Now they do a DNA. In a lot of cases they do a DNA profile. Because of PCR, they can use gel electrophoresis and analyze the DNA. |

Table 5.15
*Case Studies: Discipline-Specific Exposure: Repetition: Pose a Question*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 2 | 1 | How does it get the resting potential? |
| 24 | 2 | 2 | If the inside of the cell you have a difference in charges, how do we get to a negative inside and a positive outside? |
| 24 | 2 | 3 | What would ATPs run in order to get negative in and positive out? a Sodium-Potassium pump |
| 24 | 2 | 4 | Where are we at on the neuron? |
| 24 | 2 | 5 | What is a stimulus? pressure, stimulus |
| 29 | 2 | 6 | Why is this question not hierarchical? |
| 29 | 3 | 7 | How many internal states do we have? 50, 48 contiguous states, but with Alaska and Hawaii, that's 50. |
| 29 | 3 | 8 | They have certain rights and national government has certain rights. Why do we have this division of power? Separate components can have a greater say in making their own laws. |
| 29 | 3 | 9 | How many countries or states are there in the world? About 200 countries in the world today. |
| 9 | 2 | 10 | What did we say about the nucleus a long time ago? What does the nucleus do for the cell? What is the nucleus to a cell? It's the command center, the control center; it tells us what to do, what you're going to look like and so forth. |
| 24 | 4 | 11 | If red blood cells don't have DNA, what component of blood contains DNA? |
| 24 | 4 | 12 | Copy, add a primer. In order to copy DNA, we have to have a primer to start. Why is that? |
| 24 | 4 | 13 | Where did the DNA polymerase we use come from? This DNA comes from a thermophilic bacteria, a heat loving bacteria, found in Old Faithful. This DNA works extremely well at hot temperatures. After one cycle we have two copies. Do it again...Hot to Cold. Hot to Cold. We use thermocycles. |
| 24 | 4 | 14 | Why do we need free nucleotides? |

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 4 | 15 | Why do we need two different primers? |
| 24 | 4 | 16 | Charge diffusion. Negative end at a positive. What part of the DNA is negative? The phosphate runs to the positive end, the red end, which is actually green in the diagram here. An electric current then allows fragments to move through this gel. |
| 24 | 4 | 17 | What are STRs? What is STR analysis? Because 99.9% of DNA is similar with each other, it doesn't prove that Earl didn't do it, but... Short Tandem Repeats - the noncoding region of our DNA. We used to call it Junk DNA, but now we know it functions in genes expression versus producing traits. |
| 24 | 4 | 18 | What makes STR useful in DNA testing? It's in the same place in the chromosome. |

Table 5.16
*Case Studies: Discipline-Specific Exposure: Repetition: Pronouns & Antecedents*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 1 | 3 | It's ARA in its environment. |
| 24 | 2 | 5 | So what direction does the signal travel? From which end to which end? OK - from the cell body to the… Then it moves through the long skinny part called the axon. Then finally it reaches the . . .? Terminal end. |
| 24 | 2 | 6-8 | ● How does it get the resting potential? <br> ● If you have equal amounts of positive and negative, wouldn't it be zero? <br> ● It is not an equal ratio. |
| 24 | 2 | 9 | There are other protein channels. They only open and close when voltage levels get to certain points. |
| 29 | 4 | 10 | What is one country that is not recognized by other states? TAIWAN. Taiwan is a small island off the coast of China. They believe that they're a country. China does not. China has enough military might to say, "Enough of this nonsense." |
| 9 | 2 | 11 | Look at DNA. How many of you have heard of DNA before? How many of you have heard of it? Raise your hand if you have heard of it before. Where have you heard it? Where? Where have you heard it besides in Science? |

