English language learners epistemic beliefs about vocabulary knowledge

Nathan E. Ziegler
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A Dissertation
entitled
English Language Learners’ Epistemic Beliefs about Vocabulary Knowledge
by
Nathan E. Ziegler

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the
Doctor of Philosophy Degree in Educational Foundations and Leadership.

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May 2015
An Abstract of

English Language Learners’ Epistemic Beliefs about Vocabulary Knowledge

By

Nathan E. Ziegler

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There is a growing body of work that examines the epistemic beliefs of learners and the role those beliefs play in the development of their critical thinking and other cognitive processes (Hofer, 2001). This study examines the epistemic beliefs of English language learners, a population of learners that is relatively understudied on the topic of personal epistemology. More specifically, this qualitative study explores ELLs’ dimensional and developmental epistemic beliefs about vocabulary knowledge in English. First-year international undergraduate students enrolled in remedial ESL writing courses were given a series of speaking and writing placement tests in an Intensive ESL program at a Mid-western university. Responses to writing prompts and interviews were analyzed for this study from an epistemological lens to determine the espoused epistemic beliefs of English language learners. Results suggested that many ELLs espoused advanced epistemic beliefs (i.e., evaluativism) about vocabulary knowledge most of the time. There was a general disparity found, however, with ELLs’ epistemic beliefs about the source and justification of English vocabulary knowledge. That is, there was a
tendency for ELLs to espouse less sophisticated epistemic beliefs (i.e., absolutism) about source and justification of vocabulary knowledge. This implies that participants’ beliefs about these dimensions of knowledge and knowing might be hindering the emergence of more sophisticated epistemic beliefs in the domain of English language learning. Additional implications suggest that ESL curriculum needs to focus on developing ELLs’ use of the appropriate cognitive strategies (i.e., critical thinking) to determine the most accurate sources of vocabulary knowledge in specified communicative contexts.
This dissertation is dedicated to all the second language learners in our nation schools.
May your voices be heard, and may your dreams come true.
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Chapter One

Introduction

Language is often viewed as the key to the attainment of knowledge and empowerment. With the acquisition of language, people are able to communicate on multiple levels, allowing them to understand and interpret abstract concepts, emotions, and the thinking of others (Gollnick & Chinn, 2009). Through the acquisition of a foreign language, a larger population of people is accessed, more knowledge is attainable, and the sharing of ideas is more profound and diverse (Gollnick & Chinn, 2009). The importance of knowing foreign languages dates back to the Ancient Greeks (Yngve, 1996), where grammar (i.e., linguistics) was developed to decipher and teach languages to people of diverse backgrounds. As the United States began to gain global hegemonic power during the 20th Century, people from around the world immigrated with the hopes of attaining education, wealth, and freedom (Datesman, Crandall, & Kearney, 1997). As the immigration population increased throughout this century, so too did the desire for immigrants to assimilate to the culture of the U.S. The U.S., however, was slow to address the language needs of this immigrant population (Gollnick & Chinn, 2009). In 1981, for example, political pressure was placed on the government to mandate schools to assimilate immigrant children to the dominant, Anglophone culture and eliminate bilingual or multilingual education (Gollnick & Chinn, 2009). This English-only emphasis essentially obliterated the language minority’s use of their first language in the educational setting (Edwards, 2006; Gollnick & Chinn, 2009). The effects of which are still being felt today. In the 2000s, the number of language minorities in the U.S. school system has expanded, but the level of support for these students has changed very little (Gollnick & Chinn, 2009). For that reason, scholars have become increasingly interested
in addressing the needs of second language speakers in the U.S. classroom (Pacheco, 2010).

The National Center for Education Statistics (2010) has labeled linguistic minorities as English language learners (ELL). English language learners is the largest group of minorities in the U.S. public school system, largely because English is the lingua franca in the schools (NCES, 2010). For example, the National Center for Education Statistics (2010) reported that in 2007 roughly 21% of all students spoke a language other than English at home (i.e., first language). Some researchers believe that this number is only expected to grow (August, 2007). Broadly defined, the English language learner is any person learning English whose native language is not English. Categorically, the English language learner represents a large, diverse population of people who have different first languages, come from different cultures, and have different levels of exposure to Western-style education. This diverse population of people, thus, come to the U.S. with vastly different educational needs (National Education Association, 2008), which makes it difficult for educators to find the best ways to meet ELLs’ needs.

Many English language learners are at a disadvantage in the U.S. classroom if they have not been speaking English from birth (Fitzgerald, 1995). Because English is the dominant language spoken in the United States, it is necessary to ensure that the English language learners’ needs are being met (Fitzgerald, 1995). That is, if these learners are going to succeed in the classroom, they must acquire the necessary skills in English to meet the standards in the U.S. classroom. One of the primary skills that ELLs must obtain, in accordance with the demands of a learning a second language, is the ability to
critically think in an academic setting that uses English as the dominant language. Critical thinking, briefly defined, is the ability to interpret, predict, analyze, and evaluate knowledge claims (Abrami et al., 2002). In many ways, conducting and communicating critical thought empowers language minorities to engage in a meaningful dialogue with the dominant culture. As Paulo Freire (1970) wrote:

True dialogue cannot exist unless the dialoguers engage in critical thinking—thinking which discerns an indivisible solidarity between the world and the people and admits of no dichotomy between them—thinking which perceives reality as process, as transformation, rather than as a static entity—thinking which does not separate itself from action, but constantly immerses itself in temporality without fear of the risks involved (p. 92).

In education reforms, critical thinking has become particularly necessary for students as policy makers have begun to place emphasis on higher-order thinking processes, as is seen with the new Common Core Standards that are being implemented nationwide (National Governors Association Center for Best Practices, 2010). Despite the increasing recognition of the importance of critical thinking in classroom education (e.g., Abrami et al., 2002), there is little known about ELLs’ ability to engage in higher levels of cognition and cognitive process required for critical thinking in English (Pally, 1997). One possible explanation for this dearth of information about ELLs’ critical thinking could be the relative absence of information about their beliefs about knowledge and knowing (i.e., epistemic beliefs) in English.

The processes and value of critical thinking has been linked to a person’s epistemic beliefs, for epistemic beliefs have been associated with the cognitive processes that people believe to be important when engaging in higher levels of cognition (Hofer, 2001; Kuhn, 1999). Defined briefly, epistemic beliefs are a person’s beliefs about
knowledge and knowing (Hofer, 2001). Epistemic beliefs indicate how an individual, when prompted to think about her epistemic beliefs, orients herself when defining knowledge, how she believes knowledge is acquired and constructed, from where she believes knowledge is derived, and how she believes knowledge is evaluated (Hofer, 2001). As Hofer (2001) suggests, having the ability to monitor our own understanding of problems and evaluate evidence (the processes crucial to advanced epistemic understanding) enables the necessary critical thinking to solve complex problems. Research has found, for example, that a person with less sophisticated epistemic beliefs does not readily and successfully engage in critical thinking (Kuhn, 1999). Conversely, a person with more sophisticated epistemic beliefs has developed the value and ability to engage in the higher-order thinking involved in critical thinking (Kuhn, 1999). Therefore, by understanding a person’s epistemic beliefs, educators would be more able to determine how well a person is able and willing to engage in critical thinking. With the growing importance for ELLs to be able to engage in critical thinking in the U.S., research on their epistemic beliefs may help researchers and educators describe, explain, and improve ELLs’ critical thinking as an essential part of their language acquisition and proficiency development.

For English language learners, English vocabulary is as vital to their adjustment to the U.S. education system as critical thinking. Knowledge of vocabulary is arguably the most important aspect of the language acquisition process (Cushner, McClelland, & Safford, 2000). Most important is the acquisition of the “right” words because they represent ideas, people, actions, and things that are situated in cultural contexts. Knowing the right vocabulary becomes, then, a process through which a person is able to interpret
the larger cultural meaning and interact with people form the target culture. The English language learner is riddled with the dilemma of knowing the “right” vocabulary meanings and usage in appropriate contexts. Quite often, vocabulary is taught with the intention of placing the meaning of words in context, for scholars in Second Language Acquisition have emphasized the value of contextual understanding when learning a new language (Kirkness, 2006). However, the processes of contextualization in modern second language curriculum does not always accomplish this goal (Ziegler & Feucht, 2012). Therefore, understanding ELLs epistemic beliefs about vocabulary knowledge may shed light on their individual processes of contextualizing vocabulary word meanings.

In this qualitative study, English language learners’ epistemic beliefs about vocabulary knowledge in English were examined. More specifically, this exploratory study examined what ELLs believe about the nature of knowledge and knowing of vocabulary knowledge, such as their beliefs about the simplicity, certainty, justification, and source of vocabulary knowledge in English (Hofer, 2001), and what their levels of epistemic understanding are (i.e., absolutist, multiplist, and evaluativist) (Kuhn, 1999). There is research that has found a relationship between advanced epistemic beliefs and the presence and usage of critical thinking, suggesting that a person with more advanced epistemic beliefs will be a more sophisticated critical thinker (Kuhn, 1999; Hofer, 2001). With this relationship in mind, an examination of ELLs’ epistemic beliefs provides a better understanding of their ability and desire to critically think in English language contexts. Furthermore, by understanding the different elements of their epistemic beliefs, future research can be conducted with the aim of preparing these learners for the demands
of the U.S. educational system, which has increased its emphasis on critical thinking in recent years (e.g., Common Core Standards, 2010).

In the sections that ensue, a literature review, a method section, a results section, and a discussion are provided. The literature review provides the theoretical framing and empirical support for this study, focusing on research in second language learning, personal epistemology and vocabulary knowledge. This section also provides the issues that emerged from the review of research, as well as the research questions that guide the study. Following, the method section describes the sample studied, the research procedures, their alignment with the research questions, and the data analysis procedures. Next, the results section provides the data analyses as they pertain to the research questions. Finally, the discussion provides the implications, insights, and conclusions drawn from this research study.
Chapter Two

Literature Review

The growing body of research on second language learning and acquisition has focused primarily on processes of acquisition and language attainment (Birdsong, 2006), practical learning and teaching methods (Brown, 2007), and the acquisition of word and grammar forms (White, 1989). Relatively small amounts of research have been conducted on the beliefs of second language learners, and in particular, the beliefs of English language learners. More specifically, the research on English language learners’ epistemic beliefs (i.e., beliefs about knowledge and knowing) is practically nonexistent, especially research on their epistemic beliefs about vocabulary knowledge of English. To explore this aspect of the English language learners’ thinking and learning process, it is necessary to first examine the present research on vocabulary knowledge, the research in the field of personal epistemology, research on second language learners’ beliefs in general, and research on second language learners’ epistemic beliefs in particular for English and other languages.

In the following section, research on vocabulary knowledge and beliefs about vocabulary knowledge is reviewed first. Then, a review of research on learners’ beliefs about second language learning is presented. Following is a review of research and theory in personal epistemology, with special attention given to the two primary theoretical frameworks (i.e., Hofer, 2001; Kuhn, 1999) used to guide the investigation. Next, a review of the second language instructional methods that are customary in language learning is provided along with a theoretical alignment to Hofer’s (2001) and Kuhn’s (1999) epistemological frameworks. This will establish the epistemological
The underpinnings of the different second language methods, integrating the two areas of focus together. Figure 1: *Epistemic Beliefs and Vocabulary Knowledge: An Integrated Model*, was developed for the purpose of this study to show how the primary areas of research reviewed will inform the research study. In this framework, each part, *vocabulary knowledge, epistemic beliefs, and second language learning and instruction* will be reviewed independently and then brought together to form a comprehensive understanding of the epistemic understanding of ELLs. After a review of the research in these different areas are presented, the emerging issues and gaps in research are provided so as to explicate the need for understanding the epistemic beliefs of English language learners about vocabulary knowledge in English.

Figure 1. The framework of *Epistemic Beliefs and Vocabulary Knowledge: An Integrated Model* represents the integrated parts that are examined in this research study and how they relate to each other. Each part *Vocabulary Knowledge, Epistemic Beliefs*, and *Second Language Learning and Instruction* is a distinctive research area that appears in the literature review. The double-arrow solid lines between each part show the integration of these sections and their relationship with one another. Centrally located is where these parts meet and are examined in the study. The dotted lines between each part and the central research area represent the relationships and how each part will inform the overall framework.
Vocabulary Knowledge and Beliefs about Vocabulary Knowledge

Defining vocabulary knowledge. Conceptualizing vocabulary is a difficult task and certain theoretical considerations must be accounted for prior to understanding leaners’ beliefs about vocabulary. The *Longman Advanced American Dictionary* offers several basic definitions of vocabulary:

1) All the words that someone knows, learns, or uses. 2) The words that are typically used when talking about a particular subject. 3) All the words in a particular language. 4) The special skills or features that are typical of a particular subject. 5) A list of words with explanations of their meanings, often in a book for learning a language (Marwick, Handorf, & Stern, 2008, p. 1764).

Underlying the definitions of vocabulary are several assumptions of language, words, and definitions in particular, of which inconsistency has arisen in how researchers define these constructs (Williams, 2006). For example, Alvermann and Phelps (2005) explain that from a typographic level a word is a “group of letters surrounded by white space” (p. 233). Other constructs look at it is a lexeme, which depicts a word as a sequence of sounds or texts, which signify certain concepts or meanings (Fromkin, Rodman, & Hyamns, 2003). These constructs are different from Yngve (1996) who suggests that “words” and “vocabulary” are abstract constructs that do not adequately define human communication. Yngve purposed a new linguistic framework that examines the speech sounds, text, and other aspects of the communicative event in combination with one another to determine meaning of communication, rather than examining the isolated abstractions of words or vocabulary (see Yngve, 1996; Coleman, 2005). That is, Yngve argues that “words” do not exist in the real world; they exist in the minds of the people communicating. Because of the ‘abstractness’ of words, there can be a level of inconsistency and inaccuracy when examining the meanings of words or vocabulary.
Nevertheless, a word, as commonly defined, is a string of texts or sounds that represents concepts and meanings. Vocabulary thus is the accumulation of these words in a particular language structure, domain, or topic. For the purpose of this study, vocabulary is defined as a grouping of sounds or texts used by people to communicate specific ideas or concepts relative to the context of the communicative event and the outcomes of specific communicative events (Yngve, 1996).

**Knowing vocabulary knowledge.** Analyzing the concept of vocabulary knowledge involves deciphering certain ontological and epistemological assumptions about what it is prior to understanding individuals’ beliefs and acquisition of vocabulary knowledge (Williams, 2006). That is, it is necessary to analyze the philosophical assumptions that underlie the construct of vocabulary knowledge in the scientific field to better understand individuals’ beliefs about the meaning of vocabulary knowledge. Nagy and Scott (2000) provide an overview of vocabulary knowledge, different conceptualizations of vocabulary knowledge, and the processes involved in knowing vocabulary knowledge. In a discussion about word knowledge as the equivalent of vocabulary, Nagy and Scott (2000) discuss the complexity of word knowledge as consisting of five indiscriminant facets: a) incrementality, b) multidimensionality, c) polysemy, d) interrelatedness, e) and heterogeneity.

**Incrementality.** The *incrementality* facet of vocabulary knowledge subsumes that knowing a word is not an all-or-nothing construct, whereby a person either knows a word or does not know a word. Instead, this facet give credence to the possibility that knowledge of a word can occur in a gradual process (incremental), and that the understanding of the meaning of a word can change over time. Research by Clark (1973;
1993) has shown the development of word knowledge over time, from the initial stage of knowing as incomplete and progressing to a complete or adult like level of understanding (as cited in Nagy & Scott, 2000).

**Polysemy.** Another important facet to address is the *polysemy* of the word, which refers to the multiple meanings that can be interpreted from a single word. That is, a string of texts and sounds that are identical in form to another string of texts or sounds may have different interpreted and unrelated meanings (i.e., connotations). Here, for example, the string of texts and sounds *Go* can be representative of the command [to move forward] (e.g., Ready, set, *go!* or of the game, entitled *Go* (e.g., Last night we played *Go!* (Example drawn from Yngve, 1996). This implies that the meanings of words are flexible, changing, and dependent upon the context, the participants in a communicative event, and the complexity of a situation (Nagy and Scott, 2000).

**Multidimensionality.** The facet of *multidimensionality* of word knowledge is crucial to understanding the complexity of language and vocabulary knowledge. That is, word knowledge should be categorized into multiple, independent dimensions that measure a person’s understanding of the word in different ways, such as its grammatical properties, written form, spoken form, collocational behavior, conceptual meaning, frequency, stylistic register, and associations with other words (Nation, 1990). Other researchers (e.g., Graves, 1986) have proposed other dimensions that operate similarly, but have a focus on the conceptual components of words, such as learning new concepts, knowing the labels of concepts, and using and acquiring productive vocabularies. Despite the common interpretation that word knowledge exist on a continuum, Nagy and Scott (2000) suggest that word knowledge operates on independent dimensions. This suggests
that a learner may have a stronger command or knowledge of one dimension in comparison to another dimension of the word.

**Interrelatedness.** The interrelatedness of word knowledge (and not dimensions) is also a key aspect that Nagy and Scott (2000) highlight. This aspect emphasizes a constructivist understanding of word knowledge that places emphasis on how words are linked together through lexicon or semantics. That is, a person’s knowledge of a word may be related to their knowledge of another similar or opposite word. Nagy and Scott illustrate how a person who knows the words *hot, cold,* and *cool,* should also have an understanding of the word *warm* because of their conceptual similarities. This aspect may also provide insight into how people remember the meanings of words (Nagy & Scott, 2000).

**Heterogeneity.** The final aspect highlighted in Nagy and Scott’s (2000) framework is heterogeneity. This aspect illustrates how a word type may have greater or lesser complexity and therefore require a different level of knowledge regarding that word. That is, the nature of a word such as a preposition (e.g., on) will have a different level of understanding than a terminological word (e.g., synapse), and will therefore elicit a different conception between the words.

In summary, this framework points to the complexity of vocabulary knowledge (Nagy & Scott, 2000). Under this framework, traditional concepts of vocabulary knowledge are overthrown in favor of a richer, deeper understanding of what it means to *know* a word. That is, this framework moves away from the common perception that vocabulary knowledge is basically knowing definitions. Instead, this framework suggests that vocabulary knowledge can exist on different levels (incrementatlity), have different
meanings depending on the context (polysemy), operate under different dimensions (multidimensionality), have related meanings to other vocabulary (interrelatedness), and have different levels of complexity (heterogeneity). Adopting this view would then impact how vocabulary is taught in schools and how it is learned by students (Nagy & Scott, 2000).

Relevance of English vocabulary and acquisition. A crucial aspect of language learning is the learner’s ability to acquire vocabulary knowledge (Wei, 2007), and its necessity in reading achievement (Francis & Simpson, 2003), developing writing knowledge and skills (Victori, 1999), and overall success in school (Saville-Troike, 1984). For English language learners, vocabulary knowledge is often a significant barrier in their acquisition of other knowledge and skills, making vocabulary acquisition and development an even more crucial part of their learning process (Gomez & Madda, 2005; Moje, Collazo, Carillo, & Marx, 2001; Watts-Taffe & Truscott, 2000). With the growing demand to understand what strategies learners use and how they learn vocabulary knowledge (Nagy & Townsend, 2012), research needs to be conducted not only on their strategies and procedures to acquire vocabulary knowledge, but also on their beliefs about vocabulary knowledge (Francis & Simpson, 2003). Finally, research has shown that language development is benefited by the belief that vocabulary is an important aspect of language (Nagy & Scott, 2000). This suggests that knowing what English language learners believe about vocabulary knowledge will help educators teach vocabulary and develop students’ proficiency in English.

Vocabulary beliefs. Beliefs about English vocabulary knowledge have been found to play a significant role in students’ learning process (Nagy & Scott, 2000). That
is, a person’s beliefs about vocabulary knowledge play a role in developing greater reading proficiency, comprehension and accuracy (Francis & Simpson, 2003; Nagy & Scott, 2000). The more complex and contextualized beliefs about vocabulary knowledge (or the higher the level of their beliefs), the better a person’s reading comprehension will be. Despite the importance of vocabulary beliefs and their influence on reading comprehension, little research was found that explored the role beliefs actually play in the development of reading comprehension. To better explore the relationship between learners’ beliefs about vocabulary knowledge and their reading proficiency, Francis and Scott (2003) examined undergraduate students’ beliefs about vocabulary knowledge, their reading achievement, and vocabulary acquisition.

Francis and Simpson (2003) gave 110 participants a questionnaire about their vocabulary beliefs, a reading assessment that measured their reading proficiency, and a vocabulary acquisition assessment. More specifically, this research study examined native speakers of English beliefs about English vocabulary. The researchers asked four different research questions that guided the study. First, they explored the relationship between students’ reading achievement and their beliefs about vocabulary knowledge. Second, they explored the relationship between students’ reading achievement and vocabulary acquisition. Third, the researchers examined the relationship between students’ beliefs about vocabulary knowledge and their vocabulary acquisition. Fourth, the researchers explored the difference between low and high reading achievement scores and students’ beliefs about vocabulary knowledge.

To measure students’ reading achievement, vocabulary beliefs, and vocabulary acquisition, three different measures were used. In order to determine reading
achievement, the researchers used the Nelson-Denny Reading Test, Form G (1993). This measure was used because it provided a quick assessment of students reading comprehension, vocabulary knowledge, and overall reading achievement (Francis & Simpson, 2003). To tap into students’ vocabulary beliefs, the researchers designed the Vocabulary Beliefs Questionnaire, which explored students’ beliefs about two dimensions: vocabulary knowledge and vocabulary acquisition. The questionnaire contained 14 questions, seven for each dimension. The items were scored on a continuum, with the highest aggregate scores equating to more sophisticated beliefs about vocabulary knowledge and vocabulary acquisition. Each item was rated on a 5-point Likert scale, to show agreement or disagreement with the items. Sample statements taken from the dimension vocabulary knowledge included, “1) To me, words can have only one meaning. 2) I think knowing a word’s meaning involves being able to use the word in my own writing” (Francis & Simpson, 2003, p. 68). Sample statements taken from the dimension vocabulary acquisition included “1) If I don’t understand a word, I just read carefully all the words before and after the unknown word. 2) I have learned most new words from watching television and reading books” (Francis & Simpson, 2003, p. 68). The third measure assessed the students’ vocabulary acquisition. This measure, the Vocabulary Task, was taken from Nist and Olejnik (1995). For this part of the assessment, students had to choose the correct definitions for words. The second part of the assessment investigated how well students could use a word in context. For the third part of the assessment, students were required to generate clear sentences using different vocabulary words.
The researchers used Pearson product-moment correlations to examine the relationships between the different measures for the students. For research question 1, the researchers found that there was a positive and significant correlation between students’ scores on the *Vocabulary Beliefs Questionnaire* and their reading achievement (*r*=.216, *p* <.05). This result indicated that students with more sophisticated beliefs about vocabulary knowledge performed better on reading assessments. For research question 2, the researchers found that there was a significant correlation between scores on reading achievement and vocabulary acquisition (*r*=.470, *p*<.01). This suggests that students who had a larger vocabulary performed better on reading assessments. For research question 3, the researchers found that there was a small, yet significant correlation between scores on the *Vocabulary Beliefs Questionnaire* and vocabulary acquisition (*r*=.209, *p*<.05). This suggests that students who had more sophisticated beliefs about vocabulary knowledge also had more vocabulary knowledge. Finally, for the fourth research question, no statistical correlation between levels of reading achievement and vocabulary beliefs was found. This suggests that there is no relationship between achievement and vocabulary, but also that some students may in fact be good readers but may not be aware enough of their belief structures to explicate how they view vocabulary knowledge.

Francis and Simpson (2003) highlighted that there was only one strong correlation, which was the relationship between vocabulary acquisition and reading achievement. Therefore, while there may be some relationship between vocabulary beliefs and reading achievement, and between vocabulary beliefs and vocabulary acquisition, more research needs to be conducted to better understand how students’ beliefs about vocabulary knowledge influence their ability to perform well on reading and
vocabulary tasks. Furthermore, the researchers suggested using qualitative research methods to explore students’ vocabulary beliefs using the students’ own wording to explain what they believe about vocabulary knowledge.

**Beliefs about Second Language Learning**

The beliefs of second language learners have been given considerable attention over the last 30 years (Ellis, 2008). Consequently, research has found that second language learners’ beliefs play an important role in their language proficiency development (Ellis, 2008). Moreover, the beliefs of language learners play a crucial role in how they approach learning a second language (Hosenfeld, 1978) and how it could be studied. Over the years, the Beliefs about Language Learning Instruction (BALLI) (Horwitz, 1987) instrument has become an influential measurement tool that examines five general beliefs about language learning: 1) difficulty of language learning, 2) aptitude for language learning, 3) nature of language learning, 4) learning and communication strategies, and 5) motivation and expectations. Research on these belief structures has uncovered necessary data regarding language learners’ beliefs. For example, research has found that second language learners believe that studying grammar of the second language is an important part of the learning process (Schultz, 2001).

Of interest to this study are the findings of research conducted by Benson and Lor (1999) on the beliefs of Chinese undergraduate students studying English about the nature of the English language as a knowledge domain. They uncovered that students hold two distinct beliefs about English language as a knowledge domain: language is *quantitative and analytic*, or language is *qualitative and experiential*. For the *quantitative and analytic* belief, language is mostly believed to be a set of grammar rules, which can
be learned through translation from first language to second language and through memorization. For the *qualitative and experiential belief*, language is communicative. To learn a language, one must listen and speak the language, engage in communication with native speakers, and worry little about errors. This suggests that since there are these two distinctions in conceptions of language and learning, students’ epistemological beliefs about language knowledge may have similar divisions.

Even though there have been distinctions found in learners beliefs, they are often diverse, changing, and complex, and are dependent upon the context of the learning environment. There are two problems that arise when examining a language learner’s beliefs: 1) the person may not be accurately reporting his or her beliefs because of the perceived expectations of the researcher (see Ellis, 2002; Ellis, 2008), or 2) the person may not be able to articulate or verbalize his or her beliefs (e.g., language proficiency is a confounding variable) (Ellis, 2002; Ellis, 2008). Furthermore, most research regarding second language learners’ beliefs focuses on their beliefs about second language learning (e.g., Benson & Lor, 1999; Bernat & Gvozdenko, 2005; Horwitz, 1988; Horwitz; 1999; Tanaka & Ellis, 2003; Wenden, 1986), failing to identify beliefs about the nature of second language knowledge and the implication that those beliefs have on second language learning and proficiency. One reason is that these belief studies do not highlight the epistemological beliefs about the knowledge of second languages. Instead, they focus primarily on what the learners perceive the process of learning a language to be, their efficacy in the process, and their motivation to engage in the process. Understanding, conversely, second language learners’ beliefs about the nature of knowledge of a target
second language, such as English, could provide valuable insight into what beliefs a learner has and what role those beliefs play in the learning and acquisition process.

**Personal Epistemology: Beliefs about Knowledge and Knowing**

The field of personal epistemology has become an area of growing importance in the fields of education and educational psychology (Hofer, 2001). Generally, personal epistemology is a person’s beliefs about knowledge and knowing (e.g., Hofer, 2001). That is, personal epistemology is an individual’s beliefs about “the definition of knowledge, how knowledge is constructed, how knowledge is evaluated, where knowledge resides, and how knowing occurs” (Hofer, 2001, p. 355). Since Perry’s (1970) influential work, many researchers have attempted to understand personal epistemology more fully (Hofer & Pintrich, 1997; Hofer, 2001; Schommer-Aikins, 2004). As such, many different frameworks have emerged as a way to describe learners’ beliefs about knowledge and knowing, and how those beliefs impact their learning and thinking (Hofer & Pintrich, 1997; Hofer, 2001).

There are four prominent frameworks that drive much of the research in personal epistemology: *Epistemic Understanding* (Kuhn, 1999), *Epistemological Theories* (Hofer, 2001), *Epistemological Beliefs Systems Theory* (Schommer-Aikins, 2004), and *Epistemological Resources Model* (Hammer & Elby, 2002). Each framework conceptualizes personal epistemology differently, while at times maintaining a level of similarity to the other frameworks. Generally, Kuhn’s (1999) *Epistemological Understanding* framework focuses on epistemic development, Hofer’s (2001) *Epistemological Theories* and Schommer-Aikin’s (2004) *Epistemological Beliefs Systems Theory* focus on the dimensions of a person’s epistemological beliefs, and Hammer and
Elby’s (2002) *Epistemological Resources Model* focuses on the role context plays in shaping a person’s epistemic belief structure. Following is a more thorough description of these four frameworks.

**Epistemological Understanding.** Since Perry’s (1970) research on undergraduate college students’ epistemic development, examining epistemic development has been an important part of how personal epistemology is conceptualized in the field. Despite the fact that Perry’s work was a significant contribution to the study of epistemology, his sample of white, upper-class males from an elite university has been highly criticized because it did not take into account other cultures, ages, races, gender, and different contextual aspects that might influence a person’s beliefs about knowledge and knowing (Hofer, 2001). For this reason, other frameworks have adopted similar ideas and terminology from Perry’s work, but have included a broader and more comprehensive subject pool, such as the studies conducted on “women’s ways of knowing” by Belenky, Clinchy, Goldberger, and Tarule (1986), and Goldberger, Tarule, Clinchy, and Belenky (1996). Consequently, Kuhn (1999) proposed a simplified framework of epistemic understanding that closely resembles Perry’s framework. Additionally, Kuhn (1999) included cognitive and meta-cognitive components as relevant aspects to epistemic development in her model.

Kuhn’s (1999) developmental model of *epistemological understanding* is of relevance to the framework of this study and, therefore, will be described in more detail. Kuhn describes four levels in which a person’s epistemic understanding develops over time: *Dualism, Absolutism, Multiplicity, and Evaluativism*. These four levels depict epistemic beliefs and how those beliefs specifically relate to a person’s value to engage in
higher levels of thinking. In these four levels, however, it should not be assumed that they strictly project a developmental line of thinking; rather they provide a rough estimate of what these beliefs reflect within delineated groups.

**Dualism.** The first stage of epistemological understanding is *dualism*, which is strongly linked to the Theory of Mind development often found in early childhood (Burr & Hofer, 2002; Chandler, Hallett, & Sokol, 2002; Kuhn & Park, 2005). Here, the person believes knowledge to be directly received from the real world, rather than constructed by the knower. This person believes that knowledge is directly knowable through experience of the knower (Kuhn, 1999). Furthermore, a dualist believes that all people perceive the same reality so there is no possibility for conflicting beliefs between two people, or there is no possibility for the inaccuracy in the rendering of events. Therefore, knowledge is a copy of reality (Kuhn, 1999; Kuhn & Park, 2005; Kuhn & Udell, 2007). People with this belief also assume that knowledge is certain, concrete, and objective. Critical thinking is not a necessary vehicle for determining knowledge claims for the dualist because this person believes that knowledge is readily understood (Kuhn, 1999).

**Absolutism.** Kuhn (1999) defined the next stage of epistemological understanding as *absolutism*. Here, individuals believe that knowledge is objective and knowing is certain. Despite the understanding that knowledge is objective and certain, the absolutist does understand that mental representations are not necessarily copies of the external world as they were for the dualist. Moreover, because the absolutist believes knowledge is objective and knowing is certain, she believes critical thinking is essentially comparing one’s claim with reality to determine the truth of the claim (Kuhn & Park, 2005). That is, if reality matches the person’s previous assertion, then the assertion must be true.
**Multiplism.** For the next stage of epistemic understanding, Kuhn identified *multiplism* (Kuhn, 1999; Kuhn & Park, 2005). The multiplist believes that knowledge is subjective, uncertain, and complex. Because truth is uncertain and knowing is subjective, the individual believes that everyone is correct in their belief about reality and each person has the right to his or her opinion. This multiplist ignores any notion of objectivity of knowledge (i.e., facts). Because of this, the multiplist believes that all knowledge derives from the knower (Kuhn & Park, 2005). Thus, critical thinking is unnecessary to this person because of the indiscriminability of reality (Kuhn & Park, 2005).

**Evaluativism.** The last level of epistemological beliefs is *evaluativism*. The transition from multiplism to evaluativism involves the reintegration of the objective with the subjective aspects of knowing. Knowing is understood as a process of evaluation, judgment, and construction (Kuhn, 1999; Kuhn & Weinstock, 2002). Further, the evaluativist uses judgments that require support from evidence and argument. Consequently, this level of epistemological understanding is linked to critical thinking, which is seen as a tool that can be used to enhance understanding and generate sound assertions (Kuhn & Weinstock, 2002; Kuhn & Park, 2005).

Research on the development of epistemic understanding has found that beliefs do tend to shift from absolutist to multiplist beliefs and from multiplist to evaluativist beliefs (Kuhn, 1999; Kuhn, 2000; Mason & Boscolo, 2004, Weinstock et al., 2004). Mason and Boscolo (2004), for example, found that epistemological understanding (i.e., absolutist, multiplist, and evaluativist) and topic interest affect the interpretation of a controversy. This research lends support to the notion that more advanced epistemic beliefs (i.e., evaluativism) assist in learning. Similarly, Weinstock, Neuman, and Traback (2004)
examined whether epistemological understanding played a role in the development of argumentation skills. Their research also supported the notion of epistemic development, but they were not able to find clear and definitive progressions related to age or maturation. This research also found that argumentation skills may lag slightly behind the development of epistemological understanding, but that there is some relationship between the two. This suggests that people may have the appropriate beliefs to engage in higher forms of thinking and reasoning, but may not explicitly know the specific ways in which to do so. Finally, Kuhn, Cheney, and Weinstock (2000) used an epistemic questionnaire to study the development of epistemological understanding of people of different ages and educational backgrounds (see Appendix D for an example of the instrument). They found that developmental patterns of epistemic understanding can be found, but they depend largely on the domain of knowledge in question. For example, the domain of aesthetic judgment may not find anyone who transitions past the multiplist level because this domain is largely based on subjective perceptions that require little or no criteria for judgment. The judgment depends on personal taste. Judgments of facts about the physical world, on the other hand, requires that a person looks at both the subjective and objective reality of the claims. In this instance, an evaluativist is more likely to be apparent.

**Epistemic development and meta-cognition.** The epistemic beliefs useful for people engaging in higher order thinking patterns can be directly tied to the development of meta-knowing, such as metacognitive knowing, metastrategic knowing, and the development of epistemological understanding (Kuhn, 1999). Kuhn (1999) argues that in order for a person to have the necessary higher order intellectual skills involved in
critical thinking one must develop the ability to think about thinking. That is, a person must first develop the *metacognitive ability* to think about how one knows and what one knows prior to engaging in second-order cognitions (i.e., critical thinking) (Kuhn, 1999). Along with the acquisition of metacognitive knowing, it is also necessary for individuals to develop *metastrategic knowing*, whereby they are able to monitor and administer effective resources for the evaluation and acquisition of knowledge (Kuhn, 1999). This skill, in part, allows individuals to manage and use the cognitive resources (e.g., memory strategies) needed in higher order thinking (Kuhn, 1999). Influencing these two crucial aspects in meta-knowing is an individual’s *epistemological understanding*. To some extent, epistemological understanding provides a general understanding of an individual’s beliefs about what knowledge is and how knowing occurs. Depending on the developmental level of epistemological understanding (i.e., absolutist, multiplist, and evaluativist), an individual’s value of and ability to engage in critical thinking will be quite distinctive.

*Epistemic development and critical thinking*. The role of critical thinking in a person’s intellectual development has become a topic of concern for some researchers (Abrami et al., 2002; Kuhn, 1999; Kuhn & Park, 2005). Policy makers have responded to this call on a national scale through the implementation of curriculum that emphasizes critical thinking. (i.e., Common Core Standards, 2010). Briefly defined, critical thinking is the ability and process of interpreting, predicting, analyzing, and evaluating knowledge claims (e.g., Abrami et al., 2002; Kuhn, 1999). Further, Kuhn (1999) makes the case that critical thinking can be conceptualized as making sound judgments that adhere to epistemologically sound criteria. Criteria, here, is referred to as specific aspects of
knowledge claims (e.g., models, evidence, arguments, sources) used to make decisions about the accuracy of said knowledge claims (Pluta, Chinn, & Duncan, 2011).

Accordingly, Kuhn’s (1999) epistemic understanding model aligns with the process of critical thinking. In this framework, Kuhn explained that in order for a person to be a critical thinker, she must be “competent and motivated to know how you know” (Kuhn, 1999, p. 23), which allows her to be in control of her beliefs and why these beliefs are valuable. For example, a person at the absolutist level believes that knowledge and knowing is objective or certain, and believes that critical thinking is an essential skill in evaluating knowledge claims. However, this individual seeks to find evidence that matches the “truth” and fails to acknowledge and evaluate competing knowledge claims. The individual at the multiplist level, in contrast, believes that knowledge and knowing are subjective and completely uncertain. Here, the person believes that all knowledge claims are equally right because each individual’s beliefs and opinions are valid. Therefore, the multiplist does not believe that critical thinking is necessary to decipher the accuracy of knowledge claims because each individual is entitled to her opinion. Finally, the individual at the evaluativist believes that knowledge and knowing are objective and subjective, as well as uncertain. The person at this level believes that in order to determine the accuracy of a knowledge claim she must use critical thinking to evaluate the knowledge claim, which allows her to make judgments based on certain evaluated criteria and arguments. Critical thinking, for this person, is a vital aspect of deciphering and acquiring knowledge.

In summary, Kuhn’s model of epistemological understanding focuses on how a person’s epistemic beliefs develop in a stage-like progression (Kuhn, 1991; Kuhn 1999).
As described in her framework, the person moves through four stages of epistemic development (i.e., dualism, absolutism, multiplicity, evaluativism), with evaluativism encompassing the most sophisticated beliefs (Kuhn, 1999). At the evaluativist level, the person believes that knowledge is objective and subjective, uncertain, changing, and complex. The evaluativist is the more advanced critical thinker. Moreover, Kuhn (1999) highlights other relevant cognitive capacities needed to critically think: metacognitive knowing and metastrategic knowing. That is, in order for a person to be able to critically think, the person must first be able to think about her thinking (i.e., metacognitive knowing) and must also be able to think about successful strategies for knowing and evaluating knowledge claims (i.e., metastrategic knowing).

**Epistemological theories.** Hofer and Pintrich (1997) proposed a model of epistemological theories that includes four dimensions, which are classified into two areas: the nature of knowledge and the nature of knowing. The area *Nature of Knowledge* can be broken down into two dimensions: certainty of knowledge and simplicity of knowledge. The area *Nature of Knowing* can be broken into two dimensions, as well: source of knowledge and justification of knowing. Although personal epistemological beliefs are separated into dimensions in this framework, each dimension is examined in a developmental progression, with naïve beliefs being placed at one end of a continuum and sophisticated beliefs being placed on the other end. Accordingly, Hofer (2000) explains that these dimensions operate in consistent and coherent ways.

**Certainty of knowledge.** *Certainty of knowledge* is the degree to which knowledge is believed to be fixed or fluid and changing, and the strength of supporting evidence (Hofer & Pintrich, 1997; Hofer, 2001). This dimension of knowledge moves
from a belief that knowledge is absolute and fixed to a belief that knowledge is complex and evolving (Hofer, 2004). This dimension is also conceptualized in developmental frameworks (e.g., Kuhn, 1999), where the person at the lower end of the spectrum would believe knowledge is certain and fixed is defined as an absolutist, while the person on the higher end of the spectrum would believe that knowledge is uncertain and complex and is identified as an evaluativist (Hofer, 2000).

**Simplicity of knowledge.** Simplicity of knowledge is the dimension of knowledge that refers to the accumulation of interrelated concepts or the relative connectedness of knowledge (Hofer & Pintrich, 1997). At the lower end of this dimension, the person believes knowledge is compiled of distinct facts, whereas the person on the higher end believes knowledge is relative, subjective, and dependent on the context. Therefore, the person on the lower end of the continuum believes knowledge is simple (e.g., absolutist). In contrast, the person on the higher end believes knowledge is complex (e.g., evaluativist).

**Source of knowledge.** Source of knowledge is the dimension regarding the origins of knowledge. At the lower levels of this dimension, an individual believes that knowledge originates outside of the self, whereas at the higher level, knowledge is believed to be constructed by both the knower and outside sources (Hofer & Pintrich, 1997). Since the source of knowledge “examines the relative value placed on different methods of accessing knowledge” (Burr & Hofer, 2002, p. 204), individuals tend to shift from a dependence on external sources of knowledge (i.e., teachers, parents, textbooks) to a more subjective understanding of knowledge sources that place some emphasis on personal experience. Eventually, individuals transition to the belief that one must use a
combination of both external and internal sources that allow for the construction of knowledge (Burr & Hofer, 2002), which is similar to Kuhn’s (1999) level of evaluativism.

**Justification of knowing.** Justification of knowing is the procedure used to evaluate knowledge and the use of authority and evidence to support knowledge claims (Hofer & Pintrich, 1997). As individuals develop they start to judge competing claims and are able to “coordinate theory and evidence” (Burr & Hofer, 2002, p. 205). Individuals at the lower end of the dimension would justify their knowledge assertions through direct observation and the use of an authority. On the other end of this spectrum, the person would use specific “rules” of judgment and inquiry to evaluate the knowledge assertion and would incorporate knowledge from experts on the topic.

In summary, Hofer’s (Hofer & Pintrich, 1997; Hofer, 2001) epistemological theories framework looks at four dimensions of personal epistemology: certainty of knowledge, simplicity of knowledge, source of knowledge, and justification of knowing. These separate, yet related dimensions run on a continuum and represent different epistemological aspects of knowledge and are developmental in nature.

**Epistemic belief systems.** Schommer-Aikins (Schommer, 1990; Schommer-Aikins, 2004) proposed a model of personal epistemology that looks at independent beliefs that constitute a person’s overall epistemological beliefs. Because these beliefs are more-or-less independent, they may not necessarily develop synchronously (Schommer-Aikins, 2004), as is true in the other frameworks, such as Perry’s (1970) model of epistemological development or King and Kitchener’s (1994) reflective judgment model. That is, according to Schommer-Aikins (2004), personal epistemology can be re-
conceptualized as a system of independent beliefs, instead of a developmental progression of beliefs. The hypothesized beliefs presented by Schommer-Aikins include five dimensions of epistemology: *the stability of knowledge, the structure of knowledge, the source of knowledge, the ability to learn* and *the speed of learning*.

**The stability of knowledge.** The stability of knowledge refers to the beliefs of the innateness of knowledge, and ranges from unchanging knowledge to tentative knowledge (Schommer-Aikins, 2004). This dimension is quite similar to Hofer’s (2001) certainty of knowledge dimension. That is, there are two ends of a continuum in which the person’s beliefs may fall: knowledge is certain (unchanging) or knowledge is uncertain (changing).

**The structure of knowledge.** The structure of knowledge refers to beliefs of the structure and integration of knowledge and ranges from isolated parts of information to the integration of concepts (Schommer-Aikins, 2004). This dimension falls in line with Hofer’s (2001) simplicity of knowledge dimension, where knowledge is believed to be simple and static, or complex and dynamic.

**The source of knowledge.** Much like other prominent epistemological frameworks (Perry, 1979; Hofer, 2001), the source of knowledge dimension showcases a person’s belief about where knowledge comes from and how knowledge should be evaluated. That is, this dimension refers to a person’s belief about the origin of knowledge and ranges from omniscient authority to sources that can be supported by empirical evidence.

**The speed of learning.** The speed of learning refers the beliefs about the pace of knowledge acquisition, ranging from quick or not-at-all to gradual. Schommer-Aikins
(2004) indicated that previous research (e.g., Dweck & Leggett, 1988; Schoenfield, 1983) on learning lends support to a link between the source of knowledge and beliefs about learning, in general. This link was thus examined by establishing a framework that included a dimension about a person’s belief that learning is a quick and easy process, or is a gradual process. Research has found that a person who believes learning is indeed quick will deliver over-simplified conclusions of problem sets. The person who believes that learning takes time will provide a more detailed and descriptive conclusion (Schommer, 1990).

**The ability to learn.** The ability to learn refers to the belief that knowledge is either fixed at birth or one has the ability to improve upon one’s knowledge base. More specifically, this dimension examines a person’s belief about the innateness of knowledge or the belief that knowledge (and ability) is able to be improved and developed. Schommer (1990) drew from the work of Schoenfeld (1985) who found that students of mathematics believed that only “gifted authority figures” were able to understand complex mathematical problems. Further, Dweck and Legett (1988) found that children who believed ability is innate showed more helplessness in learning activities, while children who believed that they are able to improve their knowledge and skill showed more proactive learning attitudes.

In summary, Schommer-Aikins’ epistemological beliefs systems theory (Schommer, 1990) looks at personal epistemology as a system of interrelated beliefs that do not run on a sole continuum, but rather form a system of separate, independent beliefs composing a person’s epistemic beliefs. These dimensions include the stability of knowledge, the structure of knowledge, the source of knowledge, the ability to learn and
the speed of learning. Furthermore, Schommer-Aikins (2004) framework introduces learning as a key component of a person’s epistemic beliefs system.

**Epistemological resources.** Hammer and Elby (2002) contend that epistemic beliefs are situated based on the context and the domain of the epistemological inquiry. They propose a resource model of epistemic beliefs that can be activated depending on the epistemic context. For example, a person who is naïve in their epistemic beliefs in math may not have naïve epistemic beliefs in other areas, such as history. Within this framework, there are four resources that people use to make knowledge claims: *resources for understanding the nature and sources of knowledge, resources for understanding epistemological activities, resources for understanding epistemological forms,* and *resources for understanding epistemological stances.* Moreover, Hammer and Elby (2002) conceptualized differently the ontological assumptions of epistemological beliefs being a unitary construct, whereby a person has a consistent epistemological framework across contexts. Instead, they suggest that epistemological beliefs can be enacted differently in different contexts and may be inconsistent across contexts. These epistemological beliefs thus form an “epistemological frame” (Elby & Hammer, 2010). That is, the activation of particular epistemological resources can “promote or inhibit the activation of others” (Elby & Hammer, 2010, pp. 412-413).

**Resources for understanding the nature and sources of knowledge.** The *resources for understanding the nature and sources of knowledge,* as Hammer and Elby contend (2002), are the resources people use to understand what knowledge is and from where it is derived. Multiple sub-resources are elaborated upon in this category. First, they describe the belief that knowledge is “propagated as stuff” (Ebly & Hammer, 2010;
Hammer & Elby, 2002). This belief sees knowledge as a thing that can be given and passed on from person to person. Second, they describe the belief of knowledge as “constructed” (Elby & Hammer, 2010). Here the person believes that people can independently construct knowledge or that they can “make it up”. Third, they describe the belief that knowledge is “fabricated stuff”. This belief contends that knowledge is derived from other knowledge, thus implying connectivity between knowledge claims. These resources may overlap or be enacted in different contexts depending on the needs of the individual.

**Resources for understanding epistemological activities.** The resources for understanding epistemological activities help the individual understand how she came to know a knowledge claim (Hammer & Elby, 2002). Three sub-resources are implored in this resource category. The first, accumulation, is the belief that an individual can gather or retrieve knowledge claims. This suggests that a person can “find out” what she doesn’t know by engaging in varying experiences. The second, formation, is the belief that knowledge is constructed individually through activities such as writing or inventing games. That is, the person is constructing knowledge in creative contexts. The third, checking, is the process whereby an individual reassures a knowledge claim is accurate by comparing it to other knowledge claims.

**Resources for understanding epistemological forms.** The resources for understanding epistemological forms explain the different forms necessary to and dependent upon the understanding of a knowledge claim (Hammer & Elby, 2002). Hammer and Elby (2002) use two sub-resources to explain how form is conceptualized in this framework, “stories” and “rules”. For “stories”, the individual’s epistemological
belief is guided by the structure of the story, thus acting as a necessary aspect of understanding knowledge claims. On the other hand, “rules” are the guiding steps or criteria for which a knowledge claim or activity can operate under. For example, these beliefs dictate what rules are invented in the creation of a game, or how those rules are applied to the game (see Hammer & Elby, 2002).

**Resources for understanding epistemological stances.** For the resources for understanding epistemological stances, Hammer and Elby (2002) explain that people enact different resources based on the stance they take towards a knowledge claim. Hammer and Elby identified “belief” or “disbelief” that the information in the knowledge claim is accurate. That is, when presented with a knowledge claim, does the person doubt or accept the stances made in the claim? Second, they identified “Puzzlement” or “Understanding” of the information in the knowledge claim. That is, does the person grasp the concepts in the knowledge claim or does she have difficulty comprehending it?

In summary, Hammer and Elby’s epistemological resources model (2002) looks at the differentiation of epistemological beliefs depending on the context and situation. Therefore, Hammer and Elby suggest that the context of the knowledge claim should be taken into consideration when examining a person’s epistemic beliefs about the given topic. Because of its contextual emphasis, more research is needed to better understand how a person’s epistemological beliefs may differ across contexts (Hofer, 2001).

**Domain specificity vs. domain generality.** A growing area of inquiry and importance in the study of personal epistemology is related to the debate regarding if epistemic beliefs are domain general or domain specific (Muis, Bendixen, & Haerle, 2006). Hofer (2000) defines domain as the important characteristics of a discipline (e.g.,
mathematics, chemistry) that include criteria and validation processes that are used to make knowledge claims. Domain general beliefs imply that epistemic beliefs would be the same or relatively similar across domains. Domain specificity implies that epistemic beliefs may be different depending on the domain. Even though domain generality is the underlying assumption in much personal epistemology research, the research on domain specificity is growing in importance (Hofer, 2000; Muis et al., 2006). Following is a brief overview of literature on the topic of domain generality and domain specificity.

**Domain generality.** The common thread of inquiry in personal epistemology has assumed that epistemic beliefs are domain general (Muis et al., 2006). This implicit assumption indicates that the epistemic beliefs of an individual are relatively the same across domains. As such, there have been studies (e.g., Schommer & Walker, 1995; Schommer-Aikins, et al., 2002) that have found evidence for domain generality of beliefs. For example, Schommer-Aikins, Duell, and Barker (2003) found domain generality of beliefs of students from multiple disciplines, such as mathematics, social sciences, and business. Using statistical regression of data obtained from domain-general questionnaires, the researchers found that there were no statistically significant differences found between the groups of students in each domain as a whole. This supports the notion that some beliefs may in fact be domain general.

**Domain specificity.** The notion that epistemic beliefs are domain specific is supported by a distinction in the epistemological orientation of multiple disciplines (Buehl et al., 2002). Disciplines often have a different view of the dimensions of knowledge because of the nature of the investigations and the overall beliefs of knowledge claims (Muis et al., 2006). Consequently, there has been a significant amount
of research that supports the fact the some epistemic beliefs may be domain specific (Buehl & Alexander, 2004; Estes et al., 2003; Hofer, 2000; Jehng et al., 1993). For example, Hofer (2000) examined if students in the sciences would have relativity similar beliefs as students in psychology, across the four dimensions: certainty of knowledge, simplicity of knowledge, source of knowledge, and justification of knowledge (e.g., Hofer & Pintrich, 1997). Hofer’s research found that some differences did emerge within and between subjects. For example, students believed that truth was more likely to be found in the sciences than in psychology. This supports the notion that epistemic beliefs of certain domains are different.

In summary, there is evidence that epistemic beliefs may be both domain general (e.g., Schommer-Aikins, et al., 2003), and domain specific (e.g., Buehl et al., 2002). That is, some knowledge domains may elicit consistent epistemic beliefs with other knowledge domains, while some knowledge domains may elicit distinctive epistemic beliefs (Muis et al., 2006). Because research suggests that some epistemic beliefs may be consistent across certain domains but different in others, it would be worth examining if the discipline of English as a second language elicits domain specific beliefs. It could be argued that the discipline of English as a second language operates similarly to other knowledge domains such as psychology (e.g., Hofer 2000), and therefore has domain specificity unique to that discipline. For example, learners’ beliefs about source of knowledge of English could be different from learners’ beliefs about source of knowledge in general. A person studying English as a second language may believe that there are internal sources (e.g., personal experiences) of knowledge about how to
communicate in English, but when studying other subjects the person may believe that knowledge comes only from external sources (e.g., historians, textbooks).

**Epistemic beliefs of second language learners.** There is an overall lack of research on second language learners’ personal epistemology. Only one study, Mori (1999), was found that explored this topic of interest in students who studied Japanese as a second language. Mori (1999) investigated the role epistemic beliefs play in second language learning using Schommer-Aikins’ epistemic beliefs system framework (Schommer, 1990). In this study, Mori gave 187 undergraduate students studying Japanese as a foreign language an epistemic belief questionnaire and a language learning questionnaire with the intention to: a) explore the language learner’s beliefs about learning in general, b) study their beliefs about language learning in particular, c) examine the relationship between the aforementioned belief structures, and d) examine the relationship between these beliefs and achievement. Data from the questionnaires were correlated to determine relationships. Specifically, the independent dimensions within each questionnaire were analyzed.

The *epistemic belief questionnaire* analyzed five dimensions of domain-general epistemic beliefs, previously identified by Schommer-Aikins (Schommer, 1990): 1) *Fixed Ability*, 2) *Simplicity of Knowledge*, 3) *Quick Learning*, 4) *Certain Knowledge*, and 5) *Omniscient Authority*. A total of 40 items were given to students to assess their epistemic beliefs. Each participant had to rate agreement or disagreement with the items on a 6-point scale. The framework was taken from Schommer-Aikins (Schommer, 1990) and was shortened for the purposes of the study (Mori, 1999, pp. 383-385). Below
general items are provided to show the focus of the epistemic belief questionnaire (see Table 1).

Table 1

Epistemological Belief Questionnaire

<table>
<thead>
<tr>
<th>Fixed Ability: The ability to learn is innate rather than acquired.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Innate ability (2 items)</td>
</tr>
<tr>
<td>b. Success is unrelated to hard work (1 item)</td>
</tr>
<tr>
<td>c. Fixed ability (6 items)</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Simple Knowledge: Knowledge is simple rather than complex.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Avoid ambiguity (2 items)</td>
</tr>
<tr>
<td>b. Avoid integration (2 items)</td>
</tr>
<tr>
<td>c. Seek a single answer (2 items)</td>
</tr>
<tr>
<td>d. Simple knowledge (4 items)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quick Learning: Learning is quick rather than gradual (7 items).</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Certain Knowledge: Knowledge is certain rather than tentative (5 items).</th>
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<table>
<thead>
<tr>
<th>Omniscient Authority: Knowledge is handed down by authority.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Dependence on authority (6 items)</td>
</tr>
<tr>
<td>b. Asking for help (3 items)</td>
</tr>
</tbody>
</table>

The language learning questionnaire contained 92 items that were constructed based on 17 hypothesized beliefs. Some of the beliefs applied the dimensions of Schommer-Akins’ (Schommer, 1995) epistemic belief system to language learning. These items included: 1) Innate Ability, 2) Quick Learning, 3) Simple Knowledge, 4) Avoid Ambiguity, 5) Avoid Integration, 6) Certain Knowledge, 7) Dependence on Authority, 8) Language Learning is the Same, 9) Japanese is Difficult, 10) Kanji is Difficult, 11) Vocabulary is Important, 12) Effort is a Waste, 13) Focus on the Whole, 14) Memorization is Important, 15) Risk Taking, 16) Cannot Learn from Mistakes, 17) Learn
the Natural Way. Each participant had to rate agreement or disagreement with the items on a 6-point scale.

Participants were also given a student information questionnaire. This questionnaire asked students demographic information such as age, gender, educational background, first language, nationality, grade point average, foreign language experiences, motivation, and career goals. Student achievement was also obtained to explore relationships between epistemic beliefs and proficiency. To obtain achievement, participants' scores on daily quizzes, achievement exams, proficiency tests, and course achievement were collected. Even though students from multiple universities participated in this study, only students from one university (n=97) were analyzed based on their achievement data, which lent to the internal consistency of this research question.

Each dimension of the epistemic beliefs questionnaire and the language learning questionnaire were statistically analyzed using factor analysis to determine the relationships among and between them. Results from this study indicate that second language learners demonstrated distinct and independent dimensions of epistemic beliefs and language learning beliefs, thus supporting research previously conducted in this framework (i.e., Schommer, 1990). There were, however, a few significant correlations across the epistemic beliefs questionnaire and language learning questionnaire, however. For example, there was a correlation between the dimension Simple Knowledge from the epistemic belief questionnaire and Avoid Ambiguity from the language learning questionnaire (r=.45, p < 0.05). One possible explanation for this link is that the construct developed by Mori, Avoid Ambiguity, is closely related conceptually to Schommer-Aikins’ construct of Simply Knowledge. A significant correlation was also found between
the dimension *Dependence on Authority* from the epistemic beliefs questionnaire and *Reliance on First Language* from the language learning questionnaire (r=.27, p < 0.01). That is, participants who believed authority was important tended to rely on their first language for second language learning. Correlations were also found between language learners’ beliefs and achievement in the second language classroom (i.e., Japanese).

Primarily, the belief that *Japanese is Easy* was associated positively with high achievement. The belief, *Avoid Ambiguity*, was negatively correlated with high achievement, suggesting that learners who accept language as an ambiguous knowledge domain have greater success learning a foreign language.

The results from this study have four primary implications that lend importance to the proposed study. First, Mori (1999) found that beliefs about language learning are related to proficiency in a second language. This suggests that more advanced epistemological beliefs are related to higher language proficiency or are most visible when a person is able to communicate their beliefs. Second, naïve epistemological beliefs of language learning tend to be related to views of language knowledge as concrete and unchanging. This belief is related to lower achievement in language learning. Students who believed language knowledge is context based and changing were more proficient in their language proficiency. Third, Mori found evidence for domain specific beliefs of Japanese as a knowledge domain. The same might then apply to English as a knowledge domain. Finally, this study supports the notion that there are distinct dimensions of epistemic beliefs, supporting dimensional epistemic frameworks, such as Hofer’s (2001) and Schommer-Akins (Schommer, 1990; Schommer-Aikins, 2004), that place an emphasis on the different dimensions of knowledge when examining a person’s epistemic
beliefs. This also suggests that epistemic belief dimensions may or may not function congruently with one another and may be enacted differently depending on the circumstances of the context (e.g., Schommer-Aikins, 2004), including the epistemic climate of the classroom where learners receive epistemic messages from the teacher, the curriculum and the discipline of study (e.g., Feucht, 2010).

Epistemic climate. A growing area of concern for researchers of personal epistemology is the epistemic climate of classrooms (Feucht, 2010). Despite the fact that there is an overall paucity of research on this topic as whole (Feucht, 2010; Haerle & Bendixen, 2008), knowing the epistemic climate of a classroom can help researchers better understand why and how students’ epistemic beliefs within a specific discipline, school, or culture develop in the manner in which they do. Feucht (2010) defined epistemic climate as:

the nature of knowledge and knowing of a classroom emerging from the personal epistemologies of students and their teachers, as well as from the epistemological underpinnings of instruction and knowledge representations along with the reciprocal relations among these four components. An epistemic climate is sensitive to its context and school subject, and influential on epistemic development (p. 58).

The different factors of an epistemic climate and the processes involved in that climate interact and influence how a person’s epistemic beliefs develop and are shaped in that particular context. People are constantly influenced by different epistemic climates, whether at home, school, or other interactional spaces, and therefore their epistemic beliefs can be shaped by the epistemological orientation of the different contexts that are encountered (Feucht, 2010). The Educational Model of Personal Epistemology (EMPE) provides a framework to more appropriately discuss and examine the epistemic climate of
a classroom (Feucht, 2010; Feucht, 2011). Five factors are presented as essential elements of this model: 1) the learner’s personal epistemology, 2) the teacher’s personal epistemology, 3) epistemic knowledge representations (i.e., the epistemic messages that are embedded in the discipline, textbooks, and curricula), 4) epistemic instruction (i.e., epistemic messages that are embedded in the teaching methods for the specific content/discipline), and 5) the reciprocal relationships between each component.

When examining certain aspects of students’ epistemic beliefs, understanding the epistemic climate of the classroom is useful. In particular, it would be helpful to look at the teacher’s epistemic beliefs in the discipline or domain where the learners’ beliefs are examined (Schraw & Olafson, 2002). That is, teachers’ beliefs about knowledge can influence what is taught (i.e., discipline content) and how it is taught (i.e., instruction) (Feucht, 2010; Schraw & Olafson, 2002). These curricular decisions can have an impact on the epistemic beliefs of the learners (Bendixen & Rule, 2004; Feucht & Bendixen, 2010; Muis & Foy, 2010). For example, a teacher with absolutist beliefs will believe that knowledge is transmitted from authority (i.e., the teacher) to learner and their teaching goals will be for students to receive objective knowledge through passive learning (Feucht, 2010; Feucht, 2011; Johnson et al., 2001). The multiplist teacher, on the other hand, facilitates a constructivist learning environment where the students are involved in the knowledge construction. Because of their subjectivist views of knowledge, experts and authoritative sources of knowledge, curricula, and textbooks are unapproved of and not used in the learning environment. Evaluativist teachers tend to engage students in collaborative learning that require the students to commit to their knowledge claims, using judgment and reasoning to come to conclusions (Feucht, 2010). Additionally,
because evaluativist teachers believe knowledge is context dependent and tentative, they bring in additional and multiple sources of information in their instruction, expanding the student’s worldviews and exposure to different perspectives (Feucht, 2010). Essentially, it is assumed that constructivist teaching promotes more advanced epistemic beliefs (Feucht, 2010).

Another important aspect of the epistemic climate is the knowledge representations of the discipline in which the learners’ beliefs are being examined (Feucht, 2010; Hammer & Elby, 2002). The epistemic messages that are embedded in the curricula influence how students’ perceive knowledge within that identified field (Feucht, 2010). That is, different disciplines may display different epistemic messages given the nature of knowledge in the field (Hammer & Elby, 2002; Louca, Elby, Hammer, & Kagey, 2004). For example, mathematics may have more objectivist knowledge representations than history which takes into account multiple worldviews of an event to come to a conclusion regarding the event (Hammer & Elby, 2002). Thus, curricular epistemology should be the reflection of the scientific epistemology of the discipline (Feucht, 2010).

Also important are the epistemic messages embedded within the instruction methods used in the specific disciplines or content areas (Feucht, 2010). Instruction can influence students’ personal epistemology because of the epistemic messages embedded in the pedagogical practices (Feucht, 2010). The methods implored by teachers often are tied to the knowledge beliefs of the teacher (e.g., Johnston et al., 2001), the epistemic messages from the discipline (Yang, 2001), and the coordination of these beliefs. Instructional methods that are more traditionalist in nature (e.g., lecture), placing the
teacher as the knower and the students as the knowledge receivers, are more likely to have epistemic messages that are more absolutistic (Boscolo & Mason, 2001; Feucht, 2010). Constructivist instructional practices, where learners are engaged in the knowledge construction actively, are more evaluativistic in their epistemic messages (Boscolo & Mason, 2001; Feucht, 2011). Finally, literature suggests that the epistemic orientation of instruction and content knowledge should be consistent with the epistemic messages of instruction so that students can evaluate knowledge as independent thinkers (Feucht, 2010).

For the purposes of this study, aspects of the epistemic climate may shed light on the epistemic beliefs of English language learners. Even though each aspect of the epistemic climate would be useful to understand, specifically examining on a theoretical level the possible impact of the epistemic messages of the discipline of English as a second language and the epistemic messages embedded in the instruction methods of ESL may be helpful. The fields of ESL and foreign language education have been rather divisive regarding theories of second language acquisition and the instructional methods that best teach a second language (Brown, 2007). Within this divisiveness, several distinctive methods of teaching second/foreign languages have arisen. Provided below is a brief discussion of certain second language methods and the epistemic messages that they might portray.

**Second Language Instructional Methods and their Epistemological Orientation**

Over the past 100 years, several theories of second language acquisition have emerged, greatly impacting the development of different second language instructional methods. These different theories of second language acquisition, thus, carry several
epistemic undertones that influence the epistemic orientation of the second language instructional methods. Since the Stoics first described a functional grammar as a way of teaching Greek over 2,000 years ago (Yngve, 1996), language has been seen as a system of grammar and words that people use to communicate. Chomsky’s (1964) theories about generative grammar and the language acquisition device further situated the role of grammar and translation in the second language classroom within the last 50 years (Brown, 2007). Despite the prevalence of functional grammar in second language learning, several models have shifted away from a grammar-only focus in language instruction, but remain closely linked in their theoretical assumptions regarding the nature of language and its use in human communication. Furthermore, prominent theoretical frameworks of second language acquisition, such as the universal grammar framework (Chomsky, 1964; Chomsky, 1968), input-based hypothesis (Krashen, 1989), the interaction hypothesis (Ellis, 1990), the cognitive linguistic framework (Ellis, 2008), and the hard-science linguistic framework (Yngve, 1996) have influenced, on a theoretical level, second language instruction methods.

Due to the developments in second language research, the field of second language instruction has gone through many distinct changes (Brown, 2007). Thus, several different instructional methods have emerged based on research in second language acquisition and learning. There are, at times, overlapping methods with differences that are minimal in some cases. Below several prominent second language instructional methods are briefly overviewed, with certain epistemological associations outlined in their description. Even though not all methods are discussed, several methods are introduced, such as the grammar-translational method, the audio-lingual method,
content-based instruction, communicative language teaching, and a new framework, the hard-science linguistic method.

Table 2

**Epistemological Orientation of Second Language Instructional Methods.**

<table>
<thead>
<tr>
<th>Second Language Instruction Methods</th>
<th>Epistemological Underpinnings</th>
<th>Overall Epistemic Development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Certainty of knowledge</td>
<td>Simplicity of Knowledge</td>
</tr>
<tr>
<td>Grammar-Translation</td>
<td>Certain</td>
<td>Simple</td>
</tr>
<tr>
<td>Audio-lingual</td>
<td>Certain</td>
<td>Simple</td>
</tr>
<tr>
<td>Content Based Instruction</td>
<td>Uncertain</td>
<td>Complex</td>
</tr>
<tr>
<td>Communicative Language Teaching</td>
<td>Uncertain</td>
<td>Complex</td>
</tr>
<tr>
<td>Hard Science Linguistics</td>
<td>Uncertain</td>
<td>Complex</td>
</tr>
</tbody>
</table>

*Note.* This table was created for the purpose of the literature review. It provides theoretical linkages between second language instructional methods and epistemological underpinnings based on the epistemological belief frameworks of Hofer (2001) and Kuhn (1999). The linkages are based on enacted and philosophical principles of the second language instructional methods as they are most commonly discussed.

**Grammar-translation method.** One significant method of second language instruction approach is the grammar-translation method (Bachman & Palmer, 1996;
Brown, 2007; Canale & Swain, 1980; Gass & Selinker, 2001; Oller, 1979; Purpura, 2004). This method of second language teaching focuses on teaching grammatical rules, conjugating verbs, and translating words from a native language to a second language to understand vocabulary in the target second language (Brown, 2007; Oller, 1979). More specifically, the native and second languages are constantly compared, with the idea of converting the first language to the second language (Omaggio Hadley, 1993). Thus, dictionaries and grammar workbooks are an important part of the language classroom. Moreover, little attention is given to communicating in the second language. Instead, the primary focus is on communicating about the second language (Omaggio Hadly, 1993).

The fact that this method is deeply rooted in tradition is evident when examining the different epistemological assumptions embedded within its philosophical foundation. First, because this approach uses translation and direct grammatical instruction, there is the underlying assumption that knowledge about a second language is objective and certain. That is, the assumption is that there is correct grammatical usage and there is incorrect grammatical usage. Second, this approach has authoritative undertones regarding the source of knowledge about grammar and vocabulary knowledge. For example, there may be a belief that there are textbooks that have the correct and most accurate translation of a word, or the correct usage of a given word. This implies an objective view of vocabulary knowledge that is derived directly from an outside or external source of knowledge (see Table 2). Context in this case is essentially an afterthought. Finally, there is little or no need for the learner to explore different ways of knowing with this method (i.e., justification of knowledge). With the belief that there is one correct way to “use” a word, there is also the belief that there is only one way to
acquire word knowledge. For the reasons stated above, this method would have more absolutistic epistemic underpinnings (see Table 2).

**Audio-lingual method.** In the 1960’s the *audio-lingual method* became an alternative to the grammar-translation approach. This method uses audio form as the primary mode of delivery for new material. With this method, the learner is required to imitate the material and use repetition and rehearsal to memorize the new material (Brown, 2007). There is also much emphasis on producing error free utterances. Additionally, this method is a departure from the grammar-translation approach because there is little or no grammar explanation, and vocabulary instruction is rather limited and taught purely in context (Omaggio Hadley, 1993).

In many ways, the audio-lingual method has a very similar epistemological orientation to the grammar-translation method. This method encourages the belief that there is a correct way to produce language, or rather, knowledge about language is certain and simple. Moreover, because there is emphasis on producing error-free language, there is a general disregard toward the content of the communicative setting. Consequently, new vocabulary is seen to be less important, and the source of knowledge in this methodology is rather ambiguous (see Table 2). Furthermore, knowing is seen as rather dogmatic and all one must do is “acquire” the necessary sounds to know a new language. Therefore, this instructional method would have more absolutistic epistemic underpinnings.

**Content-based instruction.** Another prominent method of language instruction is *content-based Instruction*, which teaches second languages through the integration of the second language into other content areas in the classroom (Grabe & Stroller, 1997). The
goal with this language method is to create more meaningful second language learning experiences by incorporating language learning into the other content areas, such as mathematics and history. Moreover, this approach does not teach language skills in isolation. The explicit focus on actual language structures and skills may at times be absent. Ultimately, however, this method promotes communication and shows the importance of learning languages in different domains, contexts, and subject areas.

For the reasons stated above, this instructional method would theoretically promote more sophisticated epistemological beliefs. That is, knowledge about language in this method would be seen as uncertain, changing, complex, and the source of knowledge about language would be context or domain specific. This is because this approach acknowledges that knowledge about language is, or can be, dependent upon the domain in which someone is speaking. Knowing a language would be seen as a process dependent upon the knowledge of the specific domain where the language is being taught (e.g., science). For example, an ELL may be more confident speaking English in mathematics if that is the person’s primary subject of interest or background knowledge. It could be inferred that this instructional method displays more evaluativistic epistemic beliefs (see Table 2). This will depend on the actual domain of knowledge where the second language is being taught.

**Communicative language teaching.** The *communicative language teaching* approach has become widely popular throughout the last 30 years because of its focus on teaching communication rather than just grammar and vocabulary (Brown, 2007). There is a special emphasis with this approach on fluency (e.g., flow of conversation) over accuracy (e.g., grammatical correctness) and on context-rich learning environments. This
method has a few primary components that establish it as a distinct approach to language teaching. First, there is a basic emphasis on contextualization of the target language. This suggests that learners are immersed in learning that is relevant to the real-world. Second, meaning is an important aspect of the approach. Therefore, vocabulary plays an important role in developing communicative competence.

Based on some of the key characteristics of this approach, it can be inferred that this method has a sophisticated epistemological orientation. Because communicative language teaching focuses on context rich-learning environments and fluency, this method portrays the notions that knowledge about language is uncertain, complex, situation dependent, and that source of knowledge of language depends on the context, rather than an ultimate authority (e.g., a grammar book, a textbook). Furthermore, this approach implies that knowledge about language is both objective and subjective, thus possibly reinforcing more evaluativistic beliefs of second language knowledge (see Table 2).

**Hard-science linguistic.** The *hard-science linguistic* method is a more recent method that draws on Yngve’s (1996) reconceptualization of linguistics. Since the 1990’s, researchers of hard-science linguistics have been working towards developing a new approach to teaching human communication that is based on the scientific study of how people communicate, rather than based on the philosophical assumptions behind traditional linguistics (e.g., Coleman, 2005; Sypniewski, Coleman, & Ziegler, 2008; Ziegler & Feucht, 2012). Despite the fact that this approach is not widely used, it emphasizes a need to understand and learn communication in second language languages in context, to understand the changing nature of how people communicate, and to
understand that the meaning of sounds and texts depends on the minds of the people communicating (e.g., Yngve, 1996; Coleman, 2005), not necessarily the prescribed meaning. Therefore, correctness of communication is dependent upon the given parameters of the communicative event, rather than assumptions of universality of grammar embedded within the other approaches.

This approach to language learning would promote beliefs about knowledge of language that are uncertain, complex, and situation dependent. Knowledge about communication in a second language would be compiled through the scientific process using Yngve’s framework for studying human communication rather than more abstract methods used by traditional linguistics such as Chomsky (1964; 1968), White (1989), or Purpura (2004). For example, traditional linguistic approaches will describe a grammatical phenomenon, such as the null-subject parameter (i.e., dropping the subject from a sentence), and ask people about their perceived usage of this phenomena. On the other hand, a hard-science linguistic approach would examine how people are communicating, and what circumstances change their actual communicative patterns (e.g., not saying “I” when saying “I love to go to the cinema”) and outcomes (e.g., how people react to this articulation), rather than asking subjective opinions of such an abstract phenomenon. Through this approach to understanding human communication, vocabulary knowledge would be believed to be derived from various sources, both contextual and authoritative, and would incorporate elements of the person’s own experiences in the communicative events to determine accuracy and correctness. It could thus be inferred that this method of instruction has more evaluativistic epistemic underpinnings (see Table 2).
In sum, the epistemic messages embedded in the second language instructional methods may play a crucial role in how ELLs’ epistemic beliefs are espoused and developed in the classroom in domain-specific knowledge areas (e.g., Feucht, 2010; Muis, et al. 2006). Because of the different epistemological messages that are derived from the second language instruction methods (i.e., grammar-translation, audio-lingual, content based Instruction, communicative language teaching, and hard-science linguistics), it could be argued that students who are learning second languages under these respective methods may espouse beliefs that are more in-line with the method of instruction with which they are the most familiar (e.g., Feucht, 2010). In essence, understanding the epistemic climate of the second language classroom will inform how students’ beliefs about language learning are enacted and espoused (e.g., Muis et al., 2006). Consequently, knowing what types of procedures the students believe to be the most helpful can assist educators in designing curriculum that espouses more sophisticated epistemic beliefs.