Table 5.16 (continued)
*Case Studies: Discipline-Specific Exposure: Repetition: Pronouns & Antecedents*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|---|---|---|---|
| 9 | 2 | 12 | This is the definition of DNA. Deoxyribonucleic Acid. DNA stores our genetic code. What does DNA do? It tells what we are and who we can become. It defines us: the size of your feet, the size of your nose, and things like that... |
| 9 | 2 | 13 | That's supposed to make a simple molecule. I don't how this guy came up with it. I mean, he puts it together and all of a sudden it's a double helix. I don't know how he came up with it. |
| 24 | 4 | 14 | Back to the steps in DNA profiling. If you had just a few cells, it may not be enough. PCR - Polymerase Chain Reaction... . Incredibly simple method for producing copies of DNA. Cary Mullis was a lab technician who found it in 1983. It became available for commercial use and profiling in 1985. |
| 24 | 4 | 15 | How would you cut DNA? Use restriction enzymes. Heat up to 95 Celsius. What is going to happen? It breaks the bonds. Cool it down. Body temperature operates at 37 degrees Celsius. 55 degrees Celsius is still at protein denaturing for most organisms. |
| 24 | 4 | 16 | What makes STR useful in DNA testing? It's in the same place in the chromosome. |
| 24 | 3 | 17 | Back to the steps in DNA profiling. We talked about what...red blood cells, semen, skin, lip prints, saliva. If you had just a few cells, it may not be enough. PCR - Polymerase Chain Reaction Incredibly simple method for producing copies of DNA. Cary Mullis was a lab technician who found it in 1983. In 1985, it became available for commercial use and profiling, etc. |

Table 5.17

*Case Studies: Discipline-Specific Exposure: Repetition: Pronouns*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|---|---|---|---|
| 24 | 1 | 1-2 | • One of the things they have is transmembrane proteins.<br>• When they bond (T brings hands together) ATP! |
| 24 | 1 | 3 | When it did, it opened and it released 3 positive charges. So the potassium bond, without ATP, because of the interaction it dumps two positives. |
| 24 | 1 | 4 | When that opens up sodium ions go into the cell. |
| 24 | 2 | 5 | How does it get the resting potential? |
| 24 | 2 | 6-7 | • If you have equal amounts of positive and negative, wouldn't it be zero?<br>• It is not an equal ratio. |
| 9 | 2 | 8 | And this is now 30 years later, so they're going through the files and one thing they're going to get is a DNA sample. So, what they do is they waited at the local McDonald's. And the guy grabs a cup of coffee at McDonald's. Right?<br>As soon as he's done with his coffee cup, he throws it in the garbage. Well, what do the detectives do? Well, the detectives went over and got the cup from the garbage. Alright, and they brought it back to the lab and they were able to get enough cells like those you find from your cheek. Remember that lab we did way back when on cheek cells? Remember that? Well, anyway, they were able to get enough cells so that they could run it. Well, they were able use DNA testing to run that DNA, the DNA that they found under the girl's fingernails. They found out it was a match. |
| 9 | 2 | 9 | That's supposed to make a simple molecule. I don't how this guy came up with it. I mean, he puts it together and all of a sudden, it's a double helix. I don't know how he came up with it. |

Table 5.18
*Case Studies: Discipline-Specific Exposure: Repetition: Demonstrative Pronouns*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 1 | 1 | When that opens up sodium ions go into the cell. |
| 24 | 1 | 2 | Magic number for animal cells (circling -55,000), things take off. The voltage gate opens, sodium channels open; this is the magic number, the flood of sodium. |
| 24 | 2 | 3 | 3 potassium out and 2 sodium in… If you release 3 outside and 2 inside then the inside of the cell… -70 millivolts, this is the resting potential number. That's when cells that are at resting potential are not stimulated. |
| 29 | 1 | 4 | What is the most recent tool we've explored to support learning the terms? Right...Frayer Model This is the tool that uses a definition, characteristics, example, and picture. Remember you have options here that include a picture or example/non-example. |