**Emerging Issues**

Through the review of relevant research and literature, several gaps in research have arisen. Because the English language learner represents one of the largest minority populations in the U.S., it is unquestionable that these gaps in research be addressed. Four prominent, yet interwoven issues have emerged, and while there is an overlap of each emerging issue, it is necessary to tease them apart to gain a more extensive understanding of English language learners’ epistemic beliefs. The first issue that emerged is the minimal amount of research on English language learners’ epistemic beliefs about knowledge in general. Not surprising, the second issue that emerged is the absence of
research on ELLs’ epistemic beliefs about English vocabulary knowledge in particular. The third relevant issue that emerged is the paucity of research on English language learners’ epistemic beliefs about English as a second language as a specific domain of knowledge. The fourth, and final, emerging issue is the lack of in-depth, qualitative research on English language learners’ epistemic beliefs. Following is a more thorough discussion of each emerging issue.

An important issue that emerged is the lack of research on the epistemic beliefs of English language learners about knowledge in general. Several studies have, in fact, examined beliefs of second language learners about learning (e.g., Abraham & Vann, 1987; Benson and Lor, 1999; Bernat and Gvozdenko, 2005; Horwitz, 1988; Horwitz; 1999; Tanaka and Ellis, 2003; Wenden, 1986; Yang, 1999), but only one study (Mori, 1999) specifically examined the epistemic beliefs of second language learners focusing on Japanese as a foreign language. No research, however, was found that examined the epistemic beliefs of English language learners about knowledge in general. Moreover, Mori’s study primarily examined the relationship between epistemic beliefs about language learning, rather than the epistemic beliefs about the knowledge of a second language. More research needs to be conducted to understand what English language learners believe is the nature of knowledge and knowing in general. The absence of research on English language learners’ beliefs about knowledge and knowing is surprising considering the positive relationships that have been found between sophisticated epistemic beliefs and positive learning outcomes (e.g., Hofer, 2000; Mason & Boscolo, 2004; Schommer-Aikins, 2004; Elby & Hammer, 2010). When one considers the growing population of English language learners in the U.S. (Pacheco, 2010), this
lack of research is even more startling. Therefore, it is important to examine what English language learners’ epistemic beliefs are and the implications of these beliefs to the instructional setting.

A second emerging issue is the lack of research on English language learners’ epistemic beliefs about English with a focus on vocabulary knowledge specifically. With only one prominent study of second language learners’ of Japanese epistemic beliefs (e.g., Mori, 1999), much is left unexamined about their epistemic beliefs regarding vocabulary knowledge. This is unexpected given that many second language educators and researchers have shown the importance of vocabulary knowledge in second language curricula and pedagogy (e.g., Brown, 2007; Francis & Simpson, 2003; Saville-Troike, 1984; Victori, 1999; Wei, 2007; Williams, 2006). Because vocabulary knowledge is a crucial aspect of an English language learner’s language development, it would be helpful to know what their beliefs are about vocabulary knowledge so that more advanced epistemic beliefs can be fostered in the ESL classroom (e.g., Muis et al., 2006). Furthermore, Muis et al. (2006) and Feucht (2010) reviewed literature supporting the need for sophisticated epistemological beliefs in the instructional setting. Therefore, it could be suggested that knowing more about ELLs’ epistemic beliefs about English vocabulary knowledge would lend a significant amount of support for the ESL classroom.

A third emerging issue is the lack of research on ELLs’ epistemic beliefs about English as a second language as a specific domain of knowledge. Research on second language learners has found that there is domain specificity regarding their beliefs (Ellis, 2008; Mori, 1999), including distinct language structures (e.g., Japanese, English, and
Spanish) as separate domains. The only prominent research study on second language learners’ epistemic beliefs examined learners of Japanese as a second language. With significant support showing that there may in fact be domain specificity (e.g., Muis et al., 2006), this implies that Mori’s findings of learners of Japanese as a second language may not be generalizable to learners of other second languages, such as English. Moreover, Mori’s (1999) study lacks evidence showing what language learners believe about vocabulary knowledge in a second language. Therefore, research is needed to explore the epistemic beliefs of English language learners about the domain of English, and in particular English vocabulary, as the previous research on second language learners’ personal epistemology has failed to look at this domain.

A final issue that emerged from the literature review was the lack of in-depth, qualitative research on the epistemic beliefs of second language learners in general (Francis & Simpson, 2003), and English language learners, in particular, regarding beliefs about vocabulary knowledge. The exemplary study, conducted by Mori (1999), examines the beliefs of second language learners of Japanese using Schommer-Akins’ (Schommer, 1990) domain-general epistemic questionnaire. A limitation addressed by the researcher is that the study does not provide a clear description of the complex, dynamic, and varying beliefs about second language knowledge because of its quantitative nature. Thus, a qualitative, in-depth analysis is needed to be able to account for the variability in beliefs that may arise through the interview process (e.g., Bendixen & Feucht, 2010; Bernat & Gvozdenko, 2005; Pintrich, 2002) or other qualitative data collection methods. More pertinently, using qualitative approaches to examine English language learners’ epistemic beliefs about English vocabulary knowledge will provide
the researcher with a base-line of information regarding their own perceptions of English vocabulary knowledge.

**The Study**

**Significance**

English language learners often begin the English learning process with a wide variety of cognitive abilities, and social and educational backgrounds, some of which might assist in their English language development (Garcia, 2002). There remains, however, much to be understood about their cognitive processes in the second language setting, and how those processes affect their language development. Understanding the epistemic beliefs of ELLs helps educators better understand what strategies and processes they use in the learning process, how their epistemic beliefs are influenced by the broader epistemic climate of the ESL classroom, and what their abilities to engage in critical thinking in the second language setting are. The exploration of their epistemic beliefs in the second language setting establishes a foundational understanding of the values, attitudes, and abilities that ELLs use in higher-order thinking processes, thus providing insight into their critical thinking abilities. As Freire (1970) described, critical thinking is a necessary vehicle for true dialogue to occur. Thus, English language learners must be equipped with the ability to engage in critical thinking in an English language setting. Furthermore, with a growing population of people who speak English as a second language in the U.S. (August, 2007), the need to understand the critical thinking of ELLs has never been more pressing, especially with the recent implementation of the Common Core Standards in the U.S. public school systems (National Governors Association Center for Best Practices, 2010). Despite the fact that this study solely examined ELLs’
epistemic beliefs about English vocabulary, this research provides a basis for better understanding ELLs’ epistemic beliefs in other contexts and educational practices, thus shedding light on their ability to engage in, and espouse, critical thought in the second language setting.

**Rationale and Research Questions**

There are several research questions that arise from these issues. The answers to these questions will contribute to the fields of English as a second language, second language acquisition, and personal epistemology, which come together in the field of educational psychology. These questions are exploratory in nature and aim to develop a better understanding of the epistemic beliefs of English language learner in the domain of English as a second language. Thus, the primary focus of this study explores the English Language Learners’ epistemic beliefs about vocabulary knowledge in English (Research Question 2),

1. What are ELLs’ beliefs about language learning and vocabulary knowledge in general?

2. What are ELLs’ epistemic beliefs about vocabulary knowledge?

   a. What are the dimensional aspects of ELLs’ epistemic beliefs of vocabulary knowledge (i.e., certainty, simplicity, source, and justification)?

   b. What are ELLs’ developmental levels of epistemic understanding of vocabulary knowledge in English (i.e., absolutist, multiplist, evaluativist)?

   c. Are ELLs’ epistemic beliefs domain general (i.e., knowledge) or domain specific (i.e., vocabulary knowledge)?
Working Definitions

**Working definition of vocabulary knowledge.** The working definition of vocabulary knowledge is drawn from Nagy and Scott’s (2000) facets of vocabulary knowledge and Yngve’s (1996) hard science linguistic framework. Nagy and Scott’s (2000) framework of indiscriminant facets of vocabulary knowledge shows that there are five different aspects of vocabulary knowledge: incrementality, polysemy, multidimensionality, interrelatedness, heterogeneity. Yngve’s framework suggests that words are not a part of the real world. Vocabulary then would then be a grouping of sounds or texts that represent certain behaviors, concepts, ideas, or emotions in specified contexts. By operating under the premise that words are not real-world constructs but rather abstract constructs that represent things in the real-world (e.g., Yngve, 1996), the five facets of vocabulary knowledge can be more easily examined because they align with the notion that words and knowledge of words can have different, yet interrelated constructs.

**Working definition of epistemic beliefs.** The working definition used in this study for epistemic beliefs is drawn from Hofer’s epistemological theories framework (Hofer & Pintrich, 1997; Hofer, 2001) and incorporates Kuhn’s model of epistemic understanding (Kuhn, 1991; Kuhn, 1999) to show the developmental aspects of epistemic beliefs in the four dimensions of knowledge and knowing. The dimensions *certainty of knowledge* and *simplicity of knowledge* describe beliefs about the nature of knowledge. The dimensions *source of knowledge* and *justification of knowing* describe the beliefs about the nature of knowing. Kuhn (1999) proposed four stages of epistemic development, three of which will be examined in this study: *absolutism multiplism*, and
evaluativism. Kuhn’s developmental model is integrated with Hofer’s to explain the developmental aspects within each dimension (see Table 3). Using Kuhn’s (1999) developmental model of epistemic understanding, each of Hofer’s (2001) dimensions of English language learners’ beliefs about vocabulary knowledge will be examined along a developmental continuum (see Table 3).

Table 3

**Dimensional and Developmental Aspects of Epistemic Beliefs**

<table>
<thead>
<tr>
<th>Dimensional Aspects of Epistemic Theories (Hofer, 2001)</th>
<th>Developmental Levels of Epistemic Understanding (Kuhn, 1999)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certainty</td>
<td></td>
</tr>
<tr>
<td><strong>Absolutism</strong></td>
<td>Knowledge is <em>Certain and Changing</em></td>
</tr>
<tr>
<td><strong>Multiplism</strong></td>
<td>Knowledge is <em>Uncertain and Changing</em></td>
</tr>
<tr>
<td><strong>Evaluativism</strong></td>
<td>Knowledge is <em>Uncertain across contexts, relatively Changing</em></td>
</tr>
<tr>
<td>Simplicity</td>
<td></td>
</tr>
<tr>
<td><strong>Absolutism</strong></td>
<td>Knowledge is <em>Simple and Static</em></td>
</tr>
<tr>
<td><strong>Multiplism</strong></td>
<td>Knowledge is <em>connected with other subjective knowledge claims</em></td>
</tr>
<tr>
<td><strong>Evaluativism</strong></td>
<td>Knowledge is <em>Complex and Dynamic</em></td>
</tr>
<tr>
<td>Source</td>
<td></td>
</tr>
<tr>
<td><strong>Absolutism</strong></td>
<td>Knowledge is derived from <em>External Sources</em></td>
</tr>
<tr>
<td><strong>Multiplism</strong></td>
<td>Knowledge is derived from <em>Internal Sources</em></td>
</tr>
<tr>
<td><strong>Evaluativism</strong></td>
<td>Knowledge is derived from an integration of <em>Internal and External Sources</em></td>
</tr>
<tr>
<td>Justification</td>
<td></td>
</tr>
<tr>
<td><strong>Absolutism</strong></td>
<td>Knowing occurs through <em>Direct Observation and Authority</em></td>
</tr>
<tr>
<td><strong>Multiplism</strong></td>
<td>Knowing does not occur through evaluation based on criteria</td>
</tr>
<tr>
<td><strong>Evaluativism</strong></td>
<td>Knowing occurs through <em>Rules of Inquiry and Evaluation</em></td>
</tr>
</tbody>
</table>

*Note:* This table is based on the integration of Hofer’s (2001) *Dimensional Aspects of Epistemic Theories* model and Kuhn’s (1999) *Developmental Levels of Epistemic Understanding* model. This cell matrix was originally published by Feucht (2011) and was adapted for the purpose of this research study.
**Working definition of second language learning.** The proposed working definition of second language learning is developed through an analysis of the different second language teaching methods and the sophistication of their epistemic underpinnings (see Table 2). Second language learning would best occur when the epistemic climate or the learner’s own epistemic beliefs were more sophisticated (e.g., Feucht, 2010; Mason & Boscolo, 2004). That is, second language learning would benefit from practices that emphasize context and correctness, that see multiple sources of vocabulary knowledge as important (i.e., dictionaries and personal experience), that focus on communication and uncertainty in communicative contexts, and that highlight the necessary evaluation of communicative properties in coordination with the outcomes of communicative events (e.g., Coleman, 2005; Yngve, 1996; Ziegler & Feucht, 2012).
Chapter Three

Methods

In order to understand ELLs’ epistemic beliefs about knowledge and knowing of English vocabulary, this study used qualitative approaches to inquiry. Qualitative research provides a richer, deeper understanding of information and allows researchers to examine a person’s beliefs system (e.g., epistemological beliefs) using the person’s own understanding and words to demonstrate their beliefs. Quantitative approaches, while more generalizable, do not provide as much detail and are not as in-depth, flexible, and fully depicting of a person’s beliefs (Ellis, 2008). That is, a qualitative approach provides a more intricate understanding of what ELLs believe about vocabulary knowledge in English. More specifically, this research study used *Qualitative Content Analysis* (Mayring, 2002) as the basic framework for analyzing ELLs’ epistemic beliefs. *Qualitative content analysis* uses textual analysis with inductive and deductive coding schemes that have arisen from the literature and provides the opportunity for the researcher to identify inductive coding schemes and themes that arise during the data analysis (Mayring, 2000). In the following section, the sample of participants will be described. Then, a discussion of the materials used during data collection will be discussed, as well as a discussion of the procedures used to collect data. Finally, the method for data analysis will be addressed.

Sample

The target population for this research study are undergraduate English language learners at a Midwestern university in the United States of America. Each participant was enrolled full-time in a degree-seeking program, and was enrolled in one of the three ESL
writing courses. Each of the different ESL writing courses targeted a different level of writing, from basic, intermediate, to the advanced level. There were twenty (n=20) participants in this study (males n=12; females n=8), with a mean age of 20.75 years. There were four participants (n=4) from Bangladesh, three participants (n=3) from Saudi Arabia, three participants (n=3) from China, two participants (n=2) from South Korea, one participant (n=1) from Honduras, one participant (n=1) from Columbia, one participant (n=1) from Japan, one participant (n=1) from Turkey, one participant (n=1) from Ivory Coast, one participant (n=1) from Burkina Faso, one participant (n=1) from Mexico, and one participant (n=1) from Egypt.

Materials

The data used in the study was taken from writing and speaking assessments used in an Intensive ESL program at a mid-size university in the United States of America. The writing samples and speaking assessments were analyzed from an epistemological angle to determine participants’ epistemic thinking. In total, there were four primary materials used for data collection:

1) Writing Prompts 1 and 2;
2) Interview Question Sets 1, 2, and 3;
3) Ill-structured Scenario;
4) Epistemological Thinking Assessment.

Each instrument is described below as it pertains to the purpose of this study.
Table 4

*Data Collection Procedures*

<table>
<thead>
<tr>
<th>Writing Prompt 1</th>
<th>Research Questions</th>
<th>Domain Specificity vs. Generality</th>
<th>Procedure</th>
<th>Time</th>
<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RQs: 2c</td>
<td>Domain General</td>
<td>Step 1a; Participants write answer to first prompt</td>
<td>75 Minutes</td>
<td>A</td>
</tr>
<tr>
<td>Writing Prompt 2</td>
<td>RQs: 2, 2a, 2b, 2c</td>
<td>Domain Specific</td>
<td>Step 1b; Participants write answer to second prompt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interview Question Set 1</td>
<td>RQs: 2c</td>
<td>Domain General</td>
<td>Step 2a; Participants answer interview questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interview Question Set 2</td>
<td>RQs: 1, 2, 2a, 2b, 2c</td>
<td>Domain Specific</td>
<td>Step 2b; Participants answer interview questions</td>
<td>20-25 Minutes</td>
<td>B</td>
</tr>
<tr>
<td>Interview Question 3</td>
<td>RQs: 2, 2a, 2c</td>
<td>Domain Specific and Domain General</td>
<td>Step 2c; Participants answer interview questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ill-Structured Scenario</td>
<td>RQs: 2, 2a, 2b</td>
<td>Domain Specific</td>
<td>Step 3; Participants and Interviewer read scenario; participants answer interview questions</td>
<td>5 minutes</td>
<td>C</td>
</tr>
<tr>
<td>Epistemological Thinking Assessment</td>
<td>RQ: 2, 2b</td>
<td>Domain Specific</td>
<td>Step 4; Participants read scenario and answer survey questions</td>
<td>10 Minutes</td>
<td>D</td>
</tr>
</tbody>
</table>

**Writing prompts 1 and 2.** The writing assessment contained two prompts that all participants were required to answer. Each writing prompt directed students to write an academic essay that answered an open ended question (Appendix A). For the first writing prompt, participants responded to the question: Is truth unchanging? This writing prompt was used by Bendixen (2002) to examine epistemic beliefs about truth and epistemic change (i.e., domain general epistemic beliefs). Responses to this question were analyzed.
to understand the participants’ domain general beliefs about knowledge and truth (see Table 4). After the participants completed the first writing prompt, they were instructed to submit an answer to the second writing prompt: Is vocabulary knowledge unchanging? This question explored the *domain specificity* of participants’ beliefs about vocabulary knowledge and how that compared to their domain general beliefs about truth. That is, responses to this question were analyzed to understand participants’ domain specific epistemic beliefs of vocabulary knowledge (see Table 4).

**Interview question sets 1, 2, and 3.** The speaking assessment had three parts asked consecutively as semi-structured interview questions. Interview question set 1 (Step 2a; see Table 4) asked participants *domain general* questions about knowledge and knowing (Appendix B), focusing specifically on ELLs’ beliefs about the nature of knowledge and knowing in general, overall situations. For example, the question “What sources do you use to make sure you have good information?” was asked to determine participants’ beliefs about the sources of knowledge in general, what sources they believed to be useful, and their perceived reliability. Interview question set 2 (Step 2b; see Table 4) asked participants *domain specific* questions about vocabulary knowledge, such as “What is the best source for understanding about new vocabulary?” This question aims to understand what participants believed is a good and reliable source to know new vocabulary. These questions tapped into ELLs’ beliefs about the nature of English vocabulary knowledge and how one comes to know new vocabulary. Interview question set 3 (Step 2c; see Table 4) asked students questions related to their writing prompts, thus bringing together the ideas they had previously written about and the ideas they were discussing during the interview (i.e., domain general and domain specific). That is,
participants were asked to explain their beliefs about the changing aspect of truth and vocabulary knowledge and the certainty aspect of truth and vocabulary knowledge.

The semi-structured interview questions were developed to explore and validate the beliefs of ELLs about vocabulary knowledge in English throughout the different steps of the data collection process. All question sets were pilot tested with English language learners in the same age and education-level demographics prior to the study. By using semi-structured interview questions, it provided the researcher with fixed questions to ask and the freedom to ask ad hoc questions to ensure an appropriate level of depth and clarity of participants’ responses (Bogdan & Biklen, 2007; Flick, 2006). Moreover, the interview questions stemmed directly from Hofer’s epistemological theory model (1997; 2001) and Kuhn’s epistemological understanding framework (1999).

**Ill-structured scenario.** For the ill-structured scenario the interviewer read a short scenario about a second language speaker’s misuse of a common phrase, and the hypothesized events that would follow (Step 3; see Table 4). While the interviewer read the scenario, the students were encouraged to read along silently. Afterwards, the interviewer asked the students seven questions, designed to engage the student in more advanced epistemic thinking. More specifically, the scenario featured the misuse of the phrase “Have you had lunch yet?” by a student communicating with a professor. To illustrate, once the student in the scenario says the phrase, the professor is confused by the implications of the statement and answers the statement with a confused “no”. Later, the professor realizes that the student was essentially asking “how are you today?” Thus, the professor understands the cultural implications behind the use of the phrase and realizes that the reaction was not validated. This phrase has different cultural undertones
depending on the background of the second language speaker despite the fact that it might be considered pretty straightforward for many native speakers of English (see Appendix C).

The interview questions that follow asked participants to think about the reason for this confusion between the student and professor regarding the use of the phrase “Have you had lunch yet?” For example, the first question asks “What do you believe was the reason for this misunderstanding?” This question was designed to determine how specific vocabulary can be misused or misinterpreted, who is responsible for the misunderstanding, and why the misunderstanding occurred. Other follow up questions asked the participants epistemologically oriented questions to determine how they are critically thinking about this situation. For example, Question 29 (see Appendix C) asked the participants “Are there other phrases Chris could have used in this scenario? Would both phrases be equally accurate to use? If so, is one phrase more right than another? Please explain.” These questions tapped into sources, processes, and problems associated with using vocabulary incorrectly in different contexts. Consequently, these questions were designed to give a snapshot of the participants’ ability to critically think in English about a vocabulary-related problem. That is, this ill-structured scenario activated the need for the participant to espouse more advanced epistemic beliefs because there is no one “certain” solution to this problem (e.g., Weinstock et al., 2004).

**Epistemological thinking assessment.** The epistemological thinking assessment that was used in this study is an adaptation of Kuhn and Weinstock’s (2002) epistemological thinking assessment, which examined a person’s transition between epistemic stages of development from absolutist to multiplist and from multiplist to
evaluativist. Two contrasting views of knowledge claims in different domains were presented to individuals who had to determine if only one view could be right or if both views could have the same rightness. If both statements could be right, students were asked to decide if one could be better or more right than the other (see Appendix D). Students were asked to make these judgments for the following domains: 1) judgment of personal taste, 2) aesthetic judgments, 3) value judgments, 4) judgments of facts about the social world, 5) judgments of fact about the physical world, and 6) judgments about vocabulary knowledge. The last domain, judgments about vocabulary knowledge (see Appendix D), was added to the instrument by the researcher to determine the developmental level of epistemic understanding using a quantitative procedure (Step 4; Appendix D). Participants read three statements about vocabulary and had to make judgments about their rightness:

1. Robin believes context is important to know a meaning of vocabulary. Chris believes dictionaries are important to know a meaning of vocabulary.

2. Robin prefers to use one method to know vocabulary in English. Chris prefers to use another method to know vocabulary in English.

3. Robin believes one meaning of a vocabulary word is right. Chris believes another meaning of a vocabulary word is right.

Procedure

All students registered in the program participated in the writing and speaking assessments. Students in each level of the program took the writing assessment with their class, but were given the speaking assessment individually. Below the four different steps to data collection are discussed in the order that they were administered: 1) Writing
Prompts 1 and 2; 2) Interview Question Sets 1, 2, and 3; 3) Ill-structured Scenario; 4) Epistemological Thinking Assessment.

**Writing prompts.** First, the writing prompts took each participant approximately 75 minutes to complete, or the length of one class period (Step 1a and 1b; Table 4). The writing prompts (i.e., assessments) were administered to each remedial ESL writing course individually (i.e., basic, intermediate, and advanced) in the foreign language lab on campus. Upon completion of the assessments, students saved their writing samples in one file.

**Interview question sets 1, 2, and 3.** Upon completion of the writing assessment, participants were instructed to sign up for a time for the speaking assessments (i.e., Interview Questions Sets 1, 2, and 3). The interviews took place approximately one week following the writing assessments and took approximately 20-25 minutes to complete (Steps 2a, 2b, and 2c; Appendix B). During the interviews, each student met individually with the interviewer in the ESL program office. The interviews were recorded using a voice recorder. Participants’ interviews were saved into two separate files, one for the speaking assessment and the other file for data analysis pertaining to the study.

**Ill-structured scenario.** Immediately following interview question sets 1-3, the participants read and answered questions about an ill-structured epistemic scenario (Appendix C). This was included in the speaking assessment to elicit more advanced epistemic thinking and was applied to a typical second language learning scenario. This procedure took approximately 5 minutes to complete (Step 3; Table 4).

**Epistemological thinking assessment.** After participants completed their interviews and the ill-structured scenario, they were provided with an epistemic thinking
assessment (Step 4; Appendix D). After reading the different judgments, participants had to circle which belief they agreed with most. First, participants answered: *Can only one of their views be right, or could both have some rightness? (circle one).* If participants circled *only one right,* that response was identified as *absolutist.* If participants circled *both could have some rightness,* they were instructed to answer the following question: *If both could be right: Could only one view be better or more right than the other? (circle one).* If participants circled *one could be more right* they were label *multiplist.* If participants circled *one could more right than the other,* they were identified as *evaluativist.* This instrument took approximately 10 minutes for participants to complete.

**Digitalization, de-identification, and labeling of data.** Following the completion of data collection, all textual and audio files were digitized in the form of transcripts. For the purpose of the study, all personal identifiers were removed prior to data analysis, and were replaced with the following identifier system: Participant number-Participant Age/Participant Sex (e.g., P1-18M). The research data files were kept separate from the files used for the assessment procedures so as to protect the confidentiality of the participants and to reduce researcher bias during data analysis. To analyze the data, the responses to the interviews and writing prompts were up-loaded directly to the Atlas.ti V07 software. Atlas.ti V07 is a computer software program used for qualitative data analysis that streamlines the coding of data, aids in the inductive and deductive construction of coding networks, and assists in the analysis of the coded data.

**Data Analysis**

The principles of *Qualitative Content Analysis* guided data analysis for this study (Mayring, 2002). This approach to data analysis has two methodological principles that
assist the researchers in data analysis (Mayring, 2002). First, there is openness to context, themes and individual variation. Second, this approach uses theory guided investigation to analyze the data (Feucht & Bendixen, 2010). Therefore, data were analyzed using inductive and deductive coding schemes. Inductive coding schemes are derived from the data, helping to identify new themes and phenomena (Mayring, 2000). In this study, example inductive codes include *Process of Defining Words, Cognitive Strategy*, and *Search Internet*. Deductive coding schemes are derived from theory and are grounded in existing literature (Mayring, 2000). In this study for example, Hofer’s (2001) epistemological dimensions (i.e., certainty of knowledge, simplicity of knowledge, source of knowledge, and justification of knowledge) and Kuhn’s (1999) levels of epistemic development (i.e., absolutism, multiplism, evaluativism) were used as deductive codes.

In the context of the aforementioned principles of the *Qualitative Content Analysis* (Mayring, 2002), four variations of the approach were used to better account for the difference in and complexity of the data sources used to answer the research questions. Overall the goal and outcome of each variation was to provide a code count for each participant. The four variations are described and depicted in the following section.

Table 5

*Research Questions, Procedures, and Data Analysis Methods*

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Procedures</th>
<th>Data Analysis Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ1: What are ELLs’ beliefs about language learning and vocabulary knowledge in general?</td>
<td>1. Interview Set 1</td>
<td>Method 1</td>
</tr>
</tbody>
</table>
| RQ2: What are ELLs’ epistemic beliefs about vocabulary knowledge | 1. Writing Prompt 2  
2. Interview Set 2  
3. Interview Set 3  
4. Ill-structure Scenario | Method 4 |
5. Epistemic Thinking Assessment

| RQ2a: What are the dimensional aspects of ELLs’ epistemic beliefs of vocabulary? | 1. Writing Prompt 2  
2. Interview Set 2  
3. Interview Set 3  
4. Ill-structured Scenario | Method 1: Simplicity  
Method 2: Certainty, Source and Justification |
|---|---|---|
| RQ2b: What are ELLs’ developmental levels of epistemic understanding of vocabulary knowledge? | 1. Writing Prompt 2  
2. Interview Set 2  
3. Ill-structured Scenario  
4. Epistemic Thinking Assessment | Method 2 |
| RQ2c: Are ELLs’ epistemic beliefs domain general or domain specific? | 1. Writing Prompt 1  
2. Writing Prompt 2  
3. Interview Set 1  
4. Interview Set 2  
5. Interview Set 3 | Method 3 |

Note: This table shows the alignment of the research questions with the data collection procedures and the data analysis methods used to analyze each research question respectively.

**Data analysis: Method 1.** This variation examined data from one source. The first step was to summarize data for each participant. The second step was to explicate the data by categorizing the summaries and aligning them thematically with the research and sub-research questions (Figure 2). The results section reports on the all the codes by providing the code, a code description, two or more example quotations, and the number of participants who were assigned that code. This method was used to answer Research Question 1 (see Table 5).
Figure 2. This figure represents the analysis process for Data Analysis: Method 1. For this method of analysis, data from one source were first analyzed on the participant level to determine participants’ beliefs for the respective research question.

Data analysis: Method 2. This variation examined data from multiple data sources to answer the respective research questions. In the first step, data were summarized for the number of code occurrences or instances (not per participants). For the second step of data analysis, data were triangulated on the participant level to determine each participants’ epistemic beliefs for the respective research question (Figure 3). The results section reports on all the codes by providing the code, a code description, two or more example quotations, and the number of code occurrences across the multiple data sets. Finally, the triangulated results then demonstrated the overall beliefs as they pertain to each individual research question. This method was used to answer Research Question 2a and 2b (see Table 5).
Figure 3. This figure represents the analysis processes for Data Analysis: Method 2. For this method of analysis, data from multiple sources were first analyzed based on the number of instances for the respective codes. Data were then triangulated on the participant level to determine overall participant beliefs.

**Data analysis: Method 3.** This variation was used to analyze and report the findings for Research Question 2c (see Table 5). The first step was to determine participants’ epistemic beliefs about the dimensions of certainty, simplicity, source, and justification of general knowledge and vocabulary knowledge, separately (Figure 4). The second step was to triangulate the data from step 1 for general and vocabulary knowledge. Triangulation revealed the dominant beliefs within each dimension. Dominant epistemic beliefs were validated for each dimension when the belief occurred more than 50% of the time (>50%). The third step was to compare the dominant beliefs for general and vocabulary (specific) knowledge.
Figure 4. This figure represents the analysis process for Data Analysis: Method 3. For this method of analysis, participants’ epistemic beliefs about the dimensions of general and vocabulary knowledge were triangulated and compared to determine if their epistemic beliefs were domain general or domain specific.

Data analysis: Method 4. This method was used to answer Research Question 2 (see Table 5). The first step was to summarize the results from Research Questions 2a and 2b. These results were then triangulated to determine the overall epistemic beliefs of English language learners’ about vocabulary knowledge (Figure 5). Results are reported that show the six different aspects of epistemic beliefs and their triangulated results for each participant.
Figure 5. This figure represents the analysis process for Data Analysis: Method 4. For this method of analysis, data outcomes from Research Questions 2a and 2b. Data were triangulated to determine participants’ overall epistemic beliefs about vocabulary knowledge.

In summary, the methods discussed above helped the researcher gain an in-depth look into English language learners’ epistemic beliefs about vocabulary knowledge. By looking at students’ responses to their interview questions and their answers to the writing prompt questions, a more comprehensive understanding of their belief structure could be obtained. Following, the results from the data analysis are presented. Each research question is answered sequentially, starting with the analysis of Research Question 1 and ending with Research Question 2.
**Chapter Four**

**Results**

In the following chapter, results are reported for each of the research questions, highlighting specific inductive and deductive codes that were found during data analysis. First, participants’ beliefs about English language learning, vocabulary, and vocabulary knowledge and knowing are reported (Research Question 1). Second, results are reported on English language learners’ epistemic beliefs about the certainty, simplicity, source, and justification of vocabulary knowledge (Research Question 2a) (Hofer, 2001). Third, results are reported on ELLs’ developmental level of epistemic understanding of vocabulary knowledge (Research Question 2b) (Kuhn, 1999). Fourth, results are reported on ELLs’ domain specificity of knowledge in general and vocabulary knowledge (Research Question 2c). Finally, results are reported on ELLs’ overall epistemic beliefs about vocabulary knowledge (Research Question 2). This analysis established an understanding of the epistemic beliefs espoused by ELLs in the domain of English vocabulary knowledge and knowing. Table 11 provides a summative analysis of the results compiled throughout the data collection process through the use of data triangulation.

**ELLs’ Beliefs about Language Learning and Vocabulary Knowledge: Research Question 1**

The first research question targets the conceptions and beliefs of ELLs about vocabulary knowledge, English language learning, and vocabulary learning in general. This question (and sub questions) did not explicitly solicit epistemic beliefs of the participants; however, some responses could be analyzed from an epistemological perspective. Data sources for this research question were Interview Question Set 2:
Question 7, Question 8, Question 9, Question 10 and Question 11. Data for this question were analyzed using *Data Analysis: Method 1* (Figure 2a) (see Table 5). First, data were analyzed on the participant level to determine their beliefs. Subsequently, the results are reported indicating the number of participants who were assigned each code. Following, participants’ responses to interview questions about their beliefs about English language learning, the importance of English vocabulary, the nature of English vocabulary knowledge and the nature of knowing English vocabulary are presented.

![Data Analysis: Method 1 Diagram](image)

*Figure 2a.* This figure represents the analysis process for *Data Analysis: Method 1.* For this method of analysis, data from one source were first analyzed on the participant level to determine participants’ beliefs for the respective research question.

**English Language Learning.** To understand participant’s beliefs about learning the English language, participants were asked, “When you learn English, what is the most important thing you need to know?” This question targeted English language learners’ overall beliefs about the English language learning process to tap into what methods and strategies learners use and believe to be most important. Participants’ mentioned ten different aspects of language that need to be learned/accounted for: *Vocabulary* (n=8),
Speaking (n=7), Communication (n=7), Grammar (n=7), Writing (n=2), Listening (n=2), Reading (n=1), Thinking (n=1), Motivation (n=1), and Context (n=1). There were several times (n=11) where participants demonstrated multi-faceted beliefs about language learning, highlighting more than one important aspect of the process.

**Vocabulary.** Eight participants (n=8) believed that vocabulary was important to learning English as a second language. This code was used to label responses that say vocabulary, words, definitions, and names of things are important for learning English. For example, one participant explained that vocabulary is important because it is the essence of a language, stating “[i]n my opinion, vocabulary. Because knowing so many vocabulary, you're almost there for knowing the language” (P12-26M). Another participant explained that vocabulary is an essential part of communicating in a second language, showing a multifaceted belief (indicated in brackets and italics) about acquiring a second language “I need to know about some vocabulary. If I have some vocabulary, I have to know some vocabulary” (P16-19M).

**Speaking.** There were seven participants (n=7) who believed that speaking was important to learning English. This code was used to label responses that also included talking and pronunciation as important things to know when learning English. One participant, for example, explained that pronunciation is important “[f]irst of all, pronunciation. Because I think many people know the first expression, so I think it's very important in pronunciation” (P11-19F). Another participant expressed how important speaking is for understanding during a communicative event, stating “[h]ow to speak. It's the most important thing that you can speak well and organize your phrases and to make people understand you” (P20-18M).
Communication. Seven participants (n=7) believed that communication was important to learning English. This code label also included statements about sharing ideas in English and talking with friends and other people. For example, one participant explained that she thinks the most important thing “[i]s how to improve the ability to express our opinions and get the other ones opinions exactly” (P14-20F). Another participant explained his belief about the importance of communication when learning a language:

The most important things I want to, need to, about the communication part because I want to communicate with the different types of people. So first of all, I want to know the communicating language. So you know that they have common words for communicate with someone. So first of all, my preference to know the communicating language, the communicating words, the common words which can easily communicate with any other persons. Those are the main important tasks for me to. (P5-26M)

Grammar. There were seven participants (n=7) who believed that learning grammar was essential to knowing English. That is, this code was used to label responses that discussed grammatical properties, such as verbs and nouns, rules of the language, syntax, and conjugations. To demonstrate this belief, one participant succinctly explained “[g]rammar, right tense. Because I have some trouble with my grammar and writing [Writing] and have to use sometime and I don't know many words, so sometimes can I explain myself correctly” (P8-24M). A different participant discussed the role grammar plays in organizing language “[a]bout the grammar and how to speak. It's the most important thing that you can speak well and organize your phrases and to make people understand you, so you have to have a good grammar” (P20-18M).

Writing. Two participants (n=2) believed that writing was important to knowing and acquiring English. For example, one participant explained how important writing is
to success in schools, stating “I think the first is writing and listening [Listening]. And then I think the same time, you have to develop speaking [Speaking] and the writing, if you want to study academic” (P2-22M). Another participant expressed a belief that shows that multiple things are important for learning English, including writing, by stating, “I think that the basics would be communicate and how to speak properly and writing…” (P1-18F).

**Listening.** Two participants (n=2) believed that listening was an important aspect of learning a second language. This code was used to label statements that also mentioned understanding speaking and hearing as important to learning English. One participant discussed how multiple aspects are important for learning a language, including listening, “Because speak needs basic grammar and vocabulary and pronunciation, and listening” (P4-22M).

**Reading, Thinking, Motivation and Context.** Reading, thinking, motivation and context were separate codes each mentioned once by different individual participants as important for knowing English. Reading (n=1) was used to label responses that included reading books, understanding text, and knowing how to read. The participant demonstrated this belief explaining:

I say would like the ABC. Yeah, because you can know like how, for example, the vowel sound and the letters and everything. I would say like the sounds and the ABCs cause for example in Spanish. Spanish is my first language and if you know the ABC you can know like the sounds of the letters. But English is like difficult because sometimes they change like the words, like the sounds of the letters. When you like, I always make like this example like "elephant" and in the ABC the /e/ is with /e/, so it will be like elephant, something like that. And then they told me like "no, no, no because the /e/ has different sounds" and I was like "oh yeah right". But if sometimes it’s like difficult, but I think if you know the ABC and the sounds of the vowels and the letters, I think that that will be the most important thing. (P3-18F)
The code *Thinking* (n=1) was used to label one response that explained that thinking in the foreign language is the most important thing to know when learning English. One participant demonstrated this belief by stating “But I think the most important thing is how to think in English” (P9-24F). *Motivation* (n=1) was used to label one response that stated that a learner must want to learn, seeing the value in learning a second language, exclaiming:

The important... I think first you have to be interested in it. You think, you need to believe that you need it actually, you know. That can be a motivator for you because before I decided I want to come to another country like United States to study, I wasn't that into English. But later I was really interested in it, so I want to learn it, so that makes it easier you know. (P6-18M).

The code *Context* (n=1) was used to label one response that explained the learning environment was important for acquiring English. Participant 15-19M stated “I think the environment and the classes, the lecture of the classes is pretty important for me.”

In sum, there were ten different aspects that participants believed to be most important for learning English. *Vocabulary* (n=8), *communication* (n=7), *speaking* (n=7), and *grammar* (n=7) emerged as the most common aspects of language that participants believed to be important. *Listening* (n=2) and *writing* (n=2) emerged as important aspects for two participants, respectively, while *reading* (n=1), *thinking* (n=1), *motivation* (n=1), and *context* (n=1) emerged for one participant a piece. Additionally, there were eleven participants (n=11) who mentioned more than one aspect as being important for language learning, thus demonstrating a multifaceted belief system about learning a language. For example, Participant 16-19M discussed how *vocabulary* is an integral part of *communication*, thus describing a multi-faceted belief about the importance aspects of learning English:
I need to know about some vocabulary \([Vocabulary]\). If I have some vocabulary, I have to know some vocabulary. If I know some vocabulary, I can communicate \([Communication]\) to others. If I don't know any vocabulary, it is not possible to communicate with others. So it's most to know something, some little thing of vocabulary, little bit of vocabulary to communicate. (P16-19M)

These multi-faceted beliefs highlight the participants’ complex views of language learning and the role these different elements of language play in their own learning process.

**Importance of English vocabulary.** With the focal point of the study being ELLs’ epistemic beliefs about vocabulary, it was pertinent to identify participants’ beliefs about the importance of learning vocabulary when acquiring a second language. To identify those beliefs, participants were asked, “How important is vocabulary to you? Please explain.” Fifteen participants \((n=15)\) believed that vocabulary is very important when learning English, while four participants \((n=4)\) believed it was the most important thing to know. There were five different explanations that supported participants’ beliefs about the importance of vocabulary: Communication \((n=10)\), Understanding \((n=7)\), Speaking \((n=5)\), Writing \((n=4)\), and Essence of Language \((n=2)\).

**Communication.** Half of the participants \((n=10)\) believed that vocabulary is important to be able to communicate in a second language. This code was also used to label response that stated vocabulary is important because it helps with communication between two people, helps people express themselves to share ideas, to show meaning, and making connections. One participant exemplified this belief, by saying “[i]t's so important because you know we have many connections with the other people so we have to express yourself and get more information from the others” (P14-20F). Another participant explained why vocabulary is essential for communication “I think it’s very
important. Cause, with like the new vocabulary you can like express yourself in like many ways. Even if you're like talking with somebody, if you have like new vocabulary and you're like using like basics, sometimes they won't understand you” (P3-18F).

**Understanding.** Seven participants (n=7) believed that vocabulary is important to have an understanding of English as a second language. More specifically, this code was used to label response that state vocabulary is important because it helps people understand reading, writing, speaking, and listening in English. One participant, for example, explained how integral vocabulary is for understanding:

And you know like many readings, when you look at the reading, sometimes it’s not like the grammar that you don't understand, its many different vocabs. Probably in one sentence you don't know like five or four vocabs so you probably don't understand the whole meaning of that sentence. (P6-18M)

Another participant explained that vocabulary is important for understanding, explaining:

If you didn't know this word you can't understand the whole sentence maybe. But the words, especially verb, is the most important cause if you don't know this, the whole sentence or the whole paragraph or the main idea of the article we cannot find it. (P13-18M)

**Speaking.** There were five participants (n=5) who believed that vocabulary is important for speaking in English. That is, participants believed that vocabulary helps with talking and pronunciation. For example, one participant expressed the belief that vocabulary is important for speaking, stating:

I have to know vocabulary so I can describe anything that I want to talk to you. Like my first language is Arabic, so I have to know things from the vocabulary that it's in Arabic means in English, so I can speak with people. So it is important to me. (P20-18M)

A different participant explained that it is essential to know vocabulary in order to speak a second language “it's really important because if I don't know any vocabulary I can't
speak. If I know the more vocabulary, the more vocabulary I know... The more topics, or the more time I can speak. So vocabulary is really important for me” (P4-22M).

**Writing.** Four participants (n=4) believed that vocabulary is essential for writing in a second language, which highlights the importance for using vocabulary for portraying meaning through textual forms. For example, one participant explained that she thought “vocabulary is very important to write...” (P17-19F). Another participant added “you can put it like in, I don't know, like writing way or just like talking with somebody” (14-3-18F).

**Essence of language.** Two participants (n=2) believed that vocabulary is important because it is the essence of language. More specifically, this code was used to label statements that described that vocabulary is important because it’s the main part of language or it is the fundamental attribute of language. One participant exemplified this responses by stating “[i]t's the main thing to learn any other language. It's the meaning of the language” (P19-25M). Another participant discussed how vocabulary pretty much is language, explaining “[b]ecause knowing so many vocabulary, you're almost there for knowing the language. It's very important” (P12-26M).

In sum, all participants believed that vocabulary is important for learning English. Ten participants (n=10) believed that it was important for communication. Seven participants (n=7) believed that it was important for understanding. Five participants (n=5) believed that vocabulary was important for speaking and four participants (n=4) believed it was important for writing, showing participants’ beliefs about the connectedness between vocabulary and the four main skill sets in language learning.
Finally, two participants (n=2) expressed the belief that vocabulary is the essence of language.

**Vocabulary definition.** To better understand English language learners’ conception of vocabulary, they were asked to define what they believe vocabulary is: How would you define vocabulary? More specifically, this question was designed to understand participants’ beliefs about the nature of vocabulary. Inductive codes were found that categorized participants’ conceptions of vocabulary knowledge. An additional deductive coding scheme was developed using Yngve’s (1996) frameworks for language and vocabulary as a way to identify participants’ beliefs about vocabulary. Participants’ responses yielded eight different conceptions of vocabulary: *Words to Communicate* (n=6) (Inductive), *Words in a Language* (n=6) (Inductive), *Word Meanings* (n=3) (Inductive), *Process of Defining Words* (n=2) (Inductive), *Speech Sounds* (n=2) (Deductive), *Important for Language Learning* (n=2) (Inductive), *Word Meanings in Context* (n=1) (Inductive), and *Representations* (n=1) (Inductive).

**Words to communicate.** Six participants (n=6) defined vocabulary as words to communicate. That is, this inductive code was used to label responses that stated that vocabulary is words that are used to express desires, feelings, things, ideas, thoughts, opinions, and actions. One participant explained that vocabulary is “a lot of words. I mean the definition of the things, like the tables or chairs, and some nouns, all kinds of words you used to describe your feelings and your ideas” (P13-18M). Another participant described his belief about vocabulary as being words for communication, stating “[a]ctually, I define vocabulary to something that is the vocabulary is the way to communicate with something” (P16-19M).
Words in a language. There were six participants (n=6) that defined vocabulary as words in a language. This inductive code was used to label responses that referred to vocabulary as words making up a language, being the root of language, or main aspect of language. For example, one participant stated explicitly “vocabulary probably will be the words or the definition or meaning that the language have” (P18-19M). Another participant similarly identified vocabulary as “a group of words used in some language” (P8-25M).

Word meanings. Three participants (n=3) believed that vocabulary is word meanings. That is, this inductive code was used to label responses that referred to vocabulary as words in dictionaries that form sentences, words and their meanings, and the meaning of words in a language. One participant showed this conception, explaining “I go to big dictionary every time I memorize it, but every time forget it” (P11-19F). Another participant demonstrated the belief that vocabulary is essentially words in dictionaries, stating “I just find the meaning of the words, of the word in the dictionary. Whenever I can't find the word in the dictionary, I search the word in Google. In this way, I get the meaning of this word” (P5-26M).

Process of defining words. There were two participants (n=2) who defined vocabulary as the process of defining words in a language. This inductive code was used to label responses that stated that vocabulary are words in a language that are developed and created over time. For example, one participant explained that vocabulary is “a process to define a word. Yeah a process to define a word. In all of the languages I think” (P10-20F). Another participant explained how vocabulary can develop over time “[i]t is also a way to improve ourselves and have the words develop” (P14-20F).
**Speech sounds.** There were two participants (n=2) who believed that vocabulary is speech sounds. That is, this deductive code was used to label responses that indicated that vocabulary are speech sounds that are associated with things in the real-world (Yngve, 1996). One participant, for example, explained that “[v]ocabulary is the thing if I develop my speech it needs to know some word, and its known word or unknown word. It's called vocabulary.” (P16-19M). A second participant explained that “I think vocabulary is...is something you have to pronounce, bring to day-to-day life” (P17-19F).

**Important for language learning.** There were two participants (n=2) who believed that vocabulary is important for language learning. This inductive code was used to label responses that indicated that vocabulary are the new words that are essential for learning English. For example, one participant explained “[v]ocabulary is core to learn English. Or the first step” (P4-22M). Another participant discussed its importance, “I think that vocabulary is like the new words that you're like learning” (P3-18F).

**Word meanings in context and Representations.** Each of these inductive codes were used to label one participant each. Word meanings in context was used to label one response (n=1) that stated that vocabulary is words and their meanings spoken in context or different situations. Participant 2-22M expressed this belief, stating “I think it's like a word that has different meanings when you like put it in the situation.” Representations was used to label one response (n=1) that indicated that vocabulary are verbal or textual representations of things in the real word. Participant 6-18M explained this belief “Define means definition? It's word to represent something in your life or your thought, so you can use it on paper or speak out” (P6-18M).
In sum, the two most common definitions were *Words to Communicate* (n=6) and *Words in a Language* (n=6). In addition, the definitions *Word Meanings* (n=3) and *Process of Defining Words* (n=2) and *Speech sounds* (n=2) were also mentioned by a few participants. *Words Meanings in Context* (n=1) and *Representations* (n=1) were each mentioned by a participant. *Important for Language Learning* (n=2) illustrates participants beliefs more about the role of vocabulary in language learning, rather than the definition of it, showing an alignment to the earlier part of the data collection procedure that targeted this belief.

**Vocabulary knowledge.** In order to understand English language learners’ beliefs about the nature of vocabulary knowledge, participants were asked: What does it mean to know vocabulary?” Participants’ responses were partially analyzed using a deductive coding scheme from Nagy and Scott’s (2000) framework of vocabulary knowledge. Additional inductive codes emerged from data analysis. In total, five codes were found during data analysis: *Cognitive Strategy* (n=5) (Inductive), *Knowledge and Skill* (n=4) (Inductive), *Polysemy* (n=4) (Deductive), *Multidimensionality* (n=3) (Deductive), and *Communication* (n=2) (Inductive). Three participants (n=3) had difficulty understanding the nature of the question and were unable to provide a response.

**Cognitive strategy.** Five participants (n=5) believed that knowing vocabulary is achieved through the use of *cognitive strategies*. That is, this inductive code was used to label responses that state that knowing vocabulary is done by memorizing and other strategies. For example, one participant explained the importance of memorization in knowing vocabulary, by stating “[m]emorize. Not only memorizing, I can memorize words that I don't know what they mean, so memorize and knowing what they mean”
Another participant explained different methods for learning vocabulary:

Vocabulary, when I see a movie with subtitles, there are some unknown word I listen and hear. I saw it. When I don't understand this, I search in the internet or search on dictionary. Then when I see something, when I see the appropriate meaning of the word, then it's so helpful to, it's not necessary to memorize me. It is really, it is also automatically adjusted in my mind. So I think it's the best way to remember vocabulary (P16-19M).

Here the participant demonstrated a complex understanding of the mental processes required for knowing vocabulary.

**Knowledge and skill.** There were four participants (n=4) who believed that knowing vocabulary is necessary to have specific knowledge and skills of a language. More specifically, this inductive code was used to label responses that referred to knowing vocabulary as a person having a skill of language, being smart or intelligent, understanding and comprehending more, being able to speak more, and knowing lots of words. One participant demonstrated this notion very frankly, exclaiming “to show how smart [a person is]” (P4-22M), while another participant explained that knowing vocabulary means “to enlarge someone's skill of his language because whenever someone enlarge his vocabulary level, obviously his skill will enlarge, so I think it's enlarge the skill of his language” (P5-26M).

**Polysemy.** Four participants (n=4) espoused the belief that vocabulary knowledge entails knowing multiple meanings of a word, defined by Nagy and Scott (2000) as polysemy. This deductive code was used to label responses that referred to knowledge of vocabulary as knowing words and meanings, a word’s multiple meanings, and usage and context of words. One participant expressed this belief by focusing on the context “[i]t
depends on the context you use the words. If you use the words in a wrong context, then I will right away know that you don't know that word” (P10-20F). Another participant highlighted the importance of knowing all of the meanings of a word,

To know vocabulary, like understand every single meaning. So you know maybe a word, it cannot be like for one thing. There's many words in the dictionary that it's not meant to something. Like beat and beat. It's both the same how can we write them but difference in the meaning. I can beat someone, punch them in the face and I can eat beat. (P20-18M).

**Multidimensionality.** There were three participants (n=3) who believed that to know vocabulary means knowing multiple dimensions of a word, which Nagy and Scott (2000) identified as the belief of *multidimensionality*. This deductive code was used to label responses that referred to the different dimensions of vocabulary knowledge, such as grammar, sentences, spelling, and pronunciation. For example, one participant discussed the multidimensionality of a word, explaining “it's like how to pronounce the vocabulary and how to spell it and where to use it. And like the tense of the vocabulary. Yeah, it's like verb future or past tense” (P2-22M). A different participant gave a detailed account of the different dimensions of vocabulary knowledge:

I think first you can recognize it when you read it. First I mean you should know how to spell it and you should know the meaning of it. Probably have different, some vocabs have different meanings-you should know them and like if it's a noun or verb you should know how to use them. And you should know like how to use the meaning, how to spell them, how to read them, pronunciations, and probably some vocabs can change their forms around like past time or like, so you should know all about that too (P6-18M).

Participants who demonstrated this belief about the multidimensionality were showcasing their awareness of their previously espoused beliefs about language learning. In contrast,
students who previously had expressed multifaceted beliefs about language learning did not deliberately express the multidimensionality of the vocabulary words.

**Communication.** Two participants (n=2) believed that knowing vocabulary is having the ability to communicate in English. This inductive code was used to label responses that indicated that knowing vocabulary is being able to communicate, to express oneself, and to be able to speak to show meaning. One participant highlighted this sentiment, “if I know the vocabulary, I can. If I touch it, I know what it is. I mean, it's the table. (...) You can speak of the word of what you want to express” (P13-18M). Another participant explained vocabulary’s roles in speaking in a foreign language “[y]ou'll be able to speak in like in new language or my language” (P19-25M).

In sum, there were five beliefs about knowing vocabulary that were found, with some participants believing that knowing vocabulary is a **Cognitive Strategy** (n=5). Other beliefs demonstrated more of a conception of what vocabulary knowledge is, rather than the process for acquiring it, such as **Knowledge and Skill** (n=4), **Polysemy** (n=4), **Multidimensionality** (n=3), and **Communication** (n=2).

**Vocabulary knowing.** For the purpose of determining what English language learners do to learn vocabulary, participants were asked: “Explain what you do to know vocabulary”. There were 11 ways of knowing vocabulary that emerged from data analysis: **Search Dictionary** (n=10), **Communicate** (n=6), **Reading** (n=6), **Search Internet** (n=5), **Engage with Media** (n=4), **Memorize** (n=4), **Write Down** (n=3), **Define Through Synonyms** (n=2), **Experience** (n=2), **Learn from Textbook** (n=2), and **Learn in Context** (n=1).
**Search dictionary.** Ten participants (n=10) espoused the belief that they come to know vocabulary by *searching the dictionary*. For example, one participant expressed a multifaceted approach to knowing vocabulary, by implying that she searches for the meaning in a dictionary,

I have a note book and if I know something new I write it down and then I check the meaning and I put it. And the best way, when you're like learning a language, it's to put the definition in that language, like in English, I'm learning English, so I need to put a definition in English so I can use it easily. (P10-20F)

Another participant explained that he primarily uses the dictionary, stating “Every time you go to dictionary, back to dictionary, find out the meaning and trying to use it again and again” (P19-25M).

**Communicate.** There were six participants (n=6) who believed that communication was a way to know vocabulary. This inductive code was used to label responses that indicated that learning vocabulary occurs through speaking with others, asking friends, and talking with people. One participant espoused this belief by exclaiming “I learn it by using my vocabulary like speak to other people, so usually other people give you a sample of a word” (P19-25M). Another participant explained that he likes to “use in speaking English with friends or something” (P4-22M).

**Reading.** Six participants (n=6) expressed the belief that reading is a way to know vocabulary. This inductive code was used to label responses that stated they learn vocabulary from reading newspapers, journals, and other texts. One participant expressed this belief, by stating simply “I read a lot” (P1-18F). Another participant was more specific, explaining “I read English newspaper, and I also tried to read the English journals” (P5-26M).
Search internet. There were five participants (n=5) who explained that they search the internet to know new vocabulary. This inductive code was used to label responses that also indicated that they use Google and on-line dictionaries. For example, one participant explained what he does, “[w]henever I just can't get in dictionary, I just search it in Google. In this way, I get the meaning, I try my best to enlarge my vocabulary level” (P5-26M). Another participant explained that he uses Google as well, “[w]hen I see the link, if I don't understand any word I search on Google translate” (P16-19M).

Engage with media. There were four participants (n=4) who used different types of media to learn new vocabulary. More specifically, this inductive code included responses that indicated that they prefer watching television, watching movies, or listening to music. One participant, in particular, explained that he likes “[w]atching movies, listening to my English song. Many listening songs” (P16-19M). Another participant also discussed how he uses media to learn English vocabulary, explaining “even if you want to watch TV programs or movies, try to watch it and put the English, so you can see and understand the meanings of vocabulary” (P18-19M).

Memorize. Four participants (n=4) use the cognitive strategy of memorization to know new vocabulary. In particular, this inductive code was used to label responses that indicated that learning vocabulary occurs by memorizing words, repeating definitions multiple times, and using rehearsal strategies. For example, one participant explained that he memorizes words using different strategies:

My teachers used to give me a list or every unit from the book we had a list of vocabs so I just simply memorize them by writing them over and over again. Sometimes you seen a word often enough, so you don't write you can just
remember them because you know some simple words. As you speak like you speak many times of a word you can just remember it. (P6-18M)

Another participant explained that he prefers to “[m]emorize it. Memorize what does it mean exactly and how can I use it in what term” (P20-18M).

**Write down.** There were three participants (n=3) who write down new vocabulary words when learning new vocabulary. One participant explained that she writes the word down so that she can see it frequently, “[w]rite down on the paper, and every adjective, and then get used to it every time to see it” (P11-19F). Another participant discussed how he writes words down to know them, “[f]or me the most helpful technique is writing them down and posting them on the wall. So I have an opportunity to see them all of the time” (12-26M).

**Define through synonyms.** There were two participants (n=2) who stated they learn vocabulary by defining words with synonyms. Additionally, this inductive code was used to label responses that indicate that learning English vocabulary using a thesaurus or matching the word with other similar words. For example, one participant explained “if I see a word is related to another word that I knew that has the same meaning but a different word, like I think store that in my brain and I remember that” (P1-18F). The other participant prefers a thesaurus, explaining “I try to know the meaning in the same language, so the thesaurus. I use the thesaurus a lot” (P12-26M).

**Experience.** Two participants (n=2) believed that experience was a good way to know new English vocabulary. This inductive code was also used to label responses that discussed engaging in surroundings, learning from context, and using new and different things are good ways to know vocabulary. For example, one participant discussed the
role of life experiences, exclaiming “after I went to the U.S., I try to learn vocabulary from life” (P14-20F).

**Learn from textbook.** There were two participants (n=2) who learn new vocabulary from textbooks. This inductive code was also used to label responses that indicated that learning vocabulary occurs by learning from English curriculum and vocabulary books. One participant explained what she did in her home country of China, “when I was in China, I try my best to learn vocabulary by recite a vocabulary book” (P14-20F). Another participant discussed the role of his teacher and textbook, explaining “I usually use my textbook and many times I took it from my class teacher to know for vocabulary” (P15-19M).

**Learn in context.** This inductive code was used to label one participant’s response (n=1) who explained that learning vocabulary occurs by learning words' meanings in context, situations, and environments. Participant 2-22M explained “define what it means in the context of the required reading”.

In sum, there were 11 different ways of knowing English vocabulary that emerged from data analysis. *Search Dictionary* (n=10) was the most common method for knowing new vocabulary. *Communicate* (n=6) and *Reading* (n=6) were also mentioned by a number of participants. There were several ways of knowing vocabulary that also emerged highlighting participants’ complex methods for learning vocabulary in a foreign language. Moreover, 13 participants identified two or more methods for knowing vocabulary, thus showcasing multifaceted beliefs about learning vocabulary.

**Summary.** Results for Research Question 1 uncovered various codes that ELLs’ espoused during the interviews. When examining participants’ beliefs about important
aspects of learning English, ten different codes were mentioned: *Vocabulary* (n=8), *Communication* (n=7), *Speaking* (n=7), and *Grammar* (n=7) *Listening* (n=2) and *Writing* (n=2), *Reading* (n=1), *Thinking* (n=1), *Motivation* (n=1), and *Context* (n=1). As is seen above, vocabulary was seen as vital to learning English by several participants. Consequently, all participants espoused the belief in subsequent interview questions that vocabulary is important for learning English, with ten participants (n=10) espousing the belief that it was important for *communication*. Additionally, there were five beliefs about knowing vocabulary that were found, such as *Cognitive Strategy* (n=5), *Knowledge and Skill* (n=4), *Polysemy* (n=4), *Multidimensionality* (n=3), and *Communication* (n=2).

There were eleven different ways of knowing English vocabulary that were found from data analysis, with *Search Dictionary* (n=10) *Communicate* (n=6) and *Reading* (n=6) emerging as the primary ways of knowing vocabulary. Finally, *Communication* was a primary reoccurring code for English language learning (n=7), the importance of vocabulary (n=10), vocabulary knowledge (n=6) and vocabulary learning (n=2).

**ELLs’ Epistemic Beliefs about Vocabulary Knowledge: Research Question 2**

Research Question 2 examined ELLs’ epistemic beliefs about vocabulary knowledge. More specifically, this research question had three sub-questions that examined participants’ dimensional epistemic beliefs (Hofer, 2001: certainty, simplicity, source, and justification), their developmental level of epistemic understanding (Kuhn, 1999: absolutism, multiplicity, and evaluativism), and the domain generality or domain specificity of their epistemic beliefs. Data from the sub-research questions were triangulated to determine participants’ overall epistemic understanding of vocabulary.
knowledge. Below, results are reported for the sub-questions followed by the triangulated results for Research Question 2.

Certainty dimension of ELLs’ epistemic beliefs of vocabulary knowledge. In order to answer Research Question 2a, part 1, four data sources were used to capture English language learners’ epistemic beliefs about the certainty of vocabulary knowledge (see Table 4). Each data source targeted participants’ beliefs about the certainty aspects and changing nature of vocabulary knowledge. Data were analyzed using Data Analysis: Method 2 (Figure 3a) (see Table 5). The first step analyzed the number of code occurrences. These data were then triangulated for each participant to determine the overall beliefs about certainty of vocabulary knowledge. Results first describe how often a code occurred across the data collection procedures. Results then show the number of participants who held the different beliefs, when triangulated.

**Figure 3a.** This figure represents the analysis processes for Data Analysis: Method 2. For this method of analysis, data from multiple sources were first analyzed based on the number of instances for the respective codes. Data were then triangulated on the participant level to determine overall participant beliefs.
A deductive coding scheme (Hofer, 2001) was used to explore participants’ beliefs about the certainty aspects of vocabulary. Data were then triangulated to provide an overall snapshot of participants’ epistemic beliefs about the certainty of vocabulary knowledge. Five primary codes emerged from the data analysis, where participants believed that vocabulary is: **Changing** (n=41 instances), **Unchanging** (n=17 instances), **Changing and Unchanging** (n=2 instances), **Uncertain** (n=38 instances), and **Certain** (n=21 instances). For an additional and more fine-combed description of the results, see Appendix E.

**Changing.** There were many instances where participants’ espoused the belief that vocabulary knowledge is changing (n=41 instances). That is, these participants espoused beliefs that vocabulary is flexible, evolving, developing and ever changing. For example, one participant discussed the influence of time and era of the people using the vocabulary:

Vocabulary is changed. Generation by generation vocabulary knowledge is changed, because when I saw something, like this I saw movies. 20 years ago and 20 years later I saw some movies, it has some different dialogue some different things. It has some different speeches. So I think it's really, I think vocabulary knowledge is changed day by day. Besides many writers write in their books in some vocabulary. And after some days they changed their vocabulary. It’s a day by day changed. So I think vocabulary knowledge is change. (P16-19M)

Another participant discussed the role of the culture of the people communicating and the role of social media in changing the meaning of vocabulary:

Nowadays the world is called as a global village. People of various countries and regions are connected with each other. It happens because of Internet and social media. So that people of various countries share their culture and expresses their languages among them. So many unknown words are included in the dictionary of
a particular language. People of these specific language try to find the proper meaning of those word. It increases his vocabulary knowledge. (P5-26M)

At times, participants provided rationalizations discussing how and why vocabulary is changing, ranging from culture to research and technology, as well as cognition and subjective thinking (see Appendix E).

Unchanging. There were 17 instances that participants espoused the belief that vocabulary knowledge is unchanging. Specifically, these participants indicated that vocabulary does not change, is absolute, and is fixed. In demonstrating a very absolutistic view about the changing nature of vocabulary knowledge, one participant wrote:

I don’t think that vocabulary knowledge could change or ever should be changed. Language is the most basic communication between people. Humans have developed different language systems for centuries, and they got use to using these languages. (P6-18M)

He wrote about the structural importance of language as a reason why vocabulary knowledge does not change:

In the same language system, people have the common understanding for the same vocabulary. I think that one vocabulary could have different meanings but none of these meanings should ever change. Imagine that if the vocabulary knowledge is changing from time to time, how much chaos would it bring to people’s communication with each other. (P6-18M)

To explicate their beliefs about the unchanging nature of vocabulary knowledge, several participants discussed how meanings can be added to vocabulary but not change its meaning.

Changing and unchanging. Two participants (n= 2 instances) espoused epistemic beliefs that vocabulary knowledge can be both changing and unchanging. This reflects a combination of beliefs highlighting both objective and subjective views of
language. One participant directly stated “[v]ocabulary knowledge could be unchanging in some cases, but it also could not be unchanging in other cases” (P10-20F). Another participant showcased the view that vocabulary knowledge could be changing or unchanging, depending on the complexity of the word, “[s]ometimes new format of vocabulary use can change the rules so I think vocabulary knowledge is changing but basic level of vocabulary knowledge is unchanging” (p15-19M).

Uncertain. When discussing the certainty of vocabulary knowledge, there were several occurrences (n=38 instances) of the belief that vocabulary knowledge is uncertain, not absolute, or not fixed. That is, this code was used to label responses that indicated the phrase can be altered, is not always the same, is a part of development, or can have various meanings. To illustrate this belief, one participant explained, “I think vocabulary is uncertain. Like, comparing with English in the last century, it change a lot right. So maybe it will change a lot in the future, because our society is changing rapidly. Vocabulary will renew it rapidly” (P14-20F). Another participant discussed how the developing nature of vocabulary causes it to be uncertain, stating:

Because, like I told you, like something’s like we knew in the past, right now there is no like words about it. For example, in my country, in my city there is a lot of words that they used to use, but not anymore. So you can hear like the words or like the vocabulary that my grandparents. But for example, my cousins and me we don't use it any more. But we try to say the same but with different words. So it's like synonym...Yeah, or like those words but we don't use that vocabulary because it changed (P3-18F).

There were several sub codes that emerged as an explanation for why vocabulary knowledge is uncertain, such as development, context, and research (Appendix E).

Certain. There were twenty one (n=21 instances) occurrences of the espoused belief that vocabulary knowledge is certain. That is, these participants stated that
vocabulary is not changing, is fixed, is absolute, or should not change over time. One participant highlights how the meaning itself stays the same, but the context in which a person uses the word can change, stating “I think the meaning is already set, but it depends on how you will use it that people will trying to catch it differently” (P1-18F). Another participant explained that the need to maintain a clear and proper structure was important for the integrity of vocabulary, saying “they have to deliver the proper meaning of the word and the proper meaning of the sentence, proper meaning of the language. So it’s the certainty aspects of truth and vocabulary knowledge” (P5-26M). Three sub-codes emerged during data analysis highlighting participants’ rationalizations about why vocabulary knowledge is certain: Add, Negative Impact and Outsider Impact (see Appendix E).

**Overall certainty beliefs about vocabulary knowledge.** The previous analysis examined the occurrence of beliefs about certainty across all procedures in the data set. To gain an overall understanding of the individual as a whole, the results here are reported for the participants. In order to determine participants’ epistemic beliefs about the certainty of vocabulary knowledge as a whole, data from each data source were triangulated to determine an overall belief about the certainty and changing nature of vocabulary knowledge. In order to do this, responses to the data sources were calculated for both the certainty and the changing aspects, and divided over total possible certainty and changing aspect responses. The percentage was then calculated to determine beliefs about certainty and changing aspects. There were a total of six data sources: three that focused on certainty of vocabulary knowledge and three that focused on changing aspects of vocabulary knowledge. For instance, if a participant responded that vocabulary
knowledge is certain for two questions, but responded that vocabulary knowledge is uncertain one question, that participant believed that vocabulary knowledge is certain for 66% of the data sources (i.e., 2 out of 3). The belief with the majority percentage of responses greater than 50% were considered fully validated (e.g., certain: 66%), deciphering the overall belief of both certainty and changing aspects of vocabulary knowledge. The outcomes of the certainty and changing aspects of vocabulary knowledge were brought together to demonstrate the overall beliefs about the dimension of certainty beliefs of vocabulary knowledge.

Table 6

*Overall Certainty Beliefs about Vocabulary Knowledge*

<table>
<thead>
<tr>
<th></th>
<th>Uncertain</th>
<th>Certain</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Changing</strong></td>
<td>P1-18F; P3-18F; P4-22M; P5-26M; P7-21F; P8-22M; P9-24F; P12-26M; P14-20F; P15-19M; P16-19M; P17-19F</td>
<td>P13-18M; P18-19M</td>
<td>n=14</td>
</tr>
<tr>
<td><strong>Unchanging</strong></td>
<td>P2-22M; P20-18M</td>
<td>P6-18M; P11-19F; P19-25M; P10-20F</td>
<td>n=6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>n=14</td>
<td>n=6</td>
<td>n=20</td>
</tr>
</tbody>
</table>

*Note.* This table shows the overall certainty beliefs of English language learners. Participants’ respective identifiers are placed in each box based on their validated triangulated scores for certainty and changing aspects of vocabulary knowledge. Total number of participants who espoused the respective beliefs.

In Table 6, results from the triangulation of certainty beliefs about vocabulary are presented. Twelve participants (n=12) espoused the belief that vocabulary knowledge is uncertain and changing. There were four participants (n=4) who espoused the beliefs that vocabulary knowledge is certain and unchanging. Two participants (n=2) espoused the
beliefs that vocabulary knowledge was uncertain and unchanging, while two participants (n=2) espoused the belief vocabulary knowledge was certain and changing. This suggests that these four participants might be transitioning between beliefs about vocabulary knowledge.

**Simplicity dimension of ELLs’ epistemic beliefs of vocabulary knowledge.** In order to answer Research Question 2a, part 2, one data source was used to target English language learners’ epistemic beliefs about the simplicity of vocabulary knowledge (see Table 6). Interview Question 16 asked participants: Can the vocabulary meanings be different in varying circumstances or is it always the same? Data were analyzed using Data Analysis: Method 1 (Figure 2b) (see Table 5). First, data were analyzed on the participant level to determine their beliefs. Subsequently, the results are reported indicating the number of participants who were assigned each code. Eighteen of the participants (n=18) believed that the vocabulary can be different (i.e., complex), while only two believed (n=2) that it can be the same (i.e., simple).

![Data Analysis: Method 1](image)

*Figure 2b.* This figure represents the analysis process for Data Analysis: Method 1. For this method of analysis, data from one source were first analyzed on the participant level to determine participants’ beliefs for the respective research question.
Complex. There were eighteen participants (n=18) who believed that vocabulary knowledge is complex. This deductive code was used to label responses that stated that vocabulary meanings could be different in varying or different circumstances, situations, or contexts (i.e., Hofer, 2001). For example, using an example from her native language of Spanish, one participant exclaimed:

But sometimes you can see like it sounds the same but it has like different meaning. Also, like in Spanish. In Spanish, you can find a lot of words like, they have like. You can hear like it’s the same sound, and sometimes its write the same, but sometimes it has like different meaning. Sometimes it can be like, a, I don't know, represent a plant and the other is the chair, or something like that. But it has like different meanings. Oh, like in Spanish, a casa is like house and casa is like to hunt, so to like hunt animals and other things. (P3-18F)

Another participant explained that meanings can be different between languages and within contexts, explaining “I think it can be different between languages. I think yeah. Depends on the context. I think a word like can have two different meanings depending on the context” (P10-20F). There were five sub-codes that encapsulated the different rationalizations that participants gave: Context, Multiple Meanings, Language Structure, Communication, and Thinking (see Appendix F).

Simple. There were two participants (n=2) who demonstrated a belief that vocabulary knowledge is simple. This deductive code was used to label responses that indicate that vocabulary knowledge has the same meaning in different or varying circumstances (i.e., Hofer, 2001). One participant explained how the meaning can stay the same regardless of structural differences in the language, explaining “I think so. That like you can take example, like color "c-o-l-o-r" and "c-o-l-o-ur". Yeah it's different but the same kind, like meaning same” (P17-19F). The other participant was more direct stating “[a]lways the same” (P11-19F).
In sum, most of the participants (n=18) espoused the belief that vocabulary knowledge is complex and can have different meanings in various circumstances. Two participants (n=2) believed that vocabulary knowledge is simple and has the same meaning in various circumstances. Several sub-codes were found to support participants’ explanations about why they believed vocabulary knowledge is complex: Context (n=9), Multiple Meanings (n=4), Language Structure (n=3), Communication (n=2), and Thinking (n=1) (See Appendix F).

Source dimension of ELLs’ epistemic beliefs of vocabulary knowledge. In order to answer Research Question 2a, part 3, four data sources were used to capture English language learners’ epistemic beliefs about the source of vocabulary knowledge (see Table 5). Data were analyzed using Data Analysis: Method 2 (Figure 3b). The first step analyzed the number of code occurrences. These data were then triangulated for each participant to determine the overall beliefs about source of vocabulary knowledge. Results first describe how often a code occurred across the data collection procedures. Results then show the number of participants who held the different beliefs, when triangulated.
Figure 3b. This figure represents the analysis processes for Data Analysis: Method 2. For this method of analysis, data from multiple sources were first analyzed based on the number of instances for the respective codes. Data were then triangulated on the participant level to determine overall participant beliefs.

Below, a deductive coding scheme (Hofer, 2001) was used to analyze ELLs’ epistemic beliefs about the source vocabulary. Responses to the interview questions were condensed to highlight ELLs’ general beliefs about sources of vocabulary. In order to understand each participants overall beliefs about source of vocabulary knowledge, data from the different procedures were triangulated. Three primary codes emerged from the data analysis: External Sources (n=120 instances), Internal Sources (n=17 instances), and Both Sources (n=4 instances). For an additional and more fine-combed description of the results, see Appendix G.