Table 5.19
*Case Studies: Discipline-Specific Exposure: Repetition: Pronoun Predominance*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 9 | 2 | 1 | Look at DNA. How many of you have heard of DNA before? How many of you have heard of it? Raise your hand if you have heard of it before. Where have you heard it? Where? Where have you heard it besides in Science? |
| 9 | 2 | 2 | This is the definition of DNA. Deoxyribonucleic Acid. DNA stores our genetic code. What does DNA do? It tells what we are and who we can become. It defines us: the size of your feet, the size of your nose, and things like that. The information is passed on from one generation to the next. |
| 9 | 2 | 3 | That's supposed to make a simple molecule. I don't how this guy came up with it. I mean, he puts it together and all of a sudden, it's a double helix. I don't know how he came up with it. |

Table 5.20
*Case Studies: Discipline-Specific Exposure: Repetition: Pronoun & Antecedents*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|---|---|---|---|
| 9 | 2 | 1 | Look at DNA. How many of you have heard of DNA before? How many of you have heard of it? Raise your hand if you have heard of it before. Where have you heard it? Where? Where have you heard it besides in Science? |

Table 5.21
*Case Studies: Discipline-Specific Exposure: Nominalization*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|---|---|---|---|
| 24 | 4 | 3 | Who's the builder? DNA Polymerase. We are going to polymerize - and we can only add nucleotides to the three-prime end. DNA polymerase is an enzyme. |
| 24 | 3 | 4 | In order to copy DNA, we have to have a primer to start. Why is that? Who's the builder? DNA Polymerase. We are going to polymerize - in other words - we are going to add, well, we can only add nucleotides to the three-prime end. |

Table 5.22
*Case Studies: Discipline-Specific Exposure: Nominalization, Repetition, & Process*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|---|---|---|---|
| 24 | 4 | 1 | Who's the builder? DNA Polymerase. We are going to polymerize - and we can only add nucleotides to the three-prime end. DNA polymerase is an enzyme. |

Table 5.23

*Case Studies: Word Learning Strategies: Context Clues*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 1 | 4 | What is basic anatomy of a neuron (nerve cell)? |
| 24 | 1 | 5 | There is a potential voltage (potential energy). |
| 24 | 3 | 5 | DNA polymerase is an enzyme. Where did the DNA polymerase we use come from? This DNA comes from a thermophilic bacteria, a heat loving bacteria, found in Old Faithful. This DNA works extremely well at hot temperatures. That makes one cycle, two copies. Do it again. Hot to Cold. Hot to Cold. Thermocycles. |
| 29 | 2 | 7 | A common error for this question was hierarchical. Hierarchical is the diffusion to places of power or authority. |
| 29 | 2 | 8 | In an ethnic religion a person moves or relocates and brings their religion with them. Christianity is contagious diffusion, but it is not an ethnic religion. |
| 29 | 3 | 9 | Synonym for country - the word State. This is a different term to political geographers. State and Country mean the same thing. |
| 29 | 3 | 10-11 | ● In reference to our country, we are a Federal Republic. We divide power amongst states and D.C.<br>● How many internal states do we have? 50, 48 contiguous states, but with Alaska and Hawaii, that's 50. |
| 29 | 4 | 15 | They need to live somewhere. We call that territoriality; there are defined boundaries. |
| 29 | 4 | 16 | There is a synonym for the word country, the word state. This is a different term to political geographers. That is, for this group of people, state and country mean the same thing. In reference to our country, we are a Federal Republic. We divide power amongst states and D.C. |
| 29 | 4 | 17 | They have certain rights and national government has certain rights. Why do we have this division of power? Separate components can have more say in making their own laws. |
| 9 | 2 | 22 | DNA is actually called the code of life. |