**External sources.** There were 120 instances where participants believed that vocabulary knowledge comes from external sources of knowledge. More specifically, this code was used to label responses that indicated that knowledge comes from dictionaries, textbooks, professors, other languages, and technological innovation. One
participant explained that vocabulary knowledge comes from textbooks, explaining “I think the textbook has a preferred definition of vocabulary and they indicate the proper vocabulary” (P15-19M). Another participant showed a more complex understanding of the origination of vocabulary knowledge, exclaiming that it comes from both science and history:

I think that, I will say like history because sometimes words can like come just because. Even like, I don't know, like physics, so there are like a law. Yeah, a law. So it like, I don't know, like Pepito's law, or Juanito's law, and why that law is like that name. Because Pepito created the formalatic [sic] equation, or something like that. So that's why and that's like a new vocabulary that all of us are using for physics or for like everything. So I think it will be like vocabulary like can come at like any time (P3-18F).

This quotation also highlights the notion that vocabulary knowledge is uncertain because of the role of the different sources in its development. Several sub-codes emerged that highlighted various types of external sources: People (n=20 instances), Books (n=17 instances), Dictionary (n=13 instances), Internet (n=13 instances), Visual Media (n=8 instances), Communication (n=6 instances), Listening (n=6 instances), Professor (n=5 instances), Translators (n=4 instances), Reading (n=4 instances), Domain Specific Books (n=4 instances), Written Media (n=3 instances), Records (n=2 instances), Electronic Device (n=1 instance), College (n=1 instance), Music (n=1 instance), and News radio (n=1 instance) (see Appendix G).

Internal sources. There were seventeen instances (n=17) of participants espousing the belief that vocabulary knowledge comes from internal sources of knowledge, such as the self, the mind, knowledge in general, and personal experience. For example, one participant explained that vocabulary knowledge “comes from the thoughts of human beings and our life” (P6: P14-20F). Similarly, another participant
stated that people invent new words to assist in their communication “I think it comes from a group of people's communicate. They want communication, so they invented vocabulary to let them communicate more efficient” (P13-18M). One sub-code emerged as an internal source of vocabulary knowledge: Personal Experience (n=8) (See Appendix G).

Both. This code was used to label participants (n=4 instances) who believed that vocabulary comes from both internal (e.g., people’s minds) and external sources (e.g., dictionaries). One participant expressed how generations of people created vocabulary and how many writers created new vocabulary in their writing:

Actually, vocabulary is changed by generation by generation. Like how language is changed by generation by generation. Many writers write some vocabulary in their books. I got there. I got some vocabulary from the internet source, from movies, and from song. This is the way to get some vocabulary to get something new vocabulary to mind (P16-19M).

Another participant discussed how people have assigned names to objects, implying that vocabulary comes from people and their internal process of linking meaning to sounds and text, “[g]ood question. Where does vocabulary...ok. When they were making the language, I have no idea. Through the years. Trying to figure out, put some names to things” (P18-19M).

In sum, external sources emerged as primary sources of vocabulary knowledge (n=120 instances). In contrast, internal sources emerged seventeen times (n=17 instances) as a source of vocabulary knowledge. There were four instances (n=4) where participants espoused the belief about vocabulary knowledge specifically coming from both internal and external sources of knowledge. The high number of participants who believed vocabulary knowledge comes from external sources suggests that most
participants maintain more traditional beliefs about sources of vocabulary knowledge. That is, most participants seem to associate learning vocabulary by retrieving it from authoritative sources, rather than being a part of the co-creation of meaning of vocabulary.

**Overall beliefs about sources of vocabulary knowledge.** The previous analysis examined the occurrence of beliefs about sources across all procedures in the data set. To gain an overall understanding of the individual as a whole, the results here are reported for the participants. In order to determine participants’ epistemic beliefs about the source of vocabulary knowledge as a whole, data from each data source were triangulated to determine an overall belief about the source of vocabulary. To align with Hofer’s (2001) epistemic dimensions, sources were grouped into broader categories to ensure that systematic triangulation could occur. That is, sources of vocabulary knowledge such as dictionary, people, books, and professors were grouped in the category, **External Source**. Sources of vocabulary knowledge such as personal experiences, people’s thinking, and personal thoughts were grouped in the category, **Internal Source**. Each source of vocabulary knowledge for the different data sources (Interview Question 2: Question 13, Question 14, Question 18, and Ill-structured Scenario: Question 4) were tallied and divided by the total number of sources provided by each participant. The source with the majority percentage (i.e., > 50%) of responses was considered fully validated, which deciphered the overall belief of source of vocabulary knowledge.

In Table 7, results from the triangulation of source beliefs about vocabulary knowledge are presented. Sixteen participants (n=16) espoused beliefs that predominantly focused on **external sources**. Three participants (n=3) espoused beliefs that focused on
both *internal* and *external* sources equally. One participant (n=1) espoused the belief that vocabulary knowledge comes primarily from *internal* sources.

**Table 7**

*Overall Beliefs about Sources of Vocabulary Knowledge*

<table>
<thead>
<tr>
<th>Participants</th>
<th>Question 13</th>
<th>Question 14</th>
<th>Question 18</th>
<th>Ill-Struc. Scenario</th>
<th>Overall Epistem Beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1-18F</td>
<td>I</td>
<td>I</td>
<td>E</td>
<td>E</td>
<td>I: n=2/4; 50% &amp; E: n=2/4; 50%</td>
</tr>
<tr>
<td>P2-22M</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=4/4; 100%</td>
</tr>
<tr>
<td>P3-18F</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=4/4; 100%</td>
</tr>
<tr>
<td>P4-22M</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=4/4; 100%</td>
</tr>
<tr>
<td>P5-26M</td>
<td>I</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=3/4; 75%</td>
</tr>
<tr>
<td>P6-18M</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=4/4; 100%</td>
</tr>
<tr>
<td>P7-21F</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>NR</td>
<td>E: n=3/3; 100%</td>
</tr>
<tr>
<td>P8-24M</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=4/4; 100%</td>
</tr>
<tr>
<td>P9-24F</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=4/4; 100%</td>
</tr>
<tr>
<td>P10-20F</td>
<td>I</td>
<td>E</td>
<td>I, E</td>
<td>E</td>
<td>E: n=3/5; 60%</td>
</tr>
<tr>
<td>P11-19F</td>
<td>I</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=3/4; 75%</td>
</tr>
<tr>
<td>P12-26M</td>
<td>E</td>
<td>E</td>
<td>NR</td>
<td>NR</td>
<td>E: n=2/2; 100%</td>
</tr>
<tr>
<td>P13-18M</td>
<td>I</td>
<td>I</td>
<td>E</td>
<td>E</td>
<td>I: n=2/4; 50% &amp; E: n=2/4; 50%</td>
</tr>
<tr>
<td>P14-20F</td>
<td>I</td>
<td>I</td>
<td>E</td>
<td>I</td>
<td>I: n=3/4; 75%</td>
</tr>
<tr>
<td>P15-19M</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=4/4; 100%</td>
</tr>
<tr>
<td>P16-19M</td>
<td>I</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=3/4; 75%</td>
</tr>
<tr>
<td>P17-19F</td>
<td>E</td>
<td>E</td>
<td>I, E</td>
<td>E</td>
<td>E: n=4/5; 80%</td>
</tr>
<tr>
<td>P18-19M</td>
<td>I, E</td>
<td>E</td>
<td>I, E</td>
<td>E</td>
<td>E: n=3/5; 60%</td>
</tr>
<tr>
<td>P19-25M</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E: n=4/4; 100%</td>
</tr>
<tr>
<td>P20-18M</td>
<td>I</td>
<td>I</td>
<td>E</td>
<td>E</td>
<td>I: n=2/4; 50% &amp; E: n=2/4; 50%</td>
</tr>
</tbody>
</table>

*Note.* The table above shows the source beliefs of participants about vocabulary knowledge. All sources were grouped into Internal (i.e., I) or External (i.e., E) categories of source of knowledge. NR represents No Response. Total occurrence of each code was divided by the total number of sources provided. Overall beliefs of source of vocabulary knowledge were fully validated if source occurred more than 50% of the time.

**Justification dimension of ELLs’ epistemic beliefs of vocabulary knowledge.**

In order to answer Research Question 2a, part 4 regarding ELLs’ beliefs about the justification of vocabulary knowledge, three data sources were used to capture English language learners’ epistemic beliefs (see Table 5). These questions targeted participants’ epistemic beliefs about how they reconcile different and contradictory definitions of
vocabulary words, their processes for ensuring accuracy of vocabulary understanding, and strategies for ensuring effective communication. Data were analyzed using Data Analysis: Method 2 (Figure 3c). The first step analyzed the number of code occurrences. These data were then triangulated for each participant to determine the overall beliefs about justification of vocabulary knowledge. Results first describe how often a code occurred across the data collection procedures. Results then show the number of participants who held the different beliefs based on the triangulation.

*Figure 3c.* This figure represents the analysis processes for Data Analysis: Method 2. For this method of analysis, data from multiple sources were first analyzed based on the number of instances for the respective codes. Data were then triangulated on the participant level to determine overall participant beliefs.

A deductive coding scheme (Hofer, 2001) was used to highlight participants’ epistemic beliefs about the justification of knowing vocabulary knowledge. When triangulated, data show a comprehensive overview of ELLs’ beliefs about the justification of vocabulary knowledge. Two primary codes were found from the data
analysis: *Rules of Inquiry* (n=43 instances) and *Direct Observation and Authority* (n=35 instances). For an additional and more fine-combed description of the results, see Appendix H.

**Rules of inquiry.** The deductive code *Rules of Inquiry and Evaluation of Expertise* was used to label responses that represent the more sophisticated end of the justification continuum (Hofer, 2001). There were 43 instances where participants demonstrated the belief that rules of inquiry and evaluation of expertise were needed to determine accuracy of vocabulary knowledge claims. For example, one participant explained that she evaluates the dictionary’s definition with usage in the real world:

> You know the example in the dictionary is limited. Sometimes a word with 3 or 5 meaning, but only 1 or 2 examples in the dictionary, so I will try to some sentence or some papers with this word to understand. To see if the words are used as a same method as the dictionary told me. (P9-24F)

Another participant described context as being the reason for both definitions of vocabulary having rightness, explaining “Yes, for sure. Like, it's basically like one word means more than one thing. So there is nothing in my mind right now, but there is some words might mean things, like totally different. Depends on where they use the word” (P12-26M). One participant expressed a similar belief about knowing vocabulary meanings, stating that all definitions of a vocabulary word can be equally right:

> It has the situation in our word. Because you have different tones or tunes? You express the different things. So maybe you said that word is the same thing, but what you want to express your mode or ideas is completely different. And you can, it is also, I mean, you can speak and start and continue. It can express opposite idea. Both definitions are like right. The difference is, like for example, they different meanings but both are right. (P13-18M)

Further sub-codes emerged: *judgment* (n=12), *experts* (n=9), *change phrases* (n=8), *context* (n=8), *sentence context* (n=3), *meanings* (n=2), and *agreement* (n=1). Each of
these codes highlight different explanations of the justification process they believe to be important when examining knowledge claims about vocabulary. For more detailed descriptions of the codes, see Appendix H.

**Direct observation.** The deductive code *Direct Observation and Authority* represents the more naïve and objective end of the continuum of the justification dimension of knowing (Hofer, 2001). Overall, there were 35 instances where participants displayed epistemic beliefs about the justification of vocabulary knowledge as occurring through direct observation and the use of authority. One participant discussed her use of translation, stating “I use a Korean dictionary and English dictionary so when I have a trouble to understand I search a Korean dictionary to English. Translation.” (P11-19F). Another participant explained “[f]irst of all, whenever I just get the meaning of the words I try my best to make a sentence from it. And, whenever I get, I talk with someone about the sentence and he tells me it's right. Most of the people tell me it is right, I get that it’s right. And it's correct” (P5-26M). More specifically, this code included sub-codes such as *Authority* (n=11), *Direct Observation* (n=9), *Talk to People* (n=7), *Watch Movies* (n=2) *Search Internet* (n=2), *Variations* (n=2), *Popularity* (n=1), and *Non-changing* (n=1) (see Appendix H).

In sum, there were a large number of instances where ELLs’ espoused the belief that justification of vocabulary knowledge occurs best with *rules of inquiry and evaluation of expertise* (n=43 instances). Seven sub-codes emerged that supported this general belief about the justification of vocabulary knowledge: *Judgment* (n=12), *Experts* (n=9), *Change Phrases* (n=8), *Context* (n=8), *Sentence Context* (n=3), *Meanings* (n=2), and *Agreement* (n=1). There were 35 instances where participants espoused
justification epistemic beliefs that state *direct observation and the use of authority* is the best way to determine accuracy of vocabulary knowledge. There were eight sub-codes that emerged that support this general belief: *Authority* (n=11), *Direct observation* (n=9), *Talk to People* (n=7), *Watch Movies* (n=2) *Search Internet* (n=2), *Variations* (n=2), *Popularity* (n=1), and *Non-changing* (n=1) (see Appendix H).

**Overall epistemic beliefs about the justification of vocabulary knowledge.** The previous analysis examined the occurrence of beliefs about justification across all procedures in the data set. To gain an overall understanding of the individual as a whole, the results here are reported for the participants. In order to determine participants’ epistemic beliefs about the justification of vocabulary knowledge, data from each data source were triangulated to determine an overall belief about justification of vocabulary knowledge. Because the responses from Interview Question Set 2 (Question 12, Question 17) and Ill-structured Scenario (Question 5) were slightly different, they were grouped into two broader codes that align with Hofer’s (2001) dimensional framework of epistemic thinking: (1) *Direct Observation and Authority*; 2) *Rules of Inquiry and Evaluation of Expertise* (see Table 6). The code *Direct Observation and Authority* represents the more naïve and objective end of the continuum of this dimension. This code was used to label responses that discuss authority, direct observation, popularity, non-changing, variations, talk to people, watch movies, and search internet. The code *Rules of Inquiry and Evaluation of Expertise* was used to label responses that represents the sophisticated end of the continuum. This code was used to label responses that discussed judgment, experts, context, meanings, agreement, sentence context, and change phrases. To calculate the overall epistemic beliefs about the justification of vocabulary,
the total number of code occurrences was divided by the total number of possible code occurrences. The code with an occurrence greater than 50% was considered to be fully validated and to represent the participants’ justification beliefs about vocabulary knowledge.

In Table 8, results are presented from the triangulation process. Ten participants (n=10) were identified as espousing Rules of Inquiry and Evaluation of Experts justification beliefs of vocabulary knowledge. On the other end of the continuum, there were eight participants (n=8) who espoused Direct Observation and Authority justification beliefs about vocabulary knowledge. Two participants (n=2) had a combination of Direct Observation and Authority and Rules of Inquiry of Evaluation of Experts justification beliefs about vocabulary knowledge.

Table 8

Overall Epistemic Beliefs about the Justification of Vocabulary knowledge

<table>
<thead>
<tr>
<th>Participants</th>
<th>Interview Question Set 2</th>
<th>Ill-Struc. Scenario</th>
<th>Overall Epistemic Beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Question 12</td>
<td>Question 17</td>
<td>Question 5</td>
</tr>
<tr>
<td>P1-18F</td>
<td>Authority (1), Judgment (2)</td>
<td>Context (2)</td>
<td>Judge Sources (2)</td>
</tr>
<tr>
<td>P2-22M</td>
<td>Direct Obs. (1)</td>
<td>Popularity (1)</td>
<td>Change Phrases (2)</td>
</tr>
<tr>
<td>P3-18F</td>
<td>Authority (1)</td>
<td>Multiple Meanings (2)</td>
<td>Talk People (1)</td>
</tr>
<tr>
<td>P4-22M</td>
<td>Direct Obs. (1)</td>
<td>Meaning (2)</td>
<td>Talk People (1)</td>
</tr>
<tr>
<td>P5-26M</td>
<td>Direct Obs. (1), Judgment (2)</td>
<td>Agreement (2)</td>
<td>Change Phrases (2)</td>
</tr>
<tr>
<td>P6-18M</td>
<td>Authority (1), Judgment (2)</td>
<td>Context (2)</td>
<td>Search Internet (1), Talk People (1)</td>
</tr>
<tr>
<td>P7-21F</td>
<td>Direct Obs. (1)</td>
<td>Context (2)</td>
<td>NR</td>
</tr>
<tr>
<td>P8-24M</td>
<td>Authority (1), Direct Obs. (1)</td>
<td>Sentence Context (2)</td>
<td>Talk People (1)</td>
</tr>
<tr>
<td>P9-24F</td>
<td>Authority (1), Judgment (2)</td>
<td>Context (2)</td>
<td>Change Phrases (2)</td>
</tr>
<tr>
<td>P10-20F</td>
<td>Experts (2)</td>
<td>Context (2)</td>
<td>Change Phrases (2)</td>
</tr>
<tr>
<td>P11-19F</td>
<td>Authority (1), Direct Obs. (1)</td>
<td>Non-changing (1)</td>
<td>Watch Movies (1)</td>
</tr>
<tr>
<td>Source</td>
<td>Methodology</td>
<td>Context</td>
<td>NR</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>---------</td>
<td>----</td>
</tr>
<tr>
<td>P12-26M</td>
<td>Direct Obs., (2), Experts (2), Judgment (2)</td>
<td>Context (2)</td>
<td>NR</td>
</tr>
<tr>
<td>P13-18M</td>
<td>Experts (2), Judgment (2)</td>
<td>Multiple Meanings (2)</td>
<td>Change Phrases (2)</td>
</tr>
<tr>
<td>P14-20F</td>
<td>Experts (2), Judgment (2)</td>
<td>Context (2)</td>
<td>Change Phrases (2)</td>
</tr>
<tr>
<td>P15-19M</td>
<td>Authority (1), Direct Obs. (1)</td>
<td>Authority (1)</td>
<td>Change Phrases (2)</td>
</tr>
<tr>
<td>P16-19M</td>
<td>Experts (2), Judgment (2)</td>
<td>Variations (1)</td>
<td>Change Phrases (2)</td>
</tr>
<tr>
<td>P17-19F</td>
<td>Direct Obs. (1)</td>
<td>Variations (1)</td>
<td>Search Internet (1), Talk People (1)</td>
</tr>
<tr>
<td>P18-19M</td>
<td>Authority (1), Judgment (2)</td>
<td>Context (2)</td>
<td>Talk People (1)</td>
</tr>
<tr>
<td>P19-25M</td>
<td>Experts (2), Judgment (2)</td>
<td>Sentence Context (2)</td>
<td>Talk People (1), Watch Movies</td>
</tr>
<tr>
<td>P20-18M</td>
<td>Authority (1), Experts (2)</td>
<td>Sentence Context (2)</td>
<td>NR</td>
</tr>
</tbody>
</table>

Note. This table shows the overall epistemic beliefs about the justification of vocabulary knowledge. (1) Represents Direct Observation and Authority; (2) Represents Rules of Inquiry and Evaluation of Expertise. NR represents No Response. Total occurrence of each code was divided by the total number of sources provided. Overall beliefs of justification of vocabulary knowledge were fully validated if strategy occurred more than 50% of the time.

**Developmental levels of ELLs’ epistemic understanding of vocabulary knowledge.**

There were three data sources used to answer the Research question 2b:

English language learners’ developmental level of epistemic understanding in the domain of English vocabulary knowledge (Table 4). Each data source was created to corroborate the ELLs’ developmental level of epistemic understanding from a slightly different angle (see Table 4). For the qualitative data analysis, Interview Question Set 2 asked participants general interview questions to elicit epistemic thinking about vocabulary knowledge in general; the Ill-structured Scenario targeted participants’ developmental levels in an ill-formed scenario creating a space for participants’ to engage in critical thinking. For the quantitative data analysis, the Epistemological Thinking Assessment (Kuhn & Weinstock, 2004) was administered in the form of a questionnaire asking participant to make judgments about a pair of statements related to vocabulary, with three
of the eighteen questions targeting epistemic thinking about vocabulary knowledge in particular (Question 12, Question 14, and Question 16).

**Qualitative data analysis.** Data were analyzed using *Data Analysis: Method 2* (Figure 3d) (see Table 5). The first step analyzed the number of code occurrences. These data were then triangulated for each participant to determine the developmental levels of epistemic thinking. Results first describe how often a code occurred across the aforementioned procedures. Results then show the number of participants who held the different beliefs based on the triangulation. There were mostly *evaluativist* (n=35 instances) and *multiplist* (n=28 instances) responses, with some *absolutist* responses (n=14 instances). For an additional and more fine-combed description of the results, see Appendix I.

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*Figure 3d.* This figure represents the analysis processes for *Data Analysis: Method 2.* For this method of analysis, data from multiple sources were first analyzed based on the number of instances for the respective codes. Data were then triangulated on the participant level to determine overall participant beliefs.
Evaluativist. There were thirty five instances (n=35) where participants espoused evaluativistic beliefs about vocabulary knowledge. More specifically, this code was assigned to participants who espoused the belief that there can be multiple strategies (n=9), definitions (n=7), sources (n=11), and phrases (n=8) that are accurate, but one strategy, definition, source, or phrase is better than the others.

Nine participants (n=9) provided evaluativistic responses regarding strategies used to understand new vocabulary. Participants explained that multiple strategies could be used to determine if understanding is accurate but that one strategy is better, more accurate, or more appropriate than others. For example, one participant explained:

Always my strategy is like the, I don't know, look on the internet or something like that. Even if, for example, if like a new word, so I think and write it down and then if like um I didn't understand this, so then I look on the internet, but then I will realize that the professor can explain it better. Something like that. Because I don't know, sometimes the internet like skips a lot of things. (P3-18F)

This participant also demonstrated why she believed one strategy might be better than another. A different participant showcased his evaluativistic understanding of strategies to understand a new vocabulary word, stating “I think it depends on different person. Like me, I use simple way just to repeat. I'm sure there are better ways to understand and memorize vocabs and I like to learn about it” (P6-18M). This participant highlighted that there are likely better ways to know a vocabulary word, demonstrating an open mind about the strategies used to learn English vocabulary.

There were seven participants (n=7) who demonstrated evaluativistic beliefs about differences in definitions of vocabulary. Participants stated that both vocabulary definitions could be right, but one definition could be more right than other. In a
discussion between the interviewer and a participant, one participant demonstrated this developmental level of understanding:

P: Yes, for sure. Like, it's basically like one word mean more than one thing. So there is nothing in my mind right now, but there is some words might mean things, like totally different.
I: Ok, and so if we have two words that have totally different meanings and they both can be right, could one be more right than the other?
P: Yeah, for sure. Depends on where they use the word.
I: Ok, yeah. That's the context, right?
P: Exactly (P12-26M).

There were eleven participants (n=11) who espoused an evaluativistic level of epistemic understanding about the source of vocabulary knowledge. These participants stated that all sources are equally right, or could be equally right, but that there are some sources that are better than others based on certain criteria related to the type of source. One participant demonstrated evaluativistic thinking about sources, by stating “I think looking at the internet is better than looking at specific books because in the book there are only one writer and in the internet the sources from different writer” (P17-19F).

Eight participants (n=8) were identified as having evaluativistic thinking about the use of different phrases in a communicative event. Participants indicated that there are phrases that could be used and are equally right, but one could be better. One participant, for example, espoused this level of epistemic understanding, stating:

P: Yes, it can used in different phrases, in different ways. If I know some different phrases, I can use these phrases in different places. And when I do in conversation. I can use these phrases from here.
I: Ok, so then would both phrases be accurate or equally right to use?
P: It depends on the phrase, for what I use. It's really, when I use some vocabulary, some phrases. I have to see if it's right or wrong. Is it matched, is it circumstance. So if it is matches, I have to use these (P16-19M).

This level of epistemic understanding is also evidenced by the following statement:
How was your lunch and how are you doing today? If as a conversation starter, I think they are equal, but the meaning probably not that equal. Like how are you today, if like two stranger people can say that as well, but if you just say “How was your lunch?” to a strange people, it's not that appropriate. You can say "How was your lunch?" to people you already know, even not too long. But to a stranger you just say "How are you doing?" or "How are you?" (P6-18M).

Both responses also highlight the reasoning necessary for deciphering which phrase is most accurate to use. For example, the first participant (P16-19M) discussed the need for the phrases to match the outcome of the communicative event, while the other participant highlighted the importance of the role of the people in the communicative event.

**Multiplist.** There were twenty eight (n=28) occurrences where participants espoused multiplistic epistemic beliefs about vocabulary knowledge. That is, these participants believed that there could be different strategies (n=6), definitions (n=11), sources (n=6), and phrases (n=5) for understanding new vocabulary that could be equally right.

There were six participants (n=6) who displayed multiplistic beliefs about strategies for understanding new vocabulary. These participants discussed that more than one strategy can be helpful to know if understanding is accurate, but there is not one strategy that is better than another; it depends on the person's preference or the context of the usage. One participant, for example, explained that multiple strategies have some usefulness, “Because you learn something from every strategy. Like you may prefer one, but I don't think it's better than the other cause they both teach you something” (P1-18F). A different participant highlighted the subjective nature of choosing one strategy over another, claiming “Well, every person, every individual has his own strategy. Some people depend on seeing, some people are listening” (P12-26M).
Eleven participants (n=11) displayed multiplistic beliefs about definitions of vocabulary knowledge. That is, these participants stated that there could be different and contradictory definitions of a vocabulary word, but both definitions can be equally right. For example, one participant discussed the relativity of the definition of a vocabulary word, “I think the meaning of word is useful to a certain conversation (…), but not mean this one is the main meaning and this one is not the main meaning or something. I think every meaning is equal in certain situations” (P9-24F). A different participant expressed a similar sentiment, stating:

I think that the only thing that they have is that they have different meanings. It doesn’t matter if they sound the same or they write the same. They have different meanings. That doesn’t mean like because of that they have, they are not right, I think that both are right. Because we use that vocabulary like every day or not every day, but we use them. And, I don’t know. I think that it’s not right, just different meaning. But both of them are right (P3-18F).

Six participants (n=6) demonstrated multiplistic beliefs about the source of vocabulary knowledge. These participants stated that all sources are equally good, right, or correct, and there is no source that is better than another. One participant demonstrated the belief that it is up to each person individually to choose a good source for them, stating “they’re both good methods and it depends on the person. Like if reading is the best way for me to learn quickly then I will go with reading. But if it's listening I will go with listening” (P10-20F). Another participant demonstrated a multiplistic way of thinking about source of vocabulary knowledge, “I don't think that some meanings is better than others. That’s just a way of communication. So, I mean, there is no bad or good” (P13-18M).
Five participants (n=5) were identified as having *multiplistic* levels of epistemic understanding about the use of different *phrases* when communicating. Participants discussed that there are other phrases to use in communicative events and they are equal, but one is not better than another. For example, one participant discussed a person’s perspective in the communicative event playing a factor in different phrases being equally right to use, “some phrases like that, or he might use like, no actually he might use a lot of phrases but in my perspective, I think generally the phrase he used, anyone could use the same meaning. I mean, anyone could understand what the professor understands” (P12-26M).

*Absolutist.* There were fourteen occurrences (n=14) of participants who espoused absolutistic epistemic beliefs about vocabulary knowledge. These participants believed that there was only one *strategy* (n=4), *definition* (n=2), *source* (n=2), or *phrase* (n=6) that could be used to understand vocabulary knowledge.

There were four participants (n=4) who demonstrated absolutistic beliefs about the *strategies* to determine accurate vocabulary. Participants believed that there are no better strategies to use to understand a new vocabulary word. Moreover, this highlights the belief that the individual's strategy is the best strategy to use. For example, one participant stated “[n]ot really” (P8-24M), thus implying that he only believes there is one good strategy to use.

There were two participants (n=2) who espoused *absolutistic* beliefs about contradictory *definitions* of vocabulary words. Participants indicated that vocabulary words can have only one right or correct definition. One participant espoused this belief, exclaiming “[b]oth definitions is not right, because if two vocabulary has two different
[meanings] it is used in two separate ways, two separate environments, so I think one vocabulary has two different meaning, but it is not used in two different places. So it is not right” (P16-19M).

Two participants (n=2) espoused absolutistic beliefs about the source of vocabulary knowledge. Participants discussed that there is one best source to use to know new vocabulary or one objectively good source for vocabulary. One participant exemplified the belief that there is only one right source, “No I think these all are not equally right” (P15-19M). A different participant expressed the belief in one absolute source, “Dictionary is absolute. Dictionary can explain accuracy meaning, but the record can explain how can I use that vocabulary” (P7-21F).

There were six participants (n=6) who espoused an absolutistic level of epistemic understanding about using the correct phrases in communicative events. Participants responded that there is no other correct phrase to use or are not equally accurate. Moreover, these participants did not provide reasoning to support their claims. One participant believed that the character Chris from the Ill-structured scenario actually used the right phrase and did not need to change “I think he used the correct phrase right there. Now that I know that was his intention to ask like... I think he did it correct” (P1-18F).

In sum, there were primarily evaluativist (n=35 instances) and multiplist (n=28 instances) responses. There were some absolutistic (n=14 instances) responses to the interview questions. When examining the areas in which participants displayed the different levels of epistemic understanding, it was found that participants displayed mostly evaluativistic beliefs for strategies (n=9), sources (n=11), and phrases (n=8).
More participants, however, displayed multiplistic epistemic beliefs about the definitions of vocabulary (n=11).

**Quantitative data analysis.** The *epistemological thinking assessment* instrument was originally developed by Kuhn and Weinstock (2004) to provide a quantitative analysis of epistemic development in different domains. Kuhn and Weinstock’s (2004) original assessment examined judgments about personal taste, aesthetics, values, facts about social world, and facts about the physical world. For this study, judgments about vocabulary were developed following the same item style. Participants read three statements about vocabulary and had to make judgments about their rightness:

1) Robin believes context is important to know a meaning of vocabulary. Chris believes dictionaries are important to know a meaning of vocabulary.

2) Robin prefers to use one method to know vocabulary in English. Chris prefers to use another method to know vocabulary in English.

3) Robin believes one meaning of a vocabulary word is right. Chris believes another meaning of a vocabulary word is right.

After reading the different judgments, participants had to circle which belief they agreed with most (Appendix D). First, participants answered: *Can only one of their views be right, or could both have some rightness? (circle one).* If participants circled *only one right*, that response was identified as *absolutist*. If participants circled *both could have some rightness*, they were instructed to answer the following question: *If both could be right: Could only one view be better or more right than the other? (circle one).* If participants circled *one could be more right* they were labeled multiplist. If participants circled *one could more right than the other*, they were identified as evaluativist.
Results varied slightly within and between the participants for each of the questions listed above. For question 1, there were ten *evaluativistic* answers (n=10), eight *multiplistic* answers (n=8), and two *absolutistic* answers (n=2). With question 2, ten participants (n=10) circled *evaluativistic* statements, nine participants (n=9) circled *multiplistic* statements, and one participant (n=1) circled an absolutistic statement. For Question 3, there nine *evaluativistic* responses (n=9), seven *multiplistic* responses (n=7), and four *absolutistic* responses (n=4). Overall, eight participants (n=8) demonstrated consistent beliefs across all question for the judgments of vocabulary, with five *evaluativists* (n=5) and three *multiplists* (n=3).

*Overall epistemic level of understanding of vocabulary knowledge.* In order to examine participants overall level of epistemic understanding in the domain of vocabulary knowledge, three data sources were analyzed together: Interview Question Set 2 (Question 12, Question 17, Question 18), Ill-structured Scenario (Question 6), and Epistemological Thinking Assessment (Question 12, Question 14, Question 16). Three levels of epistemic understanding (Kuhn, 1999) were identified from these data sources: *Absolutism, Multiplism,* and *Evaluativism.* To determine the overall level of epistemic understanding, the frequency of each level was divided by the total number of possible responses for each participant. For example, Participant 2-22M espoused one absolutist belief of seven possible responses, which equals 14% of total possible responses for that participant. The results yielded a percentage for each identified level. The level with the highest frequency and percentage was used to determine the overall level of epistemic understanding for each participant. When a level appeared in equal frequency and
percentage to another level, the two levels were used to identify a participant who may be in transition from one level to the next.

In Table 9, results are presented for the triangulation of each of the data sources. Nine participants (n=9) were identified as *evaluativist*. Four participants (n=4) were identified as *multiplist*. One participant (n=1) was identified as *absolutist*. There were six participants (n=6) who emerged from data analysis as transitioning between levels of epistemic understanding. Five participants (n=5) were identified as *multiplist-evaluativist*, and one participant (n=1) was identified as *absolutist-multiplist*.

Table 9

*Overall Epistemic Level of Understanding with Vocabulary Knowledge*

<table>
<thead>
<tr>
<th>Participants</th>
<th>Interview Question Set 2</th>
<th>Ill-Struct. Scenario</th>
<th>Epistemic Thinking Assessment</th>
<th>Epistemic Level of Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1-18F</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>Multiplist: n=3/7; 42% &amp; Evaluativist: n=3/7; 42%</td>
</tr>
<tr>
<td>P2-22M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>Multiplist: n=3/7; 42% &amp; Evaluativist: n=3/7; 42%</td>
</tr>
<tr>
<td>P3-18F</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>Multiplist: n=3/7; 42% &amp; Evaluativist: n=3/7; 42%</td>
</tr>
<tr>
<td>P4-22M</td>
<td>A</td>
<td>M</td>
<td>M</td>
<td>Multiplist: n=3/7; 42%</td>
</tr>
<tr>
<td>P5-26M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>Evaluativist: n=6/7; 86%</td>
</tr>
<tr>
<td>P6-18M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>Multiplist: n=3/7; 42% &amp; Evaluativist: n=3/7; 42%</td>
</tr>
<tr>
<td>P7-21F</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>Absolutist: n=3/7; 42% &amp; Multiplist: n=3/7; 42%</td>
</tr>
<tr>
<td>P8-24M</td>
<td>A</td>
<td>M</td>
<td>M</td>
<td>Evaluativist: n=5/7; 72%</td>
</tr>
<tr>
<td>P9-24F</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>Multiplist: n=5/7; 72%</td>
</tr>
<tr>
<td>P10-20F</td>
<td>A</td>
<td>M</td>
<td>M</td>
<td>Multiplist: n=6/7; 86%</td>
</tr>
<tr>
<td>P11-19F</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>Multiplist: n=5/7; 72%</td>
</tr>
<tr>
<td>P12-26M</td>
<td>M</td>
<td>NR</td>
<td>M</td>
<td>Evaluativist: n=4/6; 66%</td>
</tr>
<tr>
<td>P13-18M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>Evaluativist: n=4/7; 58%</td>
</tr>
<tr>
<td>P14-20F</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>Evaluativist: n=5/7; 72%</td>
</tr>
<tr>
<td>P15-19M</td>
<td>M</td>
<td>A</td>
<td>NR</td>
<td>Evaluativist: n=3/6; 50%</td>
</tr>
<tr>
<td>P16-19M</td>
<td>M</td>
<td>A</td>
<td>M</td>
<td>Evaluativist: n=5/7; 72%</td>
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<tr>
<td></td>
<td>A</td>
<td>M</td>
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<tr>
<td>P17-19F</td>
<td>A</td>
<td>M</td>
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<td>A</td>
</tr>
<tr>
<td>P18-19M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>A</td>
</tr>
<tr>
<td>P19-25M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>P20-18M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
</tbody>
</table>

Note. This table shows participants’ overall epistemic level of understanding about vocabulary knowledge. The total number of occurrences for each level, Absolutist (A), Multiplist (M) and Evaluativist (E) were added together separately and divided by the total number of responses participants gave. Overall levels of epistemic understanding of vocabulary knowledge were fully validated if the level occurred more than 50% of the time.

**Domain generality vs. domain specificity of epistemic beliefs.** Another area of inquiry was to determine if ELLs have different epistemic beliefs between domains of knowledge. That is, Research Question 2c examined if ELLs’ have domain general epistemic beliefs (i.e., comparable across domains) or domain specific epistemic beliefs (i.e., contrasting across domains). A domain is the marked epistemic distinctions, criteria and validation processes that are unique to a specific discipline/area of knowledge (e.g., mathematics, chemistry, English) (Hofer, 2000). Therefore, the primary goal was to compare participants’ epistemic beliefs about general knowledge to their epistemic beliefs about vocabulary knowledge. Unfortunately, a careful analysis of the data found that the data sources for general knowledge and vocabulary knowledge were not comparable. Furthermore, and maybe because of the data sources, results did not reveal a qualitatively distinct pattern that allowed to make the claim that the beliefs about vocabulary knowledge are domain specific or domain general. That is, results were relatively scattered across the data sources, and thus, no consistent patterns emerged. However, there were differences and similarities found among participants epistemic
beliefs about general knowledge and vocabulary knowledge. These differences and similarities are described in the following section.