Table 5.23 (continued)
*Case Studies: Word Learning Strategies: Context Clues*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|---|---|---|---|
| 24 | 4 | 27 | How would you cut DNA? Use restriction enzymes. Heat up to 95 Celsius. What is going to happen? It breaks the bonds. Cool it down. Body temperature operates at 37 degrees Celsius. 55 degrees Celsius is still at protein denaturing for most organisms. |
| 24 | 4 | 29 | Where did the DNA polymerase we use come from? This DNA comes from a thermophilic bacteria, a heat loving bacteria, found in Old Faithful. This DNA works extremely well at hot temperatures. After one cycle we have two copies. Do it again...Hot to Cold. Hot to Cold. We use thermocycles. |
| 24 | 4 | 30 | Short Tandem Repeats - the noncoding region of our DNA. We used to call it Junk DNA, but now we know it functions in genes expression versus producing traits. |
| 24 | 4 | 32 | The two main properties of STR. . . Length and Location. |
| 24 | 3 | 34 | DNA polymerase is an enzyme. Where did the DNA polymerase we use come from? This DNA comes from a thermophilic bacteria, a heat loving bacteria, found in Old Faithful. This DNA works extremely well at hot temperatures. That makes one cycle, two copies. Do it again. Hot to Cold. Hot to Cold. Thermocycles. |

Table 5.24
*Case Studies: Word Learning Strategies: Restatement*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 1 | 1-3 | • Describe how a "message" is sent down the neuron via voltage potential. <br> • There is a potential voltage (potential energy). <br> • Voltage potential says that there is a different potential across the membrane. |
| 24 | 2 | 4 | You'll have transmission between the neuron. |
| 29 | 2 | 5 | A common error for this question was hierarchical. Hierarchical is the diffusion to places of power or authority. |
| 29 | 2 | 6 | In an ethnic religion a person moves or relocates and brings their religion with them. Christianity is contagious diffusion, but it is not an ethnic religion. |
| 29 | 3 | 7-9 | • Synonym for country - the word State. This is a different term to political geographers. State and Country mean the same thing. I want you to be familiar with this term right away. <br> • Becoming a country or a state is kind of like forming a club. You make your own club, maybe even without being recognized by anyone. You decide who is in and who is out - not in the club. Certainly, you'll want friends, a club name, a place you meet...kind of like becoming your own country. You'll need boundaries, a population and you must be recognized by other states. <br> • What is one country that is not recognized by other states? TAIWAN. Taiwan is a small island off the coast of China. They believe that they are a country. China doesn't. China has military might, enough to say, "Enough of this nonsense." |
| 29 | 4 | 10 | Becoming a country or a state is similar to forming a club. When you make your own club, you might do so even without being recognized by anyone. First you decide who is in and who is out - not in the club. You'll probably want friends, a club name, a place you meet. This is kind of like becoming your own country. You'll need boundaries and a population and you must be recognized by other states. |
| 9 | 2 | 12 | DNA is actually called the code of life. Because the DNA is gonna sorta tell you what you are going to become. We all have DNA. We all basically are made up of the same stuff. We are all made up of the same four chemical compounds. |

Table 5.24 (continued)
*Case Studies: Word Learning Strategies: Restatement*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 4 | 13 | Short tandem repeats. This is how PCR works. Take a section, cut the section. |
| 24 | 4 | 14 | Who's the builder? DNA Polymerase. We are going to polymerize - and we can only add nucleotides to the three-prime end. DNA polymerase is an enzyme. |
| 24 | 4 | 15 | Where did the DNA polymerase we use come from? This DNA comes from a thermophilic bacteria, a heat loving bacteria, found in Old Faithful. This DNA works extremely well at hot temperatures. After one cycle we have two copies. Do it again...Hot to Cold. Hot to Cold. We use thermocycles. |

Table 5.25
*Case Studies: Word Learning Strategies: Metaphor*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 1 | 3 | Magic number for animal cells (circling -55,000), things take off. The voltage gate opens, sodium channels open; this is the magic number, the flood of sodium. |
| 9 | 2 | 5 | What does the nucleus do for the cell? What is the nucleus to a cell? It's the command center, the control center; it tells us what to do, what you're going to look like and so forth. |
| 24 | 3 | 7 | In order to copy DNA, we have to have a primer to start. Why is that? Who's the builder? DNA Polymerase |