*Data analysis: Method 3* was used to analyze and report the findings for this research question (Figure 4a) (see Table 5). The first step was to determine participants’ epistemic beliefs about the dimensions of certainty, simplicity, source, and justification of general knowledge and vocabulary knowledge, separately. The second step was to triangulate the data from step 1 for general knowledge and vocabulary knowledge. Triangulation revealed the dominant beliefs within each dimension. Dominant epistemic beliefs were validated for each dimension when the belief occurred more than 50% of the time (>50%). The third step was to compare the dominant beliefs for general knowledge and vocabulary knowledge. When the dominant epistemic beliefs were the same for general and vocabulary knowledge, participants were identified as having *Similar* epistemic beliefs (see Table 10). When the dominant epistemic beliefs were contrasting for general knowledge and vocabulary knowledge, participants were identified as having *Different* epistemic beliefs (see Table 10). When participants demonstrated equal (=50%) beliefs between two ends of a continuum (e.g., internal and external) in one domain (e.g., General Knowledge) but not the other (e.g., Vocabulary Knowledge), they were determined to be *inconclusive*. Below, results are presented for each of the four dimensions of epistemic thinking (*certainty of knowledge, simplicity of knowledge, source of knowledge, justification of knowing*) (Hofer, 2001).
Figure 4a. This figure represents the analysis process for Data Analysis: Method 3. For this method of analysis, participants’ epistemic beliefs about the dimensions of general and vocabulary knowledge were triangulated and compared to determine if their epistemic beliefs were domain general or domain specific.

Table 10

*Similarities and Differences of ELLs’ Dominant Epistemic Beliefs about General and Vocabulary Knowledge*

<table>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
<td><strong>P2-22M</strong></td>
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<td>Similar</td>
<td>Similar</td>
<td>Similar</td>
</tr>
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<td>GK: Simple 0%; Complex 100%</td>
<td>GK: External 100%; Internal 0%</td>
<td>GK: Direct Obs. 100%; Rules Inquiry 0%</td>
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<td>GK: External 100%; Internal 0%</td>
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</tr>
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<td>GK: External 100%; Internal 0%</td>
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<td>GK: Direct Obs. 100%; Rules Inquiry 0%</td>
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<td>VK: External 75%; Internal 25%</td>
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<td>GK: Simple 100%; Complex 0%</td>
<td>GK: External 100%; Internal 0%</td>
<td>GK: Direct Obs. 0%; Rules Inquiry 100%</td>
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<tr>
<td>VK: Certain 0%; Uncertain 100%</td>
<td>VK: Simple 0%; Complex 100%</td>
<td>VK: Internal 25%; External 75%</td>
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<td>GK: External 100%; Internal 0%</td>
<td>GK: Direct Obs. 100%; Rules Inquiry 0%</td>
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</tr>
<tr>
<td>VK: Certain 66%; Uncertain 33%</td>
<td>VK: Simple 0%; Complex 100%</td>
<td>VK: External 60%; Internal 40%</td>
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<td>GK: Direct Obs. 100%; Rules Inquiry 0%</td>
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</tr>
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<td>GK: External 50%; Internal 50%</td>
<td>GK: Direct Obs. 100%; Rules Inquiry 0%</td>
<td></td>
</tr>
<tr>
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<td>VK: External 50%; Internal 50%</td>
<td>VK: Direct Obs. 33%; Rules Inquiry 66%</td>
<td></td>
</tr>
</tbody>
</table>
Note: Triangulated data were compared for two domains: General Knowledge (GK) and Vocabulary Knowledge (VK). Each domain was compared for the different dimensions of epistemic thinking: certainty, simplicity, source, and justification (Hofer, 2001). Participants were determined to have Similar beliefs when the dominant beliefs (>50%) were the same and are shaded in the table. Participants were determined to have Different beliefs when the dominant beliefs were contrasting. Furthermore, participants who demonstrated equal beliefs in one domain (=50%) but not the other were determined to be inconclusive.

Certainty. For the dimension of certainty, participants were identified as having the belief that knowledge is certain or uncertain. There were five participants (n=5) who had different beliefs about certainty of general knowledge and vocabulary knowledge. On the other hand, ten participants (n=10) espoused similar beliefs about the certainty of general knowledge and vocabulary knowledge. There were five participants (n=5) who were determined to be inconclusive.

Simplicity. For the dimension of simplicity, participants were identified as having the belief that knowledge is simple or complex. There were six participants (n=6) who had different beliefs about the simplicity of general knowledge and vocabulary knowledge. Conversely, six participants (n=6) espoused similar beliefs about the simplicity of general knowledge and vocabulary knowledge. In addition, there were eight participants (n=8) who were determined to be inconclusive.

Source. For the dimension of source, participants were identified as having the belief that knowledge comes from internal or external sources. There was one participant (n=1) who believed that the source of knowledge is different for general knowledge and vocabulary knowledge. On the other hand, there were sixteen participants (n=16) who believed that the source of knowledge is similar for general knowledge and vocabulary knowledge. There were three participants (n=3) who were determined to be inconclusive.
**Justification.** For the dimension of justification, participants were identified as having the belief that the best way to determine knowledge claims was through *direct observation and authority*, or *rules of inquiry and evaluation*. There were four participants (n=4) who had *different* beliefs about the justification of general knowledge and vocabulary knowledge. Conversely, there were thirteen participants (n=13) who had *similar* beliefs about the justification of general knowledge and vocabulary knowledge. There were three participants (n=3) who were determined to be *inconclusive.*

In sum, Research Question 2c was not fully answered because the data sources did not provide comparable data to examine the domain specificity of vocabulary knowledge. However, there were interesting findings on the participant level that highlight the *similarity* and *differences* of their epistemic beliefs between general knowledge and vocabulary knowledge. For the dimension of certainty, there were ten participants (n=10) who had *similar* beliefs about the certainty of general and vocabulary knowledge, while five participants (n=5) had *different* beliefs. For the simplicity dimension, there were six participants (n=6) who had *similar* beliefs between general and vocabulary knowledge, and six participants (n=6) who had *different* beliefs. For the source dimension, there were sixteen participants (n=16) who had *similar* beliefs between general and vocabulary knowledge, and one participant (n=1) who had *different* beliefs. For the justification dimension, there were thirteen participants (n=13) who had *similar* beliefs between general and vocabulary knowledge, and four participants (n=4) who had *different* beliefs.

**ELLs’ overall epistemic beliefs about vocabulary knowledge.** The focus of this study examined English language learners’ epistemic beliefs about vocabulary
knowledge (Research Question 2). In order to determine English Language learners’ overall epistemic beliefs about English vocabulary (Research Question 2), results from the sub questions (Research Questions 2a and 2b) were triangulated to form a complete picture of their beliefs (see Table 5). Participants’ overall beliefs about the dimensions of vocabulary knowledge (Hofer, 2001: certainty, simplicity, source, and justification) and their targeted developmental level of epistemic understanding (Kuhn, 1999: absolutism, multiplism, evaluativism) of English vocabulary were consolidated to identify ELLs’ overall developmental level of epistemic understanding of vocabulary as a whole (Feucht, 2010) (see Table 3). That is, the dimensional epistemic beliefs that were espoused by participants were aligned with the developmental levels of epistemic understanding (see Table 11).

Data analysis: Method 4 was used to analyze the data for this research question (Figure 5a). There were three steps to data analysis. The first step was to summarize the results from Research Questions 2a and 2b. Espoused beliefs about the dimensions of epistemic understanding were then assigned their epistemic level of understanding equivalent. For example, if a participant espoused the belief that English vocabulary is changing (i.e., certainty dimension), that participant was assigned the multiplist and evaluativist levels of epistemic understanding (e.g., Kuhn, 1999). Second, these results were then triangulated to determine the overall epistemic beliefs of English language learners’ about vocabulary knowledge (Figure 5a). In order to do this, the sum of all potential responses was calculated across all data sources to determine the total number of responses for each participants (e.g., P1-18F: Total data points n=12; 100%). The sums for the epistemic level of understanding (i.e., absolutist, multiplist, evaluativist) were
calculated independently and the percentage of the total sum of data points was determined (e.g., P1-18F: Abso n=1, 9%; Multi n=5, 42%, Eval n=6, 50%). Third, percentages were used to identify the predominant epistemic level of understanding and the validation of the triangulation. The predominant epistemic level of understanding was considered *fully validated* when the level of understanding accounted for the majority (>50%) of the overall data points (P14-20F: Abso n=0, 0%; Multi n=5, 40%, Eval n=6, 60%). The epistemic level of understanding was considered *partially validated* when the level accounted for the most responses, but not the dominant majority (≤50%) (P17-19F: Abso n=4, 40%; Multi n=2, 20%; Eval n=3, 30%). When two levels of epistemic understanding were equivalent, they were considered as transition between levels, but the triangulation was considered *not validated* (P4-22M: Abso n=2, 20%; Multi n=4, 40%; Eval n=4, 40%).

*Figure 5a.* This figure represents the analysis process for *Data Analysis: Method 3.* For this method of analysis, data outcomes from Research Questions 2a and 2b. Data were triangulated to determine participants’ overall epistemic beliefs about vocabulary knowledge.
In total, there were fifteen participants that espoused an evaluativist level of epistemic understanding (partially validated n=11; fully validated n=4). There were four participants that espoused an absolutist level of epistemic understanding (partially validated n=3; fully validated n=1). One participant espoused multiplist and evaluativist levels of epistemic understanding (not validated n=1). These results suggest that the majority of participants espoused more sophisticated levels (i.e., evaluativism) of epistemic understanding most of the time.

Table 11

**Overall Epistemic Beliefs about English Vocabulary**

<table>
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<th>Justification</th>
<th>Development</th>
<th>Overall Level of Epistemic Development</th>
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<td></td>
<td></td>
<td></td>
</tr>
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<td>P1-18F</td>
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<td>Uncertain</td>
<td>Complex</td>
<td>Internal &amp; External</td>
<td>Rules of Inquiry</td>
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<td>M, E</td>
<td>M, E</td>
<td>A, M, E</td>
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<td>M, E</td>
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<td>A, E</td>
<td>A</td>
<td>M, E</td>
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<td>Complex</td>
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<td>A: n=5, 72%; M: n=1, 14%; E: n=1, 14%</td>
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Note. This table shows the overall level of epistemic understanding of English vocabulary. Each level is assigned to the dimensions. Levels are considered fully validated if they occur more than 50% of the time, partially validated if they represent the majority of occurrence but are below 50% or below, and not validated if there are two levels with the same number of occurrences.

Summary

This chapter provided the analysis of the data for this research study. First, English language learners’ general beliefs about English language learning, vocabulary knowledge, and vocabulary learning were analyzed (Research Question 1). Following codes were found. Communication was a primary reoccurring code for English language learning (n=7), importance of vocabulary (n=10), vocabulary knowledge (n=6) and vocabulary learning (n=2). Additionally, results indicated that most participants believed that vocabulary was essential element of their English language learning process (n=19). Context was not mentioned frequently, with only two instances (n=2) of occurrence.

Second, English language learners’ beliefs about the dimensions of epistemic beliefs were analyzed (Research Question 2a). For the certainty dimension, twelve participants (n=12) believed that knowledge is uncertain and changing, four participants (n=4) believed that vocabulary knowledge is certain and unchanging, two participants (n=2) believed that vocabulary knowledge is uncertain and unchanging, and two participants (n=2) believed that vocabulary knowledge is certain and changing. For the simplicity dimension, eighteen participants (n=18) believed that vocabulary knowledge is complex, and two participants (n=2) believed that vocabulary knowledge is simple. For
the source dimension of knowledge, sixteen participants (n=16) believed that vocabulary knowledge comes from external sources, three participants (n=3) believed that vocabulary knowledge comes from internal sources, and one participant (n=1) believed that vocabulary comes from internal and external sources. For the justification dimension, ten participants (n=10) believed that *Rules of Inquiry and Evaluation of Experts* was the best way to justify knowledge about vocabulary. Eight participants (n=8) believed that *Direct Observation and Authority* were the best ways to justify knowledge about vocabulary, and two participants (n=2) believed that *Direct Observation and Authority* and *Rules of Inquiry and Evaluation of Experts* were the best ways to justify knowledge about vocabulary.

Third, English language learners’ epistemic levels of understanding about vocabulary were analyzed (Research Question 2b). There were nine participants (n=9) who were identified as having an *evaluativistic* level of epistemic understanding. Four participants (n=4) were identified as having *multiplistic* level of epistemic understanding. One participant (n=1) was identified as having *absolutistic* level of epistemic understanding. There were five participants (n=5) who were identified as having *multiplist-evaluativistic* levels of epistemic understanding, and one participant who was identified as having *absolutistic-multiplistic* levels of epistemic understanding.

Fourth, English Language Learners’ domain specificity of their epistemic beliefs were analyzed (Research Question 2c). Participants’ epistemic beliefs about the dimensions of knowledge in general and vocabulary knowledge were analyzed and compared. Based on the data analysis, domain specificity was not able to be found.
However, participants’ similarities and differences were examined between general knowledge and vocabulary knowledge. Ten participants (n=10) espoused similar beliefs about the certainty of general and vocabulary knowledge, and five participants (n=5) espoused different beliefs. Six participants (n=6) espoused similar beliefs about the simplicity of general and vocabulary knowledge, and six participants (n=6) espoused different beliefs. Sixteen participants (n=16) espoused similar beliefs about the source of general knowledge and vocabulary knowledge, and one participant (n=1) espoused different beliefs. Thirteen participants (n=13) espoused similar beliefs about the justification of general and vocabulary knowledge, while four participants (n=4) espoused different beliefs between the two domains.

Fifth, English language learners’ overall epistemic beliefs about vocabulary knowledge were analyzed (Research Question 2). Results regarding ELLs’ epistemic beliefs about the dimensions of vocabulary knowledge and epistemic level of understanding were triangulated and analyzed to determine participants overall level of epistemic understanding about vocabulary knowledge. Fifteen participants espoused evaluativistic level of epistemic understanding (partially validated n=11; fully validated n=4). Four participants espoused absolutistic levels of epistemic understanding (partially validated n=3; fully validated n=1). One participant espoused multiplistic and evaluativistic levels of epistemic understanding (not validated n=1).
Chapter Five
Discussion

Chapter V explores the interpretation of ELLs’ epistemic beliefs in the second language learning context. First, themes about ELLs’ beliefs about language learning are discussed. Second, themes about ELLs’ epistemic beliefs are presented, with a discussion about their overall epistemic beliefs about vocabulary knowledge followed by a discussion of their dimensional epistemic beliefs. Third, conceptual implications, methodological implications, and educational implications are presented, highlighting the importance of ELLs’ epistemic beliefs and the impact they may have on their second language learning. Fourth, limitations and implications for future research are addressed. Finally, concluding thoughts for this research study are provided.

Themes of language learning. One element of this research study that should be discussed is the English language learners’ beliefs about language learning and vocabulary. With the focus of this research study on ELLs’ epistemic beliefs, Research Question 1 was designed to analyze the role of ELLs’ general beliefs about language. An overview and discussion of these beliefs provides a precursor to the epistemic beliefs that ELLs espoused regarding English vocabulary.

First, vocabulary was seen as a fundamental part of the language learning process for almost every participant. This matches literature on second language learning that suggests that vocabulary is the most essential element of the acquisition of a foreign language (Cushner et al., 2000) and the development of reading abilities (Francis & Simpson, 2003). Moreover, it is not surprising that vocabulary emerged as a prominent aspect of language learning because most second language teaching methods promote the
learning of vocabulary (Brown, 2007). Many methods of language instruction differ in how vocabulary is taught. Therefore, it could be suggested that the epistemic beliefs of ELLs about vocabulary knowledge are represented well in this study because this is a topic and domain that many of the learners believe to be important and one in which they have likely thought a great deal about.

Second, there was a primary emphasis on the role of communication in the second language learning process. Communication emerged as a primary code for several of the questions about language learning, definitions about vocabulary, and why vocabulary is important. This is a promising finding because it highlights participants’ beliefs about a crucial aspect of learning a foreign language, aligning with the more epistemologically sophisticated methods of language teaching (e.g., Communicative Language Teaching, Hard-Science Linguistics)(see Table 2). That is, a primary emphasis of Communicative Language Teaching (Brown, 2007) and Hard-Science Linguistic (Yngve, 1996; Ziegler & Feucht, 2012) approaches is the development of the ability to communicate effectively in second language settings. More specifically, learners are instructed on how to navigate meaning in complex communicative events, rather than recite grammar forms and translate vocabulary meanings, which is common in the Grammar-Translation approach (White, 1989). Therefore, it can be seen that participants in this study value a crucial and primary aspect of the language learning process that is highlighted in more epistemologically sound teaching approaches (see Table 2).

Themes of epistemic beliefs about vocabulary knowledge. The primary interest of this study was to identify the espoused epistemic beliefs of ELLs and the potential impact they may have on their ability to critically think and acquire the English language.
The research questions for this study focused on the beliefs of ELLs about the certainty, simplicity, source and justification of vocabulary knowledge, and the developmental association of these beliefs (see Table 3). Analyses of data revealed that ELLs generally had sophisticated epistemic beliefs about some dimensions of epistemic thinking, but there were some gaps in their espoused epistemic beliefs in the English language setting.

**Overall epistemic beliefs about English vocabulary knowledge.** The primary focus of this study (Research Question 2) targeted ELLs’ epistemic beliefs about vocabulary knowledge. Using the theoretical alignment between Hofer’s (2001) dimensional framework of epistemic theories (i.e., certainty of knowledge, simplicity of knowledge, source of knowledge and justification of knowledge) and Kuhn’s (1999) developmental framework of epistemic understanding (i.e., absolutism, multiplism, and evaluativism), epistemic levels of understanding were determined for each participant. The majority of participants espoused sophisticated epistemic thinking (i.e., evaluativism) most of the time. Even though there was a preponderance of participants with evaluativistic beliefs, this level of epistemic understanding was only partially validated for most of those participants.

Research on epistemic development has found that evaluativism typically does not emerge until late adolescence or early adulthood (King & Kitchener, 1994; Perry 1970). It was, thus, not surprising that only four participants were fully validated as evaluativists, as the mean age of the participants places them in early adulthood (20.75 years). Accordingly, there was one participant who was identified as having transitional beliefs about vocabulary knowledge (multiplism to evaluativism). It is common for
people in late adolescence or early adulthood to exhibit these transitional beliefs (King & Kitchener, 1994; Perry 1970).

The high number of partially validated developmental belief levels could also be a result of the inability of some participants to fully demonstrate and discuss their epistemic beliefs. Because these interview questions were conducted in English, participants may have espoused slightly different epistemic beliefs about vocabulary knowledge in their first languages (e.g., Ellis, 2002; Ellis, 2008). These findings suggest that more attention needs to be placed on facilitating the growth of ELLs’ ability to espouse more advanced epistemic thinking in the second language.

Furthermore, the finding that the epistemic developmental level could not be fully validated (n=11) suggests that there might be some dimensions of epistemic thinking that may not be as developed as other dimensions of epistemic thinking. That is, the partiality of this level may also be attributed to the larger number of participants who espoused less sophisticated beliefs in the dimensions of source of knowledge and justification of knowing. To illustrate, participants exhibited more sophisticated epistemic about simplicity (n=18). However, there were fewer participants (n=12) who maintained evaluativistic thinking of the certainty of vocabulary knowledge. Additionally, there were even less participants who espoused sophisticated beliefs about justification (n=10) of vocabulary knowing and source (n=3) of vocabulary knowledge. Therefore, these results should be taken carefully as English language learners did not espouse advanced epistemic belief in all dimensions all of the time when discussing and thinking about the topic of vocabulary knowledge.
Dimensional aspects of ELLs’ epistemic beliefs about vocabulary knowledge. In order to look more closely at English language learners’ beliefs about English vocabulary, this research study examined the dimensional aspects of the ELLs’ epistemic beliefs (Research Question 2a). Results revealed a variation in ELLs’ epistemic beliefs about the certainty, simplicity, source and justification of vocabulary knowledge. For each dimension, there were different implications that were drawn.

For the dimension of certainty, a little over half of the participants believed that vocabulary knowledge is uncertain and changing (n=12). Four participants (n=4) had mixed beliefs about the certainty of vocabulary knowledge, and four participants (n=4) had believed vocabulary knowledge is certain and unchanging. This suggests that participants have mixed beliefs about the certainty of vocabulary knowledge. That is, the nature of this topic may elicit conflicting beliefs about that the certainty of knowledge. For example, Participant 2-22M explained that vocabulary knowledge is unchanging “I believe it's like all the knowledge and what has relation to it can develop, not change”, while maintaining the belief that knowledge is uncertain, stating how vocabulary can have different meanings “It can be if it is for different situation, it can be like different”. This quote also suggests that the participant believed that vocabulary changes, but used different “words” to explain his meaning.

This finding points to the need for teachers to facilitate a more advanced epistemic climate for English language learners where they are engaged in meta-cognitive discourse (Pennycook, 2006), which would allow them to espouse more sophisticated epistemic beliefs. For example, integrating critical literacy activities into the classroom, where ELLs are engaged in the analysis of literature and texts, would engage
learners in meaningful language learning activities that also inspire critical thinking (Pennycook, 2006). Pedagogical approaches such as critical literacy reading activities contextualize language as an uncertain and changing knowledge domain whereby the language user is actively engaging in the creation of the language meaning.

The dimension of simplicity knowledge is closely related to the dimension of certainty of knowledge, demonstrating people’s beliefs about the complexity and connectedness of knowledge (Hofer, 2001). A very high number of ELLs’ believed that vocabulary knowledge is complex (n=18), while only two participants (n=2) believed that vocabulary knowledge is simple. It is important to add that the two participants who believed that vocabulary knowledge is simple were also identified as having absolutist epistemic beliefs most of the time.

The results for this dimension of knowledge fall in line with the results for overall level of epistemic development, but are slightly contradictory to the findings about participants’ certainty beliefs about vocabulary knowledge (see Table 3). That is, there were fewer participants who believed that knowledge is uncertain than there were who believed that is was complex. Typically, these beliefs are closely related. People who believe knowledge is uncertain also tend to believe knowledge is complex, while people who believe knowledge is certain also tend to believe knowledge is simple (i.e., Hofer, 2004). It could be argued that this implies that even though some ELLs believe that vocabulary knowledge is certain, they believe that it is complex because of the nature of this knowledge domain.

This finding may be explained by the exposure that ELLs have to the multitude of theoretical and pedagogical frameworks of second language. With the prevalence of
multiple different theoretical frameworks about language acquisition that are deeply entrenched in many second language classrooms (e.g., Adamson, 2006; Brown, 2007), learners may come to understand knowledge about language in a complex and dynamic way. Because ELLs are routinely taught by teachers from different paradigms of language acquisition and teaching (Adamson, 2006), they are constantly engaging in epistemic climates with different epistemic underpinnings about the nature of vocabulary and language knowledge. Furthermore, as language learners have an array of different learning experiences, they may develop the belief that language is complex because of the various aspects of language learning that they need to master in order to be successful and proficient in each of the pedagogical settings (e.g., Williams, 2006).

The source of knowledge represents an important dimension of knowledge, primarily when looking at the source of vocabulary knowledge. Deeply entrenched in second language curricula are very specific epistemic underpinnings about the source of vocabulary. Thus, examining ELLs’ epistemic beliefs about the source of vocabulary knowledge provided insight into the sources they believed to be important when learning English vocabulary. Results showed that a majority of participants (n=16) believed that vocabulary knowledge comes from external sources of knowledge, with only a few participants demonstrating the importance of internal sources for knowing vocabulary knowledge.

The implications of this finding shed light on how ELLs’ come to know vocabulary and what sources they use to assist in their learning. Because most participants believe that vocabulary knowledge comes from and is created by external sources, they may not recognize the role of people in creating meaning of vocabulary
words, the role that context can play during the determination of meaning, and the subjective nature of each person’s understanding during the communicative event. As Yngve (1996) demonstrated, language does not exist in the external world; it is a property of the mind. To understand communication, you must examine the participants, the props, the settings, the channels of energy flow (i.e., speech sounds, texts), and the outcomes of the communicative events to determine meaning. This suggests, then, that the meaning of vocabulary words is in part a property of the person speaking, and is created by the people in the communicative event (Yngve, 1996). This is not to say that external sources are not valid, but rather they are not the only way for identifying meaning in a communicative event (Yngve, 1996). The belief that vocabulary knowledge only comes from external sources could be problematic for ELLs as they are attempting to adapt and learn the different elements of the often complicated communicative events in which they are participating. Essentially, espoused epistemic beliefs about sources of vocabulary knowledge that highlight both internal and external sources would be the most helpful for the language learner because they highlight the role of the communicator and the scientific sources of vocabulary knowledge (e.g., Coleman, 2005; Yngve, 1996).

The justification of knowing depicts what strategies and procedures individuals believe to be important when determining the accuracy of knowledge claims. For the English language learner, developing sophisticated beliefs about the justification of knowing will not only assist in their learning of English, but it will also aid in the development of their critical thinking in the second language setting. For this study, only half of the participants (n=10) demonstrated sophisticated epistemic beliefs about the
justification of vocabulary knowledge. The other participants espoused naïve beliefs about the justification of vocabulary knowledge (see Table 3).

These findings suggest that many of the ELLs in this study have not developed more advanced strategies for determining accuracy and understanding of vocabulary meaning. This implies that even though ELLs have developed some advanced epistemic thinking about vocabulary knowledge, they may not have advanced epistemic beliefs about how to justify knowledge claims in their language learning (see Table 3). These less sophisticated beliefs could lead to breakdowns in communication because the leaners assume that authority figures are providing them the most accurate meaning of a vocabulary word most of the time, and they may not be evaluating the meaning of vocabulary words in different contexts, with different participants, and their relationship to the outcomes of the communicative event (e.g., Yngve, 1996).

Additionally, the belief that the best way to understand the accuracy of vocabulary is through direct observation and authority aligns closely with the epistemic underpinnings of the Grammar-Translation method to language teaching (see Table 2) (e.g., Adamson, 2006; Brown, 2007; White, 1989). This finding could be a result of the prevalence of this method in English language curricula (Adamson, 2006). This suggests that language teachers are using authoritative approaches to English language teaching that focus on one certain answer and way of communicating in English, highlighting the dominant cultural and linguistic groups understanding of knowledge (Pennycook, 2006). Conversely, there is research that has shown that human communication is a dynamic and contextual phenomena, whereby people are constructing meaning together based on the properties of the communicative event (Coleman, 2005; Sypniewski et al., 2008).
Learners need to be exposed to the different variations in the communicative event, and they need to be equipped to evaluate the outcomes of the communicative event.

These findings of ELLs’ beliefs about justification and source of vocabulary knowledge and knowing suggest that language practitioners need to promote the analysis of meaning in different communicative events, the impact of the context, and the role of the people communicating to determine the meaning of vocabulary. The Hard-science Linguistic approach to understanding and teaching human communication provides an appropriate framework to apply more sophisticated epistemic underpinnings in the language classroom (e.g., Coleman, 2005; Ziegler & Feucht, 2012). Hard-science Linguistics emphasizes the changing and dynamic nature of vocabulary, and the need to analyze meaning within specific communicative events (Yngve, 1996). Sources then become relative to the communicative event in which the vocabulary is used, the behaviors of the people communicating, the props being used, and the outcomes of the communicative event (Yngve, 1996). Vocabulary meanings are contextualized based on the properties of the communicative events. Language education should promote the observation of and participation in the communicative event to understand and create vocabulary meanings.

Furthermore, by establishing these epistemic underpinnings in the language classroom, learners would understand that authoritative sources of vocabulary do not always have all of the potential meanings of word (e.g., Yngve, 1996). To understand the meaning of vocabulary, learners need to know all elements of the communicative event (Yngve, 1996). In order to determine the supposed vocabulary meaning in different situations, learners should espouse and enact more sophisticated justification (i.e.,
reasoning) beliefs to determine and analyze all of the possible meanings in the communicative contexts.

**Conceptual Implications**

Based on the findings from this study, few conceptual implications arose that must be addressed. Primarily, the findings from this research study suggest that these participants may develop their epistemic thinking at different times between the different dimensions of epistemic thinking. That is, participants generally held more sophisticated beliefs about certainty and simplicity of knowledge than they did about source of knowledge and justification of knowing. This finding is contrary to research on the different epistemic belief dimensions. Hofer (2001) and Schommer-Aikins (2004) discuss the interrelatedness of the different dimensions of epistemic thinking, thus suggesting that people will exhibit, from a developmental standpoint, very similar epistemic beliefs in each of the respective dimensions. This research study, on the other hand, found that the development of the different dimensions may be distinct and unrelated.

One explanation for the discrepancy of developmental levels between the dimensions could be due to the domain of English vocabulary knowledge. More specifically, because these participants speak a first language other than English, they may not have formed more deliberate and definitive beliefs about English vocabulary meanings. These participants may indeed believe that most vocabulary meanings, sources, and strategies for determining correctness are equally right because they do not have expert knowledge in the domain of English language. That is, these participant may rely on less sophisticated epistemic thinking for the dimensions of source and justification because of their level of second language expertise and proficiency.
However, when looking at the certainty and simplicity dimensions of epistemic thinking, the learners may have more sophisticated epistemic beliefs because these dimensions may appear to be very similar across languages. That is, the participants might think that all languages are uncertain, changing, and complex. Conversely, because they are still exploring meaning making in the English language, they may rely on external sources of vocabulary knowledge and direct observation and authority (e.g., Hofer, 2001) to determine accuracy of meaning of vocabulary knowledge. Future research should compare ELLs’ epistemic beliefs about vocabulary learning in English and in their first language to determine if their beliefs about the different dimensions of epistemic thinking are similar or different.

Another conceptual issue that arose is the operationalization of the sophistication of epistemic beliefs with in each dimension of epistemic thinking. In Hofer’s (2001) epistemic thinking framework, for example, sophisticated epistemic beliefs about source of knowledge indicate that knowledge comes from internal and subjective sources of knowledge. In Kuhn’s (1999) model of developmental of epistemic understanding, the most sophisticated epistemic beliefs occur at the evaluativist level, which is the integration of both subjective and objective knowledge. The participants in this study who had evaluativist epistemic beliefs believed that vocabulary knowledge comes from both internal and external sources. Therefore, when looking at Hofer’s conceptualization of development of epistemic thinking on a continuum, with external sources on one end of the continuum (i.e., naïve) and internal sources on the other end of the continuum (i.e., sophisticated), the continuum may not validly place learners appropriately on a developmental line. In order to better understand the sophistication of ELLs’ epistemic
beliefs about source of knowledge, it would be helpful to re-conceptualize what it means to have sophisticated epistemic beliefs in this dimension (see Table 3).

Future research should examine the continuum of development differently by focusing on the integration of subjective and objective beliefs. Even though this may not be true for general knowledge domains, it should be considered when approaching a field of widely contrasting and controversial positions on the subject. The field of second language acquisition, for example, has many distinct and opposing views on how language develops and how it should be taught (Adamson, 2006; Brown, 2007). Because of this, second language learners are faced with an array of theoretically opposing views. Post-method approaches to teaching second language, which highlight and integrate various facets of second language learning from the multiple approaches (Kumaravadivelu, 2006), may provide learners with a more balanced underpinning of epistemic beliefs. For example, learners under this approach might learn that good sources of vocabulary knowledge are dictionaries (i.e., external sources) and people’s minds (i.e., internal sources). Consequently, personal epistemology frameworks should take into consideration the differences between domains to determine how best to identify sophisticated epistemic beliefs in that particular domain. It could be assumed, therefore, that not all domains of knowledge would require or permit an integrated belief system about source of knowledge, for example. Some domains might rely more heavily upon one end of a continuum to determine sophistication of beliefs, or they may believe that both ends of the continuum are equally beneficial and valid. Thus, a dimensional model that is amenable to the different domains of knowledge with respect to the developmental
criteria for sophistication may provide the best support for the examination of people’s epistemic beliefs.

**Methodological Implications**

This research study also uncovered various methodological implications that should be taken in consideration. This qualitative study was largely exploratory, using many different procedures to explore the epistemic beliefs of ELLs, such as Writing Prompts 1 and 2, Interview Questions Sets 1, 2, 3, and Ill-structured scenario. Additionally, one quantitative procedure was used: the Epistemological Thinking Assessment. Because of the variations in data collection procedures, there are multiple methodological implications that show the need to have a multi-faceted approach to data collection that provides rich, deep data to better understand the epistemic thinking of ELLs.

This study used several different qualitative procedures that elicited ELLs’ epistemic beliefs about general knowledge and vocabulary knowledge. Data from each procedure were analyzed and triangulated to determine overall epistemic beliefs of the ELLs about vocabulary knowledge. From a methodological standpoint, each procedure targeted a specific aspect of the dimensional and developmental beliefs of the participants. The use of the multiple procedures provided a comprehensive understanding of ELLs’ epistemic beliefs about vocabulary. For example, in Interview Question Set 2, participants were asked epistemologically oriented questions about vocabulary knowledge (see Table 4; Appendix B). Meanwhile, for the Ill-structured Scenario, participants were asked questions about a problem-set designed to elicit evaluativistic thinking. The Ill-structured scenario (see Table 4; Appendix C) targeted ELLs’ enacted
epistemic beliefs by situating vocabulary usage in a situation laden with problems. This procedure promoted more sophisticated epistemic thinking because it created the space and opportunity for ELLs to critically think about the situation. By utilizing these different procedures for data collection, the data analysis revealed a very in-depth and intricate understanding of the participants’ epistemic beliefs about vocabulary knowledge. Furthermore, by incorporating the ill-structured scenario, there was access to participants’ enacted epistemic beliefs, rather than just their espoused epistemic beliefs, as was the case with the interview question sets. The use of multiple procedures provided a foundation for analyzing both what ELLs believe about vocabulary knowledge and how they enact those beliefs in a specific problem-based situation. Furthermore, it provided a good amount of data that, when triangulated, gave a comprehensive understanding of ELLs’ epistemic beliefs.

An additional procedure that provided valuable insight into ELLs’ epistemic beliefs about vocabulary knowledge was Writing Prompt 2 (see Table 4; Appendix A). For this procedure, participants were asked to write about their epistemic beliefs about the certainty of vocabulary knowledge. By having participants write about their epistemic beliefs about vocabulary, it reduced the possibility that a variation in language proficiency skill sets acted as a confounding variable for the espousing of their epistemic beliefs. That is, ELLs who were more proficient in their written English than in their spoken English may have been more able to demonstrate their epistemic beliefs when writing. Therefore, the utilization of this procedure might have had an impact on the ability for some participants to give an accurate account of their epistemic beliefs.
Another procedure that was used in this study was Kuhn and Weinstock’s (2002) Epistemic Thinking Assessment, which provided a quantitative assessment of ELLs’ epistemic thinking. For this study, three items were developed that uncovered ELLs’ epistemic beliefs about the domain of vocabulary knowledge. Due to similar results, this measure could prove to be useful for future research looking for a quick assessment and understanding of ELLs’ epistemic thinking. Using the qualitative procedures, however, allowed the discovery of the discrepancy in participants’ dimensional beliefs in relationship to their overall epistemic level of development. If this study had only used the Epistemic Thinking Assessment, for example, this in-depth discovery would not have occurred. This suggests that using both the Epistemic Thinking Assessment and other qualitative procedures can provide a more detailed assessment of a person’s epistemic beliefs.

**Educational Implications**

The primary relevance of these findings is the application of this information in the second language classroom. As second language educators, it is fundamental that we are fostering an epistemic climate that promotes sophisticated epistemic thinking. It is necessary for second language curricula to focus on developing meta-cognitive skills in the second language, thus enabling students to fully participate in more advanced thinking in the target language setting (e.g., Pennycook, 2006). Students need clear and substantial instruction by the teacher that focus on developing critical thinking skills (Abrami, et al., 2008). Results from this study showed that ELLs have more advanced beliefs about vocabulary knowledge overall, but their epistemic beliefs are not fully
developed and consistent across the different dimensions of epistemic thinking. Therefore, educators need to provide more emphasis on socio-constructivism and critical thinking in the classroom to maintain higher levels of thinking in a second language setting. For example, ESL classrooms should contain an element of critical analysis and discourse where the teachers are facilitating higher levels of thinking (e.g., Pennycook, 2006). In order to do this, teachers must create a space where learners are evaluating sources of vocabulary knowledge, discussing and analyzing the different meanings, and bringing together those meanings to determine a more elaborate understanding of vocabulary knowledge.

A crucial implication for the ESL classroom is the need to focus on the justification and source of knowledge in the curricula, which would help ELLs’ develop more advanced epistemic beliefs in these dimensions and engage in critical thinking in curricular activities outside of the ESL educational setting. Additionally, this emphasis might assist in the acquisition of English vocabulary because learners would be learning more sophisticated strategies for acquiring new vocabulary. Thus, by placing an importance on the epistemic beliefs of ELLs on the topic of vocabulary, this will help ELLs develop a larger, more expansive vocabulary, engage them in higher levels of thought, and allow them to interact on a more meaningful level in the English language educational and social settings.