Table 5.26

*Case Studies: Word Learning Strategies: Component*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 29 | 3 | 1 | There's a government component. |
| 29 | 3 | 3 | Yes, there is a music genre associated with it. |
| 29 | 3 | 4 | Having a permanent population is a requirement of a country. |
| 29 | 3 | 6 | They have certain rights and national government has certain rights. Why do we have this division of power? Separate components can have a greater say in making their own laws. |
| 29 | 3 | 7 | Becoming a country or a state is kind of like forming a club. You make your own club, maybe even without being recognized by anyone. You decide who is in and who is out - not in the club. Certainly, you'll want friends, a club name, a place you meet...kind of like becoming your own country. You'll need boundaries, a population and you must be recognized by other states. |
| 29 | 4 | 8 | A permanent population is a requirement of a country. |
| 29 | 4 | 9 | They need to live somewhere. We call that territoriality; there are defined boundaries. |
| 29 | 4 | 10 | Yes, some countries, but not all, have an official language. |
| 9 | 2 | 12 | Next one: DNA is inside the nucleus of the cell. It is well-protected. It has a cell membrane, a cytoplasm, a nuclear membrane and right inside here you have DNA. |
| 9 | 2 | 13 | You might be wondering, why do you have licorice and marshmallows. We are going to make a model DNA. One is called the bases. See my model DNA? The bases would become the marshmallows. The bases - there's four different kinds. There's one called adenine, one called thymine, one called cytosine, and one called guanine. |
| 24 | 4 | 14 | Short tandem repeats. This is how PCR works. Take a section, cut the section. |
| 24 | 4 | 15 | DNA fragments of known sizes, the sizes on the ladders are in kilobase base pairs. These are the known lengths kilobases. 1,000 base pairs, so, which is the approximate size of the fragment? |

Table 5.27

*Case Studies: Word Learning Strategies: Related Case*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 24 | 2 | 1 | There are other protein channels. They only open and close when voltage levels get to certain points. |
| 29 | 3 | 2 | What is one country that is not recognized by other states? TAIWAN. Taiwan is a small island off the coast of China. They believe that they are a country. China doesn't. China has military might, enough to say, "Enough of this nonsense." |
| 24 | 4 | 3 | Back to the steps in DNA profiling. If you had just a few cells, it may not be enough. PCR - Polymerase Chain Reaction… Incredibly simple method for producing copies of DNA. Cary Mullis was a lab technician who found it in 1983. It became available for commercial use and profiling in 1985. |

Table 5.28

*Case Studies: Classroom Strategies for Interactive Learning: Prompting*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 29 | 1 | 1 | We have learned several different ways that have helped us with vocabulary for this and other units. What is one idea? |
| 29 | 1 | 2 | What is the most recent tool we've explored to support learning the terms? |
| 29 | 2 | 13 | What are some tools we have or should be using? |
| 29 | 2 | 19 | What other options do we have here? |

Table 5.29

*Case Studies: Classroom Strategies for Interactive Learning: Naming*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|-------------------------------------------|
| 29 | 1 | 1 | Old school, a 3 x 5 notecard |
| 29 | 1 | 2 | StudyBlue or Quizlet. Right, using your electronics can be helpful. |
| 29 | 2 | 3 | Another digital tool called Quizlet is something some of you might be using as well. |

Table 5.30
*Case Studies: Classroom Strategies for Interactive Learning: Strategy Components*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|--------------------------------------------|
| 29 | 1 | 1 | Writing the word and the definition is another way. Probably not the most effective tool you might use. |
| 29 | 1 | 2 | Right...Frayer Model. This is the tool that uses a definition, characteristics, example, and picture. Remember you have options here that include a picture or example/non-example. |
| 29 | 2 | 3 | Word and Definition - that works. Once again, probably not the most effective method. |
| 29 | 2 | 4 | Right, the Frayer Model. Include a definition, example/non-example, characteristics, and/or draw a picture. |