Despite variations in language, participants were able to espouse some levels of sophisticated epistemic beliefs. However, more practice in discussing abstract and epistemic concepts may solicit more advanced epistemic thinking from ELLs. Only in environments with sophisticated epistemic underpinnings can a person be given the
opportunity to develop an appreciation and value for critical thinking in the second language setting and beyond (e.g., Feucht, 2010). One way for teachers to develop epistemological beliefs and critical thinking skills in ELLs is through the implementation of reflection activities that focus on their epistemic thinking (e.g., Brownlee et al., 2009). For example, teachers can have students thinking and writing about their vocabulary learning experiences, discussing what processes, strategies, and sources were beneficial when they were learning new vocabulary. Furthermore, there should be an emphasis on communicating with a critical pedagogical element (e.g., Pennycook, 2006) to develop language learners’ ability to express their epistemic thinking in multiple contexts and domains. That is, there should be the space for ELLs to engage in critical dialog, whereby a true conversation is occurring about topics and situations that are relevant to their language and cultural learning (e.g. Pennycook, 2006).

Also important is the recognition of the students’ cultural beliefs about knowledge and knowing. Even though this is not always apparent, educators should make an attempt to tap into ELLs’ cultural beliefs about knowledge, focusing on epistemic beliefs that are dominant within the cultural context. Within the U.S. higher education system, educators need to emphasize the culturally specific epistemic beliefs about critical thinking and their importance in the classroom (e.g., Pennycook, 2006). As students better understand the intellectual values of the dominant culture, they will be more able to adapt those values and beliefs within the specific contexts they will be communicating in. Teachers need to foster an understanding of the importance of intellectual values and critical thinking (Kuhn, 1999). Then teachers need to engage students in the regular practice of
critical thinking (Pennycook, 2006), which need to be exercised, consolidated, and strengthened (Kuhn, 1999).

Limitations and Implications for Future Research

From the data analysis, certain limitations have arisen that must be acknowledged. Given the nature of this research study and its focus on the beliefs of speakers of a second language, one limitation is that this study does not control for the culture and language abilities of the participants in this study. The first language and cultural background of participants may influence their desire and willingness to espouse their epistemic beliefs. For instance, some participants may not feel comfortable discussing their epistemic thinking and truly espousing their beliefs. Further, results may be skewed because of the lack of cultural consistency among the population, making it difficult to draw generalizable conclusions. That is, there were 20 participants from 12 different countries (e.g., Bangladesh, Saudi Arabia, China, South Korea, Honduras, Columbia, Turkey, Japan, Ivory Coast, Burkina Faso, Mexico, and Egypt). Because of the cultural differences of the sample, certain assumptions or conclusions could be not be drawn based on the influence of the participants’ respective culture. Therefore, future research should look at groups of participants from specific linguistic and cultural backgrounds, and then compare the results of multiple studies to determine the possible effect that culture and language play in how English language learners espouse their epistemic beliefs.

A second limitation for this study is the small sample size. With a low number of participants, it is not possible to draw generalizations for this population of students.
Future research on English language learners should include a larger number of participants to provide a better representation of this population of participants.

A third potential limitation for this study could be the absence of research on participants’ actual knowledge of vocabulary and how that knowledge might relate to their beliefs about vocabulary knowledge. It might be predicted that ELLs with more robust vocabularies would have more sophisticated epistemic beliefs about the nature of vocabulary knowledge. Therefore, future research should analyze the relationship between level of vocabulary knowledge and epistemic beliefs about vocabulary knowledge.

Conclusion

The English language learner represents a wonderful and diverse group of people. These students come from different cultures, linguistic backgrounds, socio-economic backgrounds, and educational preparedness. With this group of students, who are often marginalized in the U.S. school system and beyond (Edwards, 2006; Gollnick & Chinn, 2009), it has never been a more pressing time for educators to provide them with the critical thinking skills and values needed to be successful communicators and citizens in this global democracy (e.g., Freire, 1970). It is clear, furthermore, that some English language learners’ demonstrate sophisticated epistemic beliefs of English language vocabulary. These leaners have been learning English for some time, so it is no surprise that they have established epistemic beliefs that demonstrate a higher level of epistemic understanding. Nevertheless, there is a gap in their understanding about the source and justification of English vocabulary. Educators must, therefore, make a concerted effort to
elaborate on strategies for determining accuracy of sources and strategies for knowing vocabulary. They must focus on the complexity of language in different communicative contexts so that ELLs are receiving epistemic messages that highlight this important attributes of understanding English vocabulary. They must compel students to understand their role in the communicative event as well, so that they understand the often subjective and contextualized nature of meaning in a communicative context. By doing this, educators can ensure that their students are not only learning how to communicate effectively, but they are also developing the essential critical thinking skills needed for their success in the U.S. higher education setting in particular, and the U.S. cultural setting in general.
References


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Appendix A

Writing Prompts

Instructions: Turn off all electronic devices. Do not answer your phone, text message or use the internet. You may not use a dictionary during this test.

1. Answer both writing prompts.
2. Write your responses in one word document.
3. Label each prompt: Writing prompt 1 & Writing prompt 2
4. You have 75 minutes to complete the essays.
5. When the proctor tells you that time is up, please save your document and submit.
6. When you are finished, save your document on your desktop using this format: (FirstName-FamilyName-Date).
7. Then send the finished copy to <email address> with your class name in the subject line (ENGL 003 or ENGL 013)

Writing Prompt I

Directions: Answer the following question as best you can. Make sure you are using academic English and standard conventions of academic writing. Your writing score will be determined based on your conventions in English writing, not the opinions that you present in your essay. This assessment is not for a grade and will not affect your standing in the course.

Writing Prompt 1: Is truth unchanging? (Bendixen, 2002). Please explain.

Writing Prompt II

Directions: Answer the following question as best you can. Make sure you are using academic English and standard conventions of academic writing. Your writing score will be determined based on your conventions in English writing, not the opinions that you present in your essay. This assessment is not for a grade and will not affect your standing in the course.

Writing Prompt 2: Is vocabulary knowledge unchanging? Please explain.
Appendix B

Interview Questions

Epistemological questions about knowledge (i.e., domain-general)

1) What do you believe knowledge is? Please explain. (Researcher encourages an answer with ad hoc questions if the participants hesitate)
2) How do you come to know something? What ‘tools’ do you use to know this?
3) How do you know if a knowledge claim is correct and accurate?
4) What sources do you use to make sure you have good information?
5) Do you think knowledge is simple or complex? Why?
6) Do you think knowledge is static or changing? Why?

Epistemological questions about vocabulary knowledge (i.e., domain-specific)

7) When you learn English, what is the most important thing you need to know? Why?
8) How important is vocabulary to you? Please explain.
9) How would you define vocabulary?
10) What does it mean to know “vocabulary”?
11) Explain what you do to know vocabulary?
12) How could you make sure that you have the understanding of a vocabulary word? What strategies do you use to determine if your understanding is accurate? Are some strategies better than others? Please explain. Use an example.
13) Where does vocabulary come from?
14) What is the best source for understanding about new vocabulary?
15) Can vocabulary knowledge change over time?
16) Can the vocabulary meanings be different in varying circumstances or is it always the same?
17) Sometimes there can be different and contradictory definitions of vocabulary. Do you think both definitions can be right? If so, is one definition more right than another? Please explain.
18) How many types of sources do you use to know new vocabulary? Do you think these sources are equally right? Are some sources better than others? Please explain.

Follow up interview questions related to Essay Prompts I and II

Let’s switch gears a little bit. Now we are going to talk about the essays that you had written. Take a few minutes to read what you had written previously. Then we will begin talking about your essay.

19) After you read parts 1 and 2, would you like to add or change something in your opinions about truth and vocabulary knowledge?
20) Bringing both essay topics together, how do you think truth and vocabulary knowledge compare and contrast with each other?
21) Are they the same? Are they different? Explain.
22) What do you think about the changing aspect of truth and vocabulary knowledge?
23) What do you think about the certainty aspect of truth and knowledge?
Appendix C

Ill-Structured Scenario

Now I am going to give you a short scenario to read. We will read this scenario together, and then I will ask you a couple of questions about it.

**Scenario**: Chris, an international student learning English, recently spoke with a professor about his grades. Upon arriving to the meeting, Chris politely asked the professor “Have you had lunch yet?” The professor, confused by this comment, hesitated with an answer because the professor thought the student had asked to go on a date. The professor told the student “no”, not knowing that the student was asking about the professor’s well-being. Later, the professor found out that Chris was basically asking “How are you today?”, and was in fact not asking to go on a date.

1) What do you believe was the reason for this misunderstanding?
2) Can the meaning of this phrase “Have you had lunch yet?” change over time?
3) Can the meaning of this phrase be different or is it always the same?
4) What sources could Chris use to ensure the most accurate phrase was being used?
5) In what ways could Chris make sure the best phrase was being used?
6) Are there other phrases Chris could have used in this scenario? Would both phrases be equally accurate to use? If so, is one phrase more right than another? Please explain.
7) What are your opinions about this scenario? (for future research; method development)
Appendix D
Epistemic Thinking Assessment

Directions: Read each pair of statements and answer the following questions by circling the answer (Kuhn & Weinstock, 2002).

Vocabulary Knowledge

Robin believes context is important to know a meaning of vocabulary.
Chris believes dictionaries are important to know a meaning of vocabulary.

Can only one of their views be right, or could both have some rightness? (circle one)
Only one right
Both could have some rightness

If both could be right:
Could only one view be better or more right than the other? (circle one)
One could be more right
One could more right than the other

Robin prefers to use method to know vocabulary in English.
Chris prefers to use another method to know vocabulary in English.

Can only one of their views be right, or could both have some rightness? (circle one)
Only one right
Both could have some rightness

If both could be right:
Could only one view be better or more right than the other? (circle one)
One could be more right
One could more right than the other

Robin believes one meaning of a vocabulary word is right.
Chris believes another meaning of a vocabulary word is right.

Can only one of their views be right, or could both have some rightness? (circle one)
Only one right
Both could have some rightness
If both could be right:
Could only one view be better or more right than the other? (circle one)
    One could be more right
    One could more right than the other
Appendix E

Certainty Dimension of Epistemic Beliefs

In order to answer Research Question 2a, four procedures were used to capture English language learners’ epistemic beliefs about the certainty of vocabulary knowledge: Writing Prompt 2, Interview Question Set 2, Interview Question Set 3, and Ill-structured Scenario (see Table 4). Each procedure targeted participants’ beliefs about the certainty aspects and changing nature of vocabulary knowledge. Triangulated they show a comprehensive picture of ELLs’ beliefs about the certainty aspects of vocabulary knowledge. Below, data from each procedure is discussed as it pertains to participants’ beliefs about the certainty aspects of vocabulary independently.

**Writing Prompt 2.** Participants were asked to write an essay response to the question “Is vocabulary knowledge unchanging? Please explain.” For this data procedure, participants were asked to discuss the changing nature of vocabulary knowledge. Within the certainty dimension of epistemic understanding, two dichotomous positions are represented along a continuum of the dimension of certainty epistemic beliefs. The belief that vocabulary knowledge is changing is associated with an uncertain epistemic belief, while the belief that vocabulary knowledge is unchanging is associated with a certain epistemic belief. Thirteen participants (n=13) believed that vocabulary knowledge is changing, five participants (n=5) believed that vocabulary knowledge is unchanging, and two participants (n=2) believed that vocabulary knowledge is both changing and unchanging.

**Changing.** A majority of participants’ (n=13) believed that vocabulary knowledge is changing. That is, these participants espoused beliefs that indicated that
vocabulary is flexible, evolving, developing and ever changing. For example, one participant stated, “[i]n short, vocabulary knowledge is changing. Getting studying more about vocabulary, getting more knowledge about vocabulary. It must be changed whatever you can do. Also, ability is not limited” (P11-19F). At times, participants provided a couple rationalizations that vocabulary is changing, which were analyzed using eight sub-codes: Continuous Growth (n=6), Culture and People (n=6), Research and Technology (n=4), Media (n=3), Generational (n=3), Influence from the Brain (n=2), Multiple Meanings (n=2), and Context (n=1).

Continuous growth. Six participants (n=6) rationalized the belief that vocabulary knowledge is changing because of its Continuous Growth. The code was used to label responses that suggested that vocabulary knowledge is changing because it is continually growing, changing, and developing over time. One participant, for example, elaborated on his belief that vocabulary knowledge is continually changing by stating:

The same happens with vocabulary we might understand what a word may mean but have no clue on what that exact word means to others or the diversity of meanings it might carry. Over time vocabulary can gain several amounts of meanings to a single or what we think of as a basic word. (P1-18F)

Another participant highlighted how the nature of language itself is changeable and therefore vocabulary is changeable as well: “[a]nother most important thing is that language is a changeable matter. It can change in his own way. Among these whole change some new words is include [sic] in the language most of the time” (P5-26M).

Culture and people. Six participants (n=6) believed that vocabulary knowledge is changing because of culture and people. Responses were assigned this code if they suggested that vocabulary knowledge is changing because of the culture, society,
civilization, or nationality of the people communicating. For example, one participant elaborated about the influence of culture, stating:

When I say vocabulary can decrease, I mean it could vanish. People can just forget about some words by not using them anymore. That depends on the society culture and civilization changes. Vocabulary will not disappear from papers, it will stay there, in the dictionaries or hard old copies, but no one is using them. Changing vocabulary is not an easy thing to do. But that happen often between closer countries that uses the same language. For example, America and England are using English as their native language, but there are so many different vocabularies in between them, and I am not talking about the accent, many words used to be in a specific form and it changed by time by the whole community. (P12-26M)

Here Participant 12-26M specifically addresses the influence of different cultures on the vocabulary of one language. That is, the participant demonstrated a view that vocabulary knowledge is very much dependent upon the people within a culture using the vocabulary.

Research and technology. There were four participants (n=4) that believed that vocabulary is changing because of the influence of research and technology. More specifically, participants’ explanations suggested that vocabulary was changing because of development and science. One participant’s statement highlighted a scientific understanding of the changing nature of vocabulary knowledge, by writing:

Again many researchers & scientist of language are working hard to invent new version of a word. They think more for that. They analysis a language and invent the update version of a new word. It’s also help people to increase their vocabulary knowledge. (P5-26M)

Another participant reflected this same sentiment in her writing:

In the modern society, there are a great number of new products appearing in our life because of economy, technology and creation. And the number of them is increasing with an amazing rapid every day and they need to be spread, so many new words needed to be used. So I think vocabulary is changing (P14-20F).
These rationalizations showcase the belief that language is changing alongside technological advancement and scientific achievement.

*Media.* The sub-code *media* was assigned to three participants’ (n=3) explanations about why vocabulary is changing. This code was used to label responses that indicated vocabulary changes because of the influence of the media, newspapers, television, videos, and movies. For example, one participant expressed the belief that media plays an important factor in the change of vocabulary, explaining “[i]n my country, almost more than ten new words or phrases are invented by the computer users. Some of them are using in all kinds of media, such as newspaper, videos, films, and so on” (P13-18M). A similar response shows different media influencers and their impact on speakers from different cultures as reason for the changing of vocabulary knowledge:

Now a days the world is called as a global village. People of various countries and regions are connected with each other. It happens because of Internet and social media. So that people of various countries share their culture and expresses their languages among them. So many unknown words are included in the dictionary of a particular language. People of these specific language try to find the proper meaning of those words. Its increases his vocabulary knowledge. (P5-26M)

In general, this reasoning showcases the relevance of media on communication and vocabulary knowledge within and across cultures.

*Generational.* Three participants (n=3) were assigned the sub-code *Generational.* This code was assigned to responses that indicate that vocabulary changes because of the influence of old or new generations of people. One participant specifically mentioned that:

During this generations we had been we can say improving as we can also say missing some of that vocabulary; the things that maybe our grandparents used to know very well, most of them are gone. By the pass of the time generations had been changing to make as we all hope a better place for all, improving or making
up vocabulary that a few years ago we couldn’t know that vocabulary would even exist. (P3-18F)

This shows a multi-era view of knowledge and how vocabulary knowledge is likely to continue to change because people from different time periods use different words to represent things and have different meanings assigned to words.

*Influence from the brain*. This code was assigned to two participants (n=2). This code was used to label responses that indicated that vocabulary can change because of the way the brain works and how it memorizes words. This rationalization showcases more internal beliefs about the changing nature of vocabulary knowledge. One participant, in particular, demonstrated this belief and supported it by using evidence and reasoning:

According to some researches, people’s brain needs “repeat.” In briefly, people need to learn the knowledge again and again to keep knowledge in their brain and to make it unforgettable. For instance, mother tongue language. Why people never forget their mother tongue language? Well, the answer is “repeat.” People use mother tongue language every day, every time and everywhere. So, we use it again and again, that’s why people never forget their mother tongue language. It is true that if we use the vocabulary knowledge again and again, we will never forget it, but we need an effort to keep the knowledge in our brain, so naturally, we will forget the knowledge without any effort. (P4-22M)

Further, this belief shows educational implications for learning vocabulary, and points to a belief shared by researchers and practioners in the field that vocabulary should be rehearsed for automaticity and fluency.

*Multiple meanings* (n=2). This code label was shared by two participants (n=2), who believed that vocabulary knowledge is changing because it has *multiple meanings*.

For example participant stated:

The same happens with vocabulary we might understand what a word may mean but have no clue on what that exact word means to others or the diversity of meanings it might carry. Over time vocabulary can gain several amounts of meanings to a single or what we think of as a basic word. (P1-18F)
Another participant demonstrated this belief, writing:

The first and most common way that the vocabulary knowledge can change is with the different meanings that every language gives to their vocabulary words. For example, in Mexico, Memo is a very common nickname, but in United States that same and exact word means another very different thing.

Another way that the vocabulary can change is when is the same exact pronunciation but has two or more different meanings, even though that is used in the same country. One example could be when in Mexico we use “hola” and “ola”. The first word (“hola”) means “hello” and the other word (“ola”) means “wave”. There are plenty of examples that can prove that the vocabulary knowledge can change (P18-19M).

This rationalization points to the notion that vocabulary is changing because it has a number of meanings for different people.

**Context** (n=1). One participant was assigned the sub-code *Context* based on his rationalization for the changing nature of vocabulary. More specifically, this code was used to label a response that stated that vocabulary knowledge changes based on the context, situation, or circumstance that the vocabulary is used. This is demonstrated well by Participant 15-19M who explained that “[v]ocabulary knowledge vary in situation because situation change the format of vocabulary knowledge and the appropriate using of vocabulary. People can’t gain the fulfills [sic] vocabulary knowledge but can learn the rules”.

**Unchanging.** Five participants (n=5) wrote that they believe vocabulary knowledge is unchanging. Specifically, these participants indicated that vocabulary does not change, is absolute, and is fixed. In demonstrating a very absolutistic view about the changing nature of vocabulary knowledge, one participant wrote:

I don’t think that vocabulary knowledge could change or ever should be changed. Language is the most basic communication between people. Humans have developed different language systems for centuries, and they got use to using these languages. (P6-18M)
To explicate their beliefs about the unchanging nature of vocabulary knowledge, two sub-codes emerged to label participants’ responses: Add (n=4) and Structure of Language (n=2).

Add. Four participants (n=4) believed that vocabulary knowledge cannot change but that it can be added. More specifically, these responses indicated that vocabulary knowledge is unchanging, but new innovations and developments add words to a language's vocabulary. For example, one participant discussed how the influence of time and literature add to English vocabulary:

Some people think that vocabulary knowledge is changing. However, I believe that vocabulary knowledge is unchanging but, in fact, people can add knowledge to it like another words. Since I have examined the English vocabulary over years, I can affirm that vocabulary is not changing but it only develop over time to suite new generations. In Shakespeare's time for instance, the use the word will as what you wish for. Today it developed to be talking about the future or simply saying what do you want or what's your command. (P20-18M)

Another participant discussed the role of innovations and their impact in adding, but not changing vocabulary:

As people cannot change the vocabulary meaning ,they start innovated a new words with new definition that they can use for whatever they need it for .for example ,all the new since words that people use these days weren’t use couple hundred years ago ,because back then they don’t have this innovations so they don’t have the words .now days every day we have new innovation or new studies and we don’t have anything to describe that ,so people can use the name of the person how found that as the word or name for the new innovation ,and then they make a definition for that .this definition could be mixed from other words together or it could be new one. (P19-25M)

It is evident that while the participants do not believe that vocabulary is changing, they do believe that there is a developmental aspect of vocabulary knowledge and that it is not necessarily static. This may represent a shift towards different epistemic beliefs about the certainty of vocabulary knowledge.
Structure of Language. There were two participants (n=2) who believed that vocabulary knowledge is unchanging because of the structural aspects of vocabulary knowledge. More specifically, these responses demonstrated the belief that vocabulary knowledge does not change because the structure of the language is static, or unchanging, and is an important element of the nature of communication. That is, there is an absolute meaning that people must follow. Participant 6-18M wrote about the structural importance of language:

In the same language system, people have the common understanding for the same vocabulary. I think that one vocabulary could have different meanings but none of these meanings should ever change. Imagine that if the vocabulary knowledge is changing from time to time, how much chaos would it bring to people’s communication with each other.

Another participant reflected these beliefs, suggesting that proper English and grammar are essential in knowing the English language:

If we want the proper vocabulary knowledge we have to read the grammar book and we have to attend in the English class because if we attend in the English class we can gain the proper English knowledge & we can share our knowledge with other student. (P15-19M)

Changing and unchanging. Two participants (n=2) espoused epistemic beliefs that vocabulary knowledge can be both changing and unchanging. This reflects a combination of beliefs highlighting both objective and subjective views of language. One participant directly stated “[v]ocabulary knowledge could be unchanging in some cases, but it also could not be unchanging in other cases” (P10-20F). Another participant showcased the view that may vocabulary knowledge could be changing or unchanging, depending on the complexity of the word, “[s]ometimes new format of vocabulary use can change the rules so I think vocabulary knowledge is changing but basic level of vocabulary knowledge is unchanging” (P15-19M).
In sum, the majority of the participants wrote that vocabulary knowledge is changing (n=13). Five participants (n=5) demonstrated the belief that vocabulary knowledge is unchanging, while two participants (n=2) believed that vocabulary knowledge was both unchanging and changing. Several rationalizations emerged that supported participants’ beliefs, with *Continuous Growth* (n=6) and *Culture and People* (n=6) being the top reasons participants believed that vocabulary knowledge is changing, with other rationalizations including *Research and Technology* (n=4), *Media* (n=3), *Generational* (n=3), *Influence from the Brain* (n=2), and *Multiple Meanings* (n=2), and *Context* (n=1). There were two explanations for why vocabulary is unchanging, *Add* (n=4) and *Structure of Language* (n=2). It is worth noting that several participants had multiple explanations supporting their beliefs about the changing nature of vocabulary knowledge.

**Interview question set 2.** During this data procedure, participants were asked one interview question that solicited beliefs about the certainty of vocabulary knowledge, Question 15: Can vocabulary knowledge change over time? That is, participants were asked to describe if vocabulary is certain and unchanging, or uncertain and changing. For this question, fourteen participants (n=14) espoused the belief that vocabulary knowledge is uncertain, and five participants (n=5) espoused the belief that vocabulary knowledge is certain. One participant did not respond to this question.

**Uncertain.** There were a total of fourteen participants (n=14) who expressed the belief that vocabulary knowledge is uncertain. That is, this code was assigned to responses that indicated that vocabulary knowledge is changing, new, a part of development, or changes naturally. One participant showed that vocabulary knowledge is
uncertain, and is even currently changing, by explaining “[o]ver time? Yes, it is change all the time. Maybe right now there is new words in the world” (P14-20F). Another participant explained his belief about how vocabulary is uncertain, stating “[s]ometimes I think vocabulary knowledge is changed and sometimes when we get new books and we want to get upgraded books from older books then we can get new vocabulary” (P15-19M). There were three sub-codes that emerged during data analysis that represented the participants’ rationalizations about why vocabulary knowledge is uncertain: Developing (n=8), Research (n=3), and Context (n=2).

Developing. Eight participants’ (n=8) held the belief that vocabulary knowledge is uncertain because the language is developing. Participants’ responses were labeled with this sub-code if they indicated that vocabulary knowledge is developing, increasing, a living language, or is able to be learned by people. Demonstrating this point, one participant explained how vocabulary is uncertain because “[e]veryday I learn new stuff like. Because I'm pretty sure that there's a lot of words we still don't know. And then we are going to find it over time and then learn about it. So that's what I think” (P10-20F). Another participant explicated his opinion that vocabulary is uncertain:

Because, like I told you, like something’s like we knew in the past, right now there is no like words about it. For example, in my country, in my city there is a lot of words that they used to use, but not anymore. So you can hear like the words or like the vocabulary that my grandparents. But for example, my cousins and me we don't use it any more. But we try to say the same but with different words. So it's like synonym... or like those words but we don't use that vocabulary because it changed. (P3-18F)

These participants’ rationalizations demonstrate the belief that language is evolving, and therefore, is not restricted to certain or definite meanings.
Research. Three participants (n=3) supported their belief that vocabulary is uncertain because of the influence of research. Additionally, these rationalizations indicated that vocabulary does change because of scientific discovery and the creation of new ideas. Specifically, one participant demonstrated this belief by explaining “[b]ecause there is like changing, developing the new technologies, and doing the research, we can see the changes” (P17-19F). A second participant discussed the role of linguistic researchers on the development of language itself, stating:

When some of the researchers and some of the scientists of phonetics or like vocabulary, they explore any words, and whenever they get the new words they change the previous words. So in this way, I think the vocabulary knowledge is changing. (P5-26M)

Context. There were two participants (n=2) that believed context was a cause for vocabulary to change or to be uncertain. These responses highlighted the impact of the situation on people’s usage and understanding of vocabulary knowledge. One student stated, “[y]es, depending on how they use it” (P2-18M), while another participant echoed that response by stating “[t]here are so many people to use vocabulary, they use same vocabulary but it is not same meaning, so this gap made different meaning than vocabulary knowledge can change” (P7-21F).

Certainty. Five participants (n=5) espoused the belief that vocabulary knowledge is certain. That is, these participants stated that vocabulary is not changing, cannot change, or should not change over time. One participant expressed this notion showing that vocabulary should not change “I don't think so. If it changed you know it will really be a big mess cause chaos because some people think this vocabulary still the same meaning but it changed you know. I don't think it should change” (P6-18M). Three sub-codes emerged during data analysis highlighting participants’ rationalizations about why
vocabulary knowledge is certain: *Add* (n=3), *Negative Impact* (n=1), and *Outsider Impact* (n=1).

*Add.* There were three participants (n=3) who were assigned this response based on their rationalization for the belief that vocabulary knowledge is certain. This code was used to label responses that stated that even though vocabulary knowledge is unchangeable, a person can add multiple meanings to a word, or the word’s meaning can develop. For example, one participant explained how there can be new words in English vocabulary, but the definitions of those words is certain “I don't think so. It can't be changed, but they add new words with different definitions but same words, same definition can't be change” (P19-25). A different participant discussed how new meanings can be added to the word, but the vocabulary itself does not changes, “[v]ocabulary. Probably don't change, but I heard that in some cases they have like, they add the meaning to the same word, and you can use the same word to different reasons and meanings, but change” (P18-19M).

*Negative Impact* and *Outsider Impact.* Each of these sub-codes was used to label one participant each: *Negative Impact* (n=1) and *Outside Impact* (n=1). The first sub-code *Negative Impact* was used to label statements that stated vocabulary does not change because it could cause chaos or have a negative impact on society. For example, one participant discussed how problematic changing meanings of vocabulary could be, explaining “I don't think so. If it changed you know it will really be a big mess cause chaos because some people think this vocabulary still the same meaning but it changed you know. I don't think it should change” (P6-18M). The sub-code *Outside Impact* was used to label responses that the vocabulary does not change because of the impact of
foreign people or outsiders. Here, a participant explained that vocabulary does not change “because when there are foreigner does not change” (P11-19F).

In sum, the majority of participants (n=14) believed that vocabulary knowledge is uncertain, while five participants (n=5) believed that vocabulary knowledge is certain. There were three explanations that emerged that explained why participants believed vocabulary knowledge was uncertain: Developing (n=8), Research (n=3), and Context (n=2). Three rationalizations about why vocabulary knowledge is certain also emerged: Add (n=3), Negative Impact (n=1), and Outsider Impact (n=1). Most participants provided only one explanation for their espoused epistemic beliefs.

**Interview question set 3.** For this data procedure, participants were asked questions that focused on the comparison and contrast between truth and vocabulary knowledge regarding the certainty of each knowledge domain. To answer the Research Question 2a, participants’ responses regarding the certainty of vocabulary knowledge will be analyzed. Participants were asked two questions that specifically targeted their beliefs about certainty of vocabulary knowledge: Question 22: What do you think about the changing aspect of truth and vocabulary knowledge? and Question 23: What do you think about the certainty aspect of truth and vocabulary knowledge? Below analysis is provided for each question independently, and then brought together to determine alignment of participants beliefs with both questions.

**Changing.** A total of fifteen participants (n=15) responded to Question 22 by stating they believed that vocabulary knowledge is changing. That is, these participants espoused the belief that vocabulary knowledge is changing, developing or evolving. One participant discussed that “[v]ocabulary does change because over time words can get
different meanings” (P1-18F). Another participant expressed the belief that vocabulary knowledge changes because of the different generations of people and the influence of media:

> Ok, it's really wrong. Vocabulary is changed. Generation by generation vocabulary knowledge is changed, because when I saw something, like this I saw movies. 20 years ago and 20 years later I saw some movies, it's has some different dialogue some different things. It has some different speeches. So I think it's really, I think vocabulary knowledge is changed day by day. Besides many writers write in their books in some vocabulary. And after some days they changed their vocabulary. It’s a day by day changed. So I think vocabulary knowledge is change. (P16-19M)

**Unchanging.** There were five participants (n=5) from Question 22 who expressed the belief that vocabulary knowledge does not change, is static, or is fixed. One participant explained succinctly, “[v]ocabulary knowledge is unchanging” (P19-25M). Another participant followed up an early statement by stating, “I said in my prompt that, like for vocabulary it's not changed, it's developed, like I said before” (P2-22M).

**Uncertain.** For Question 23, eleven participants (n=11) expressed the belief that vocabulary knowledge is uncertain, not absolute, or not fixed. One participant discussed the speed to which vocabulary can change, stating “I think vocabulary is uncertain. Like, comparing with English in the last century, it change a lot right. So maybe it will change a lot in the future, because our society is changing rapidly. Vocabulary will renew it rapidly” (P14-20F). Another participant linked his response with the changing aspect of vocabulary knowledge, explaining “[v]ocabulary knowledge is uncertain. It's a bit changed. It changed day by day. It will be changed something to some word, some letter. But I think vocabulary knowledge is changed” (P16-19M).
Certain. Nine participants (n=9) responded to Question 23 by explaining that vocabulary knowledge is certain, fixed, and absolute. For example, one participant echoed similar responses to interview Question 22, stating vocabulary knowledge is certain, but can be added to:

Vocabulary, I told my opinion, it’s a word it cannot be changed because it has definition and this thing is unchanging but they add new words for science or something. When they find new medicine or something, they give it new word with new definition. Add it to dictionary. (P19-25M)

Another participant explained that the need to maintain a clear and proper structure was important for the integrity of vocabulary, saying:

And the other part of vocabulary knowledge they have to acquire and they have to deliver the proper meaning of the word and the proper meaning of the sentence, proper meaning of the language. So it’s the certainty aspects of truth and vocabulary knowledge. (P5-26M)

Conflict of Beliefs. The structural design of this procedure strategically placed two questions of similar nature next to each other in the data collection process. This allows the researcher to look for consistency or conflicts in beliefs regarding the certainty aspect of vocabulary knowledge. That is, Question 22 asked participants to expand on their beliefs about the changing nature of vocabulary knowledge, while Question 23 asked participants to expand on their beliefs about the certainty nature of vocabulary knowledge. In Hofer’s (2001) dimensional model, change and certainty beliefs are both classified in the certainty dimension of epistemic beliefs. Therefore, a person who believes vocabulary knowledge is unchanging and is uncertain may have conflicting epistemic beliefs in this dimension. This could point to a transitional time between two development levels of epistemic understanding (Kuhn & Weinstock, 2004). There were nine participants (n=9) who had a conflict of their beliefs between changing and certainty
aspects of vocabulary knowledge. Six of the participants (n=6) believed that vocabulary knowledge is changing and is certain, while three of the participants (n=3) believed that vocabulary knowledge is unchanging and is uncertain. These participants may be in transition from an absolutistic epistemic stance (i.e., knowledge is unchanging and certain) to a multiplicitic or evaluativistic stance (i.e., knowledge is changing and is uncertain). Later, data triangulation will provide a better epistemic profile for these participants to determine where they are in their epistemological development.

In sum, a majority of participants believed that vocabulary knowledge is changing (n=15), while only slightly more than half of the participants believed that vocabulary knowledge is uncertain (n=11). Therefore, several participants appear to have conflicting beliefs about the certainty aspect of vocabulary knowledge (n=9). Nevertheless, collectively, most of the participants believed that vocabulary can change over time and the meaning of vocabulary knowledge is uncertain.

**Ill-structured scenario.** For this procedure, participants were asked to respond to the Ill-structured scenario: Question 2, “Can the meaning of this phrase “Have you had lunch yet?” change over time? and Ill-structured scenario: Question 3, “Can the meaning of this phrase be different or is it always the same? To recap, participants read a scenario that was ill-structured to provide the space for more advanced epistemic beliefs to emerge. In the scenario, a student asked a professor if he or she had lunch. However, the professor interprets the question as an invitation to go to lunch together, and quickly responds no. This uncommon phrase usage thus created a breakdown in communication. The participants were, therefore, asked to analyze the event and espouse their epistemic beliefs regarding the event. Similar to the previous procedures targeting participants’
epistemic beliefs about the certainty dimension of vocabulary knowledge, these questions target the changing nature of the phrase and the certainty of the meaning of the phrase. For Question 2, there were thirteen participants (n=13) who believed the phrase could change over time, while seven participants (n=7) believed that it could not change. For Question 3, there were also thirteen participants (n=13) who believed the meaning of the phrase could be different (i.e., uncertain), while seven participants (n=7) believed the meaning of the phrase would be the same.

Changing. Thirteen participants (n=13) believed that meaning of the phrase “Have you had lunch yet?” could change over time. For example, one participant responded to the question by saying “[i]t can change. Maybe a form for Chris or professor. I think after spending a long time in professor's country, you will know you ask about if you had lunch and we say "How are you?" simply I think” (P9-24F). Responses to this question were straightforward and offered different rationalizations as to why the phrase could change over time, which were labeled with three different sub-codes: Context (n=5), Culture (n=3), and Subjective (n=1).

Context. Five participants’ (n=5) explanations about the changing nature of the phrase focused on the context of the communicative event. This code was used to label responses that stated the meaning of the phrase changes because of the context, the situation, the experiences of the people, and the way it's said. For example, one participant highlighted the importance of the circumstance and how this phrase could be used differently in different situations, explaining “[d]epends. Because like nowadays, I don't know, people can use that as a pick up line maybe. And yeah, depends on the circumstance you're in” (P1-18F). Another participant very clearly points how that it
could be changing based on the situation, stating “[d]epends on the situation. Maybe. Or depending on the gender” (P4-22M). This participant also highlights a topic that is relatively undiscussed by these participants in this study: the gender of the people communicating. Even though this participant did not explore this topic, it suggests that he is aware of the person’s perceived identity and its influence on the communicative event.

Culture. The sub-code Culture was used to label explanations about the changing nature of the phrase by five participants (n=3). This code was used to label responses that indicated that this phrase can change depending on the people in the communicative event’s culture, country, or background. One participant, for example related the use of this phrase to a similar phrase used in his native language of Spanish, showing how different cultures can impact the meaning of a phrase:

Maybe, I'm not sure. I'd like to say no, but sometimes as I said the cultural aspects, the different influence that some countries have with other countries... For example, in Mexico, even though we speak Spanish, most of the cases, we say at the end of meeting, if you are with a person and you are saying goodbye, actually, you say bye. And we don't say adios, it's the exact word. That is because of the influence that, in this case, the United States have put into our language and in our culture. So in this case, probably, I'm not sure, but it's a maybe. (P18-19M)

Another participant explained that while the actual meaning of the phrase might not change, the culture will change, causing a different possible meaning to emerge, “[i]tself no, but the meaning to the culture, yes” (P20-18M). This highlights the role of the communicative event in the setting of vocabulary knowledge.

Subjective. One participant (n=1) believed that the meaning of this phrase could change over time because of the subjective nature of vocabulary and language, highlighting the role of people’s perceptions of vocabulary when communicating. The
participant explains, “[i]t depends if the people can accept this way to express it” (P14-20F).