Table 5.31
*Case Studies: Classroom Strategies for Interactive Learning: Reminders*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|--------------------------------------------|
| 29 | 1 | 1 | Please note, I am encouraging you again to use your tools to really learn these words. You see, your understanding of the terms is important. You need to be able to define it. Give an example… Give an example… Define - provide a definition |
| 29 | 2 | 2 | You might not be able to make a good guess without using these tools, so be sure to use them to solidify your knowledge of these words. |
| 29 | 3 | 3 | Synonym for country - the word State. This is a different term to political geographers. State and Country mean the same thing. I want you to be familiar with this term right away. |
| 24 | 3 | 4 | The length of the repeat. The two main properties of STR: Length and Location. Know where they are on the genome. If we know, we can use a restriction enzyme to cut them out. Cut out, amplify using PCR, use a gel electrophoresis. |

Table 5.32
*Case Studies: Visual Connections: Imagery*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|---|---|---|---|
| 24 | 2 | 3 | So what direction does the signal travel? From which end to which end? OK - from the cell body to the… Then it moves through the long skinny part called the axon. Then finally it reaches the . . .? Terminal end. |
| 24 | 2 | 4 | Becoming a country or a state is similar to forming a club. When you make your own club, you might do so even without being recognized by anyone.<br>First you decide who is in and who is out - not in the club. You'll probably want friends, a club name, a place you meet. This is kind of like becoming your own country. You'll need boundaries and a population and you must be recognized by other states. |
| 9 | 2 | 5 | SHAPE - double-helix, spiral, long together to form chromosomes. So we're gonna take this DNA, and the DNA is gonna form a gene, and the gene then is going to form chromosomes. |
| 24 | 4 | 6 | How would you cut DNA? Use restriction enzymes . . . Heat up to 95 Celsius.<br>What is going to happen? It breaks the bonds. Cool it down. Body temperature operates at 37 degree Celsius. 55 degrees Celsius is still at protein denaturing for most organisms. |
| 24 | 3 | 7 | The phosphate runs to the positive end - the red end, which is actually green in the diagram here. An electric current then allows fragments to move through this gel.<br>If we scattered desks throughout the room, and had students move from one side to another, they would navigate it pretty easily. But if I asked you to join with your group and move as a group you would move slower and may not make it to the end. The little guys go through, the big guys don't. |

Table 5.33
*Case Studies: Visual Connections: Images*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|---------------------------------------------|
| 24 | 1 | 1 | Student 1 (name) would be the cell body and Student 2 (name) would be the terminal end. |
| 24 | 1 | 2 | STIMULATION...I kick (Student 1) in the shin. |
| 24 | 1 | 3 | I'm kicking the dendron, the cell body. |
| 24 | 4 | 5 | An electric current then allows fragments to move through this gel. If we scattered desks throughout the room, and had students move from one side to another, they would navigate it pretty easily. If I asked you to join with your group and move together, you would move slower. |

Table 5.34
*Case Studies: Visual Connections: Visual Aids*

| ID | OB | EX | Teacher Observations: Evidentiary Excerpt |
|----|----|----|---------------------------------------------|
| 24 | 1 | 1 | Here's a graph of resting potential. |
| 24 | 4 | 2 | It's a denaturing problem for human PCR, right? We can look at the DNA using gel electrophoresis. We know from yesterday that there is a loading dye in there that would mark the DNA and allow us to see it. Look at the righthand side and you'll see an animation. |
| 24 | 4 | 3 | Charge diffusion. Negative end at a positive. What part of the DNA is negative? The phosphate runs to the positive end, the red end, which is actually green in the diagram here. An electric current then allows fragments to move through this gel. |