**Unchanging.** There were seven participants (n=7) who believed that this phrase could not change over time. That is, these responses reflected the view that the meaning of the phrase is static, fixed, and unchanging. For example, one participant stated that the meaning of the phrase will be the same regardless when it is used:

Have you had lunch?” probably not. If it's the person ask it at the right time like right before or after lunch time, it should mean the same thing, but I don't people should ask it in the morning, "Have you had lunch yet?". It's unappropriate [sic]. But if you just ask him after lunch time, I think it's still the same meaning. (P6-18M)

Another participant talk about how the meaning is fixed, saying “[m]aybe I don't think so it will be changed. "Have you had lunch?" is just normal sentence. Just as a greeting (P13-18M). Here the participants is also demonstrating a belief in another dimension of Hofer’s epistemic theories framework, simplicity. This participant believes that this phrase cannot be changed because it is simple.

**Uncertain.** Thirteen participants (n=13) believed that the meaning of the phrase “Have you had lunch yet?” can be different. That is, this code was used to label responses that indicated the phrase can be altered, is not always the same, or can have various meanings. One participant stated “I think it can be different. Sometimes it means, it rarely ask ‘Do you have lunch?’ just care about this things. But sometimes it just a greeting.” (P14-20F), while another participant explained “[i]t can be if it is for different situation, it can be like different” (P2-22M). There were four sub-codes that emerged that highlighted participants’ explanations for their beliefs: Context (n=4), Generations (n=2), Multiple Meanings (n=1), and Subjective Thinking (n=1).
Context. There were four participants (n=4) who believed that this phrase is uncertain because of the context that this phrase is used or could be used in. Additionally, this code was assigned to responses that stated meanings of words can be different depending on the situation or the environment. One participant explained that he believed the phrase could be different “[i]f it is for different situation, it can be like different” (P2-22M), while another participant echoed this response by stating “[i]t's maybe changing depend on the situation” (P4-22M).

Generation. Two participants (n=2) explained that this phrase could be different because of the influence of different generations on the meaning of the phrase. More specifically, this code was used to label responses that indicate that the meaning could be different because of the time period the phrase was used or the people's age saying the phrase. For example, one participant explained, “[i]t can be different during time, but I guess it takes many generations to change a phrase meaning” (P12-26M). Another participant explained that the phrase could be different “[i]n the future because when you have ‘Have you had lunch yet?’ If I tell it ‘How are you today?’ like sir ‘Have you fine today, sir?’ I just ask this separate question, so I think it's changing” (P5-26M). Here the person is suggesting that the phrase may carry a different meaning based on the time period the phrase is used (i.e., the future).

Multiple meanings and Subjective thinking. These sub-codes were used to label two different participants’ explanations about the uncertainty of the phrase “Have you had lunch yet?” respectively. One participant (n=1) believed that the phrase could be different because the phrase has different or multiple meanings, “I think it can be different. Because when Chris told that place, but professor didn't understand he was
mean. I think there have another meaning of this phrase. That's why professor was confused” (P15-19M). Another participant believed that the phrase could be different because of the subjective thinking of the people communicating, stating:

I think that the idea is just one thing. But it's like confusing though because well if somebody ask me that I would say like, I would think about lunch. But then like Chris was just asking like ‘How are you today?’ So it's like kinda confusing. (P3-18F)

**Certain.** There were seven participants (n=7) who believed that this phrase could not be different, is always the same, or is already determined. One participant highlights how the meaning itself stays the same, but the context in which a person uses the word can change, stating “I think the meaning is already set, but it depends on how you will use it that people will trying to catch it differently” (P1-18F). Another participant explained “[i]t's always the same. Yeah” (P11-P19-25M).

**Conflict of beliefs.** Similar to the Interview Question Set 3, the ill-structured scenario interview questions were placed consecutively to determine consistency or conflicts in beliefs regarding the certainty aspect of vocabulary in an ill-structured problem set. That is, Question 2 asked participants to expand on their beliefs about the changing nature of this phrase “Have you had lunch yet?” (i.e. changing), while Question 3 asked participants about whether the phrase could be different or remained the same (i.e., certainty). There were four participants (n=4) who had a conflict of their beliefs between changing and certainty aspects. Two of the participants (n=2) believed that meaning of this phrase could be changing, but is certain in its meaning. The other two participants (n=2) believed that meaning of the phrase is unchanging, but the meaning of the phrase can be different (uncertain).
In sum, a majority of the participants believed that the meaning of the phrase “Have you had lunch yet?” could change over time (n=13) and could have a different meaning (i.e., uncertain) (n=13). On the other hand, seven participants (n=7) believed that the meaning of the phrase could not change, and seven participants (n=7) also believed that the meaning of the phrase must stay the same (i.e., certain). Interestingly, four participants (n=4) held conflicting beliefs about the certainty nature of these beliefs, suggesting that these participants may be transitioning between different levels of epistemic development. Furthermore, context and culture emerged as prominent rationalizations about why the meaning of the phrase is changing and uncertain.
Appendix F

Simplicity Dimension of Epistemic Beliefs

One procedure was used to target English language learners’ epistemic beliefs about the simplicity of vocabulary knowledge: Interview Question Set 2 (Research Question 2a). Despite the fact that simplicity is a distinct dimension in Hofer’s (2001) epistemic theories model, this dimension is often grouped with the certainty dimension to examine epistemic beliefs about the nature of knowledge (e.g., Hofer, 2000). For this reason, the simplicity dimension was only looked at using one interview question, and the certainty aspects of vocabulary knowledge were looked at more closely. Interview Question 16 asked participants: Can the vocabulary meanings be different in varying circumstances or is it always the same? Eighteen of the participants (n=18) believed that the vocabulary can be different (i.e., complex), while only two believed (n=2) that it can be the same (i.e., simple).

Complex. There were eighteen participants (n=18) who believed that vocabulary knowledge is complex. This code was used to label responses that stated that vocabulary meanings could be different in varying or different circumstances, situations, or contexts. One participant explained that meanings can be different between languages and within contexts, explaining “I think it can be different between languages. I think yeah. Depends on the context. I think a word like can have two different meanings depending on the context” (P10-20F). Another participant had a similar response to this question, stating “[y]ou know, if you use a word and you can use many words in many different cases. It depends on the. Yeah, you know, the place you are, the people you are with” (P18-19M). Five sub-codes emerged that encapsulated the different rationalizations that participants
gave: *Context* (n=9), *Multiple Meanings* (n=4), *Language Structure* (n=3),
*Communication* (n=2), and *Thinking* (n=1).

*Context.* This sub-code was used to label nine participants’ (n=9) responses that explained that knowledge can be different because of the situation, context, circumstances, environment, or written context. One student proclaimed that vocabulary knowledge can be different and change in different contexts, explaining “[v]ocabulary knowledge is sometimes changed in many situations and because vocabulary vary in different situations” (P15-19M). Another student explained that the different circumstances can impact the meaning of the vocabulary word:

> In many circumstance some of the vocabulary is changed. There are same vocabulary and different meaning, in many circumstance. I have to understand the circumstance, understand the environment to know this vocabulary. So, there are in the dictionary many words, many word, in many circumstance many words are used. It is given in dictionary. I got it from dictionary, or internet, or Google translate. It’s the best way to find anything. (P16-19M)

This person also indicates that the dictionary can be a helpful source to understand vocabulary words and their meanings in context. This response demonstrates a multifaceted belief about the simplicity of vocabulary knowledge by including the importance of the source of vocabulary knowledge.

*Multiple meanings.* Four participants (n=4) believed that vocabulary meanings can be different because the vocabulary word itself might have multiple meanings. One participant (n=1) linked the physical properties of a word (i.e., sounds, text) with the different intended meanings. Using an example from her native language of Spanish, the participant exclaimed:

> But sometimes you can see like it sounds the same but it has like different meaning. Also, like in Spanish. In Spanish, you can find a lot of words like, they have like. You can hear like it’s the same sound, and sometimes its write the
same, but sometimes it has like different meaning. Sometimes it can be like, a, I don't know, represent a plant and the other is the chair, or something like that. But it has like different meanings. Oh, like in Spanish, a casa is like house and casa is like to hunt, so to like hunt animals and other things. (P3-18F)

A different participant was more deliberate with her responses, succinctly stating “It is different because the one vocabulary has the many meanings, so it can [be] different” (P7-21F).

*Language structure.* This sub-code was assigned to three participants (n=3) who believed that vocabulary knowledge can be different because of the structural aspects of the language. That is, this code was assigned to responses that stated that vocabulary can be different depending of the accents, language, pronunciation, and spelling of a language. For example, one participant discussed how vocabulary can be different depending on the spelling of the words:

Of course, vocabulary meanings are different. For example, English, American and England, there is same words same spelling but it might mean different things here or there. Even in my language, similar countries that speak same language but different accents similar vocabularies may mean different things. (P12-26M)

A different participants explained how the meaning can be different because of the accent of the language speaker:

Definitely sir because vocabulary meanings like in American accent in English there's called garbage can. In English, accent language they tell it as bin. I mean in American English language they tell it as an elevator and in British English they tell it as lift. So I think it's in various languages and various accents. (P5-26M)

*Communication.* Two participants (n=2) believed that vocabulary knowledge can be different because of aspects of the communicative event. More specifically, these participants explained that vocabulary can be different and develop because the change is
necessary for effective communication. One participant explained, for example, that people adapt their meanings to be effective during communication, “[i]t can be different because people will find the more effective communication ways. Yeah, so they will find some shorter meaningful to express this, or his idea” (P13-18M). Another participant talked about how communication can change because of the variations in meaning:

Not always the same. Sometimes when I talk with someone and say what do you mean by this word and explain to me. I ask about an explanation part, and sometimes when someone says something, you mean, so I think it's not the same. (P8-24M)

**Thinking.** One participant (n=1) believed that the meanings of vocabulary can be different because of the thinking or thought so of the people communicating. This participant illustrated a time-space component to the reason why people would be thinking differently and thus having vocabulary with different meaning “I think it's different. Because people thing is the development, developing, comparing with the people who live in the 20th century. The thinking of people is totally different, so I think its change, always change. And different people have different opinion” (P14-20F).

**Simple.** There were two participants (n=2) who demonstrated a belief that vocabulary knowledge is simple. This code was used to label responses that indicate that vocabulary knowledge has the same meaning in different or varying circumstances. One participant explained how the meaning can stay the same regardless of structural differences in the language, explaining “I think so. That like you can take example, like caller and ‘c-o-l-o-r’ and ‘c-o-l-o-ur’. Yeah it's different but the same kind, like meaning same” (P17-19F). The other participant was more direct stating “[a]lways the same” (P11-19F).
In sum, most of the participants (n=18) espoused the belief that vocabulary knowledge is complex and can have different meanings in various circumstances. Two participants (n=2) believed that vocabulary knowledge is simple and has the same meaning in various circumstances. Several sub-codes emerged to support participants’ explanations about why they believed vocabulary knowledge is complex: Context (n=9), Multiple Meanings (n=4), Language Structure (n=3), Communication (n=2), and Thinking (n=1). Context emerged as the most prominent explanation for the complexity of vocabulary knowledge, which indicates that participants understand an essential element of the question. That is, participants were able to understand that the question was asking for their beliefs about the meaning of vocabulary in various circumstances (i.e., context).
Appendix G

Source Dimension of Epistemic Beliefs

Two procedures were used to capture English language learners’ epistemic beliefs about the source of vocabulary knowledge: Interview Question Set 2 and Ill-structured Scenario (Research Question 2a). Each procedure targeted participants’ beliefs about the source of understanding vocabulary knowledge. There were three questions from Interview Question Set 2: Question 13, “Where does vocabulary knowledge come from?” Question 14, “What is the best source for understanding about new vocabulary?” Question 18, “How many types of sources do you use to know new vocabulary? Do you think these sources are equally right? Are some sources better than others? Please explain”. There was one question from the Ill-structured Scenario: Question 4, “What sources could Chris use to ensure the most accurate phrases was being used?” Data analysis for the responses to these question is subsequently provided.

**Interview question set 2: Question 13.** During this portion of the data procedure, participants were asked a general question about the origin of vocabulary knowledge: “Where does vocabulary knowledge come from?” This question aims to understand from where participants believed vocabulary was created or established. Because this question asks for a broader more general understanding of source of vocabulary knowledge, three general codes were used to label participants responses: *External Sources* (n=11), *Internal Sources* (n=7), and *Both Sources* (n=2).

**External sources.** Eleven participants (n=11) believed that vocabulary knowledge comes from external sources of knowledge. More specifically, this code was used to label responses that indicated that knowledge comes from dictionaries, textbooks, historians,
other languages, and technological innovation. One participant explained that vocabulary knowledge comes from textbooks, explaining “I think the textbook has a preferred definition of vocabulary and they indicate the proper vocabulary” (P15-19M). Another participant showed a more complex understanding of the origination of vocabulary knowledge, exclaiming that it comes from both science and history:

I will say like history because sometimes words can like come just because. Even like, I don't know, like physics, so there are like a law. Yeah, a law. So it like, I don't know, like Pepito's law, or Juanito's law, and why that law is like that name. Because Pepito created the formalatic equation, or something like that. So that's why and that's like a new vocabulary that all of us are using for physics or for like everything. So I think it will be like vocabulary like can come at like any time. (P3-18F)

This quotation also highlights the notion that vocabulary knowledge is uncertain because of the role of the different sources in its development.

Internal sources. This code was used to label responses by seven participants (n=7) who believed that vocabulary knowledge comes from internal sources of knowledge, such as the self, the mind, knowledge in general, and personal experience. For example, one participant explained that vocabulary knowledge “[c]omes from the thoughts of human beings and our life” (P14-20F). Similarly, another participant stated that people invent new words to assist in their communication “I think it comes from a group of people's communicate. They want communication, so they invented vocabulary to let them communicate more efficient. Yeah, like this” (P13-18M).

Both. This code was used to label participants (n=2) who believed that vocabulary comes from both internal (e.g., people’s minds) and external sources (e.g., dictionaries). One participant expressed how generations of people created vocabulary and how many writers created new vocabulary in their writing:
Actually, vocabulary is changed by generation by generation. Like how language is changed by generation by generation. Many writers write some vocabulary in their books. I got there. I got some vocabulary from the internet source, from movies, and from song. This is the way to get some vocabulary to get something new vocabulary to mind. (P16-19M)

Another participant discussed how people have assigned names to objects, implying that vocabulary comes from people and their internal process of linking meaning to sounds and text, “[g]ood question. Where does vocabulary...ok. When they were making the language, I have no idea. Through the years. Trying to figure out, put some names to things” (P18-19M).

In sum, a majority of the participants (n=11) believed that vocabulary knowledge comes from external sources. Seven of the participants (n=7) believed that vocabulary knowledge comes from internal sources, and two participants (n=2) believed that vocabulary knowledge comes from both internal and external sources. The high number of participants who believe vocabulary knowledge comes from external sources suggests that most participants maintain more traditional beliefs about sources of vocabulary knowledge. That is, most participants seem to associate learning vocabulary by retrieving it from authoritative sources, rather than being a part of the co-creation of meaning of vocabulary.

**Interview question set 2: Question 14.** For this part of the procedure, participants were asked a more specific question about the source of vocabulary knowledge: What is the best source for understanding new vocabulary? This question is targeting participants’ beliefs about which source in particular they choose to use to know new vocabulary. There were ten sources in total that participants believed were good sources for understanding new vocabulary, with some participants mentioning multiple

*Dictionary* (n=6). There were six participants who believed that the best source for understanding new vocabulary is a dictionary. This code emerged as the most frequently used source of understanding new vocabulary. It is important to point out that it is unclear if some of the participants believed the best source for understanding new vocabulary was a dictionary with definitions defined in the same language or a dictionary that provides definitions and translations for a second language in the person’s first language (e.g., Spanish to English Dictionary). One participant demonstrated that he prefers dictionaries in general, by explaining “I can know easily by any internet or dictionary. I think it's the best way to know vocabulary” (P16-19M). A different participant explained that his primary source of understanding vocabulary is an English Dictionary, “I think the best source for understanding vocabulary is dictionary, English dictionary is the most, best source” (P5-26M). This source would also be considered an external source of knowledge.

*Domain specific books*. Four participants (n=4) believed that domain specific books were the best source for understanding new vocabulary. This code was used to label responses that stated that a good source for understanding new vocabulary are books in the field of study, professional books, or textbooks. For example, one student discussed the need to have books in field of study to know new vocabulary, saying “[f]or me, I look for like the medical news and for the medical sources, actually. Because my major is biotechnology (…) and also technology” (P2-22M). Another participant
discussed how reading books that are professional might be the best source for understanding new vocabulary:

Best source. New vocabulary. Reading, reading books which little professional things, professional books. Yeah, if I read professional book, there are a lot of, not common vocabulary. I don't know but so you want to know new vocabulary, reading book is good source. (P4-22M)

This belief about source fits with the Content-based Instruction method of teaching English as second language, which suggests learning vocabulary is optimized when learning it within specific content areas (e.g., Math, History).

*Personal experience.* There were four participants (n=4) who believed that personal experience was a good source for understanding vocabulary knowledge. This code was used to label responses that stated that a good source for understanding new vocabulary is through experiences, such as travelling, interacting with people, and thinking of new words. One participant talked about the help of travelling of when learning vocabulary, explaining “I think travelling. (…) during our touring time we can see many other things and know many other people and get many other new words” (P14-20F). Another participant explained how people have the ability to create new vocabulary through experience, “[u]nderstanding new source. People. Cause people make up new vocabulary. They invent it” (P20-18M).

*Reading.* Four participants (n=4) explained that they preferred reading as a source for understanding new vocabulary. More specifically, this code was used to label responses that indicated that reading books, news articles, and understanding words in sentences are good sources. One participant explained that “[f]or knowing, reading, and listening as well” (12-26M), while another participant explained how a combination of talking or reading were good sources “[b]est, by talking or reading” (P9-24F). It is
necessary to mention these participants are highlighting more of a process of knowing, rather than a source for knowing.

**Communicate with people.** This code was used to label three participants (n=3) responses that indicated that communicating with people is a good source for understanding new vocabulary. That is, this code was used to label responses that stated that a good source for understanding new vocabulary is talking with people, asking people, and talking in general. This is illustrated by one participant who stated that he “[t]alks with people” (P8-24M). Another participant highlighted this sentiment by stating “[s]ometimes you can actually try to ask from a friend or another person” (P18-19M).

**Internet.** The internet emerged as another source of understanding new vocabulary from three participants (n=3). More specifically these participants discuss the process of looking up the meaning of words on the internet, as seen with the following quote “[d]oing research, looking at internet. Same answer” (P17-19F). Another participant expressed how the internet is the best tool, “[y]ou can internet right now is probably the best tool we have right now” (P18-19M). This sources, in terms of its functionality is likely used similarly to the dictionary, where the participants are searching the internet for word meanings, translations, or synonyms.

**Listening.** There were two participants (n=2) who believed that listening is a good source for understanding new vocabulary. This code was used to label responses that strictly say that listening is a good source, as demonstrated by one participant who stated “[l]istening as well” (P12-26M). This source, similar to reading, represents a process of acquiring a new word, rather than a source of vocabulary knowledge.
Experts, Media, and Translators. Each of these sources were identified as an important source to understand vocabulary knowledge by one participant (n=1) each. The code expert was used to label one response (n=1) that indicated that a person in a specific field, such as a professor or a teacher, is a good source for understanding new vocabulary. As Participant 3-18F noted, a good source of vocabulary knowledge is “your professor”. The code media was used to label one response (n=1) that indicated that media, such as movies, are good sources for understanding new vocabulary. Here, one participant explicated that statement, “I think watching movies is the best source with subtitles. If I saw a movie with subtitles, I can clear the language and the vocabulary” (P16-19M). For the code Translators, one participant described how translators, which translate a word and its meaning from one language to another, are helpful to understanding new vocabulary “[y]ou know I usually use a translation so yeah” (P11-19F).

In sum, there were 10 different sources that participants identified as being good sources for understanding new vocabulary: Dictionary (n=6), Domain Specific Books (n=4), Personal Experience (n=4), Reading (n=4), Communicate with People (n=3), Internet (n=3), Listening (n=2), Expert (n=1), Media (n=1), and Translators (n=1). Specific reading materials, such as dictionaries, domain specific books, translators, including the process of reading, were the primary types of sources that participants believed to be important to know new vocabulary.

Interview question set 2: Question 18. During this part of the procedure, participants were asked about the different types of sources they used, what sources they believed were the best, and why, “How many types of sources do you use to know new
vocabulary? Do you think these sources are equally right? Are some sources better than others? Please explain”. There are two primary elements of this question. First, it explores participants’ epistemic beliefs about the source of vocabulary knowledge. Second, it targets the developmental aspects of their epistemic beliefs. To answer Research Question 2a only participants’ responses that pertain to the source of vocabulary knowledge will be analyzed. The aspects of their epistemic development will be analyzed in a subsequent section. There were fourteen sources that emerged from data analysis: Books (n=13), Internet (n=10), People (n=8), Visual Media (n=7), Dictionary (n=6), Listening (n=4), Professors (n=3), Personal Experience, (n=3), Communication (n=3), Written Media (n=3), Records (n=2), Electronic Device (n=1), College (n=1), and Translators (n=1).

Books. Thirteen participants (n=13) stated that books are one of the sources that they used to know new vocabulary. Specifically, this code was used to label responses that stated that books, reading, and texts are good sources to know new vocabulary. One participant explained that he will use books to discover new words, “[b]ooks, if I find some new words, I will search it, I will look up it” (P13-18M). Another student explained that he “[p]refers new books” (P15-19M).

Internet. The Internet emerged as a source for half of the participants (n=10). This code was used to label responses that included google and other websites as sources for knowing new vocabulary. For example, one participant explained that he uses the internet to help him understand new vocabulary: “[s]ometimes I search in Google, and sometimes I took help from internet about new vocabulary” (P15-19M). Another participant explained that he searches google to help him acquire new vocabulary:
Searching Google, and nowadays it’s one of the most important thing in Google is that there is a translator at google.com. So it can easily find the meaning of a word in various languages. So that what I get those sources. I use those sources to know, to acquire new vocabulary. (P5-26M)

Interestingly, many of these statements establish a link between the internet and other sources of vocabulary knowledge.

**People.** Eight participants (n=8) stated that people were a source for understanding new vocabulary. This code was used to label responses that indicated that people, friends, and family are sources to know new vocabulary. One participant, for example, explained that he refers to other people for knowledge about vocabulary, stating “[p]robably people, you know sometimes I just ask people what does it mean. What they speak to me, they say some you know vocabs I don't know, I just ask them what does it mean to explain it to me” (P6-18M). A different participant discussed how important people are as a source of vocabulary knowledge, saying “[s]ometimes others, like other people, my family, my friend” (P3-18F).

**Visual media.** Seven participants (n=7) believed that visual media is a good source for knowing new vocabulary. That is, this code was used to label responses that indicated TV programs and movies are good sources for knowing vocabulary. In particular, one participant explained the she gets new vocabulary from “[t]he TV show. Just English created TV shows” (P11-19F). Another participant explained that “[t]elevision helps me as well. Watching programs and I don’t understand a word” (P1-18F).

**Dictionary.** The source dictionary emerged as source of knowing new vocabulary for six participants (n=6). This code was also used to label responses that stated that thesauri and on-line dictionaries are good sources of knowing new vocabulary. While
describing a process for learning new vocabulary, one participant explained how a dictionary helps him “[i]n my case, when I'm writing essay or assignment, and I want to write some vocabulary, but I don't know how to say in English, so in this case I always check my dictionary and then get the new vocabulary” (P4-22M). Another participant explained that dictionaries are helpful to use “[s]o it show me all of the definitions. (P2-22M).

Listening. This code was assigned to four participants (n=4) who believed that a good source for knowing new vocabulary is listening. More specifically, these participants referred to listening to music, the news, and conversations as good source for knowing new vocabulary. For example, one participant explained that he likes “[l]istening to English track on my computer, music” (P8-24M), while another participant explained that she prefers “[l]istening, like to the news” (P10-20F) as a source of vocabulary knowledge.

Professors. Three participants (n=3) stated that professors are a source for knowing new vocabulary. This code label included statements about teachers and mentors as a source for vocabulary knowledge. One participant explained that she “[a]sk about professors” (P17-19F) to know a new vocabulary word. Another participant that her professors were also a source of vocabulary knowledge, exclaiming “I don't know, sometimes the professor” (P3-18F).

Personal experience. This code was used to label three participants (n=3) responses that state that personal experiences, such as conducting personal research and travelling, is a good source for understanding a new vocabulary word. One participant expressed how important experiences are, by stating “[e]xperiences, different
experiences. You know, I went on a trip and I went to the United States and I was talking with an American person. Then I knew different word” (P18-19M). Another participant explained that as students “[w]e can do our own research” (P17-19F).

*Communication.* There were three participants (n=3) who stated that communication was a good source for knowing new vocabulary. This code label encapsulated statements about conversation, talking, and speaking. One participant explained that “[d]aily conversation” (P9-24F) is a good source for understanding new vocabulary, while another participant stated that his second preferred source is “[t]alking” (P4-22M).

*Written media.* Three participants (n=3) believed that different types of written media were good sources for knowing new vocabulary. This code was used to label sources that indicated that newspapers and magazines are good sources for knowing vocabulary knowledge. One participants stated “[n]ewspaper, magazines” (P16-19M) were good sources, and another participant conferred with that sentiment, indicating “[m]agazines” (P18-19M) were a good source for understanding new vocabulary.

*Records.* This code emerged as a source of vocabulary knowledge by two participants (n=2). This code was also used to label responses that indicated documents and official texts are sources for knowing new vocabulary. For example, one participant stated specifically “[d]ocuments” (P3-18F), while another participant stated “[r]ecords” (P7-21F). It is unclear, however, what exactly these participants mean when they reference documents or records. Further clarification with these participants could possibly provide more details as to how they would use those sources for new vocabulary.
Electronic device, College, and Translators. Each of these sources was stated by one participant as a good source for knowing new vocabulary. One participant (n=1) explained that electronic devices are good sources for knowing vocabulary, by saying he prefers “laptops, like electric devices, like phone” (P16-18M). College was another source mentioned by one participant (n=1) who exclaimed “[c]ollege obviously” (P19-25M). The code Translators was used to describe the use of a dictionary from first language to second language. One participant (n=1) used a translator in writing assignments to know new vocabulary, “[w]hen I'm writing essay or assignment, and I want to write some vocabulary, but I don't know how to say in English, so in this case I always check my dictionary and then get the new vocabulary” (P4-22M).

In sum, there were fourteen sources that emerged during this procedure as a good source knowing new vocabulary. The sources Books (n=13) and Internet (n=10) were the two most popular sources identified. Many students also identified People (=8), Visual Media (n=7), and Dictionaries (n=6) as good sources to know new vocabulary. There were several sources that were mentioned less frequently, highlighting the variety of sources mentioned: Listening (n=4), Professors (n=3), Personal Experience, (n=3), Communication (n=3), Written Media (n=3), Records (n=2), Electronic Device (n=1), College (n=1), and Translators (n=1).

Ill-structured scenario: Question 4. For this procedure, participants were asked to reflect on an ill-structured scenario about a breakdown in communication between an international student and a professor. With regards to the dimension of source, participants were asked: What sources could Chris use to ensure the most accurate phrase was being used? This question targeted participants’ epistemic beliefs about source of
vocabulary knowledge within a specific context. There were eight sources that emerged from data analysis: People (n=12), Books (n=4), Translators (n=2), Professors (n=2), Dictionary (n=1), News Radio (n=1), Music (n=1), and Experience (n=1).

*People.* Twelve participants (n=12) stated that people would be a good source to determine a more accurate phrase to use in an ill-structured scenario. Specifically, this code was used to label responses that indicated that people, friends, and native speakers of the language are good sources to use. One participant explained that “[s]peaking with people, you know in my country, we say this and we say this and I want to know in this culture and in this language, how do you say exact thing using another word” (P18-19M). Another participant stated that the best thing to do is to:

> Ask people. That's the number one thing. So maybe the internet have many cultures and many it's a world wide web. He has to just talk with an American or whatever the country he is, and just say to him the phrase and ask him about it. (P20-18M)

*Books.* This source was used to label response made by four participants (n=4). This code was also used to label responses about textbooks and cultural books as good sources to know what phrase would be accurate to use. Highlighting the need for a cultural book, one participant responded “[f]rom our American life or some book, they told some customs of the American” (P13-18M). Another participant discussed the importance of reading books, by explaining “I think he should read the book” (P5-26M).

*Translators.* Two participants (n=2) stated that they believe translators are good sources to better understand what phrase to use in this situation. One participant explained how she believed translation is ultimately a poor method for learning a language, but discussed how she still uses translators “I mean if he used translation, you go by like your language, which is really bad. It's not good sometimes because sometimes
the sentence doesn't make any sense. But I would go with translate” (P10-20F). Another person talked about how “[g]oogle translate” would be a good source (15-19M).

Professors. Two participants (n=2) stated that professor would be a good source in this situation. That is, this code was used to label statements that indicated that professors, teachers’ notes, or college are good sources for ensuring accurate use. One student stated frankly, “I think that professors note” (P17-19F), while another participant stated simply “[c]ollege” (P19-25M).

Dictionary, News radio, Music, and Experience. Each of these codes were assigned to one participant each. Dictionary was used to label one participant’s (n=1) response, “I would use dictionary” (P15-19M). News radio was used to label a participant’s about a news channel on the radio being a good or accurate sources “[l]ike to listen to radio, like CNN and that kind of radios” (P2-22M). Another participant (n=1) stated that music was a good source to use, and explained how the lyrics of the songs can be helpful, “[h]e can work on his pronunciation by listening to rap music or something that has different pronounce from international students, so he can get used to the words that come from his mouth” (P2-22M). Experience was identified as a source by one participant (n=1) who stated that trying things in her life would be helpful, “I should learn through life” (P14-20F).

In sum, there were eight sources that participants identified as being accurate to know how to best use the phrase “Have you had lunch?” today. The majority of participants identified People (n=12) a good source to use. The other six sources were discussed less frequently by the participants, showcasing a large variety of sources
outside of people: Books (n=4), Translators (n=2), Professors (n=2), Dictionary (n=1), News Radio (n=1), Music (n=1), and Experience (n=1).
Appendix H

Justification Dimension of Epistemic Beliefs

There were two procedures used to capture English language learners’ epistemic beliefs about the justification of vocabulary knowledge: Interview Question Set 2 and Ill-structured Scenario (Research Question 2a). Each procedure targeted participants’ beliefs about the justification of understanding and knowing of vocabulary knowledge. There were two questions from Interview Question Set 2, Question 12, “How could you make sure that you have the understanding of a vocabulary word? What strategies do you use to determine if your understanding is accurate? Are some strategies better than others? Please explain”. And Question 17, “Sometimes there can be different and contradictory definitions of vocabulary. Do you think both definitions can be right? If so, is one definition more right than another? Please Explain”. There was one question from the Ill-structured Scenario: Question 5, “In what ways could Chris use to ensure the best phrase was being used?” These questions targeted participants’ epistemic beliefs about processes of evaluating vocabulary knowledge, word meanings, and vocabulary usage. Moreover, these interview questions are structured to engage English language learners in evaluative thinking to determine their epistemic level of development.

Interview Question Set 2: Question 12. For this part of the procedure, participants were asked to explain what processes they used to ensure their accuracy of understanding: How could you make sure that you have the understanding of a vocabulary word? What strategies do you use to determine if your understanding is accurate? Are some strategies better than others? Please explain. These questions target the justification dimension of participants’ epistemic beliefs. These questions also target
their developmental levels of epistemic understanding by asking for their decision about better ways of knowing vocabulary knowledge. For the purpose of this research question, only the justification dimension will be analyzed here. Four primary strategies emerged from data analysis: *Judgment* (n=11), *Authority* (n=10), *Direct Observation* (n=9), and *Experts* (n=9).

*Judgment.* Eleven participants (n=11) indicated that a good strategy for understanding a vocabulary word is using criteria for judgment to determine the meaning of the word. More specifically, this code was used to label responses that state the best strategy is to evaluate different ways of using a word in context and in different scenarios, and finding different ways of using the word. For example, one participant explained that she evaluates the dictionary’s definition with usage in the real world:

> You know the example in the dictionary is limited. Sometimes a word with 3 or 5 meaning, but only 1 or 2 examples in the dictionary, so I will try to some sentence or some papers with this word to understand. To see if the words are used as a same method as the dictionary told me. (P9-24F)

Another participant believed that knowing a vocabulary word meant being able to use and know the different appropriate contexts for the word, stating “[u]nderstanding is very hard, I mean because some words have lots of meanings. If you completely know and learned this word, you should use it in all the different kinds of sentences. Use all it’s meaning in different sentences” (P13-18M). This strategy represents a more sophisticated epistemic belief of the justification of knowing (i.e., evaluativism).

*Authority.* There were ten participants (n=10) who stated that a good strategy was confirming meaning with an authoritative source. More specifically, this code was used to label responses that stated that participants know if their understanding is accurate by checking with authoritative sources such as dictionaries, textbooks, and translators. One
participant discussed her use of translation, stating “I use a Korean dictionary and English dictionary so when I have a trouble to understand I search a Korean dictionary to English. Translation.” (P11-19F). A different participant stated his only strategy is to use the dictionary, “I check dictionary, it's the only thing I do” (P19-25M). This strategy showcases a more absolutistic belief about the justification of knowing.

*Direct observation.* Nine participants (n=9) believed that a good strategy for understanding new vocabulary is by directly observing the use of the vocabulary in person. In particular, this code was used to label statements that stated understanding vocabulary knowledge happens by observing vocabulary in practice, and seeing others saying or writing vocabulary in different circumstances. To illustrate, one participant explained:

> Whenever I just get the meaning of the words I try my best to make a sentence from it. And, whenever I get, I talk with someone about the sentence and he tells me it's right. Most of the people tell me it is right, I get that it’s right. And it's correct. (P5-26M)

A second participant discussed how he looked for confirmation about a vocabulary word’s accuracy, “[t]ry to use in a sentence. If someone say, that's correct, it's good” (P19: P8-24M). This strategy demonstrates an objective and absolutistic epistemic belief about knowing the accuracy of vocabulary.

*Experts.* This strategy was mentioned by nine participants (n=9). That is, these participants believed that a good strategy for knowing if their understanding is accurate is by asking experts in the field of ESL, such as teachers, professors, or other people who communicate in English as a first language. One participant expressed this strategy by explaining she will “[t]alk to my teachers and seniors and that kind of stuff” (P17-19F). A different participant showed the need to communicate with speakers of the first language,
stating “[w]e can communicate with others, like my classmate or roommate. Yeah. I can speak a specific sentence and ask him whether it's correct or ask for the teachers. Like maybe, let them help us” (P13-18M). This belief shows an objective stance on knowing vocabulary, but it highlights how the source of knowledge should be trustworthy and experienced.

In sum, there were four strategies mentioned as a good way to determine understanding of a vocabulary word: Judgment (n=11), Authority (n=10), Direct Observation (n=9), and Experts (n=9). Judgment was mentioned the most frequently, with eleven of the participants believing it was a good strategy to determine understanding of vocabulary. Authority, Direct Observation, and Experts were also discussed as good strategies for understanding of vocabulary by several participants. Fifteen participants (n=15) mentioned multiple strategies for understanding vocabulary, which demonstrates a multi-faceted approached to knowing vocabulary.

**Interview Question Set 2: Question 17.** During this part of the interview, participants were asked to discuss how they reconcile different and contradictory definitions of vocabulary words, “Sometimes there can be different and contradictory definitions of vocabulary. Do you think both definitions can be right? If so, is one definition more right than another? Please explain. This question was designed to tap into participants’ epistemic level of understanding; however, aspects of the justification of vocabulary knowing emerged as well. Therefore, to answer Research Question 2a, the justification dimension of vocabulary knowing will be analyzed here. There were nine rationalizations that emerged, supporting participants’ beliefs about the rightness of contradictory vocabulary meanings: Context (n=8), Sentence Context (n=3), Variations
(n=2), Multiple Meanings (n=2), Popularity (n=1), Non-changing (n=1), Meaning (n=1), Agreement (n=1), and Authority (n=1).

Context. Eight participants (n=8) discussed context as their reason for why different and contradictory definitions could both be right. That is, this code was used to label rationalizations about the context of the vocabulary, the situation it's used, or the environment of the communicative event. For example, one participant elaborated on this belief, stating “I mean if they created the words and then they put it on two different meanings and then when you use it in the context, it does make sense” (P10-20F). Another participant described context as being the reason for both definitions of vocabulary having rightness, explaining “[i]t's basically like one word mean more than one thing. So there is nothing in my mind right now, but there is some words might mean things, like totally different (…) depends on where they use the word” (P12-26M).

Furthermore, context was used as a reason for both multiplist (n=4) and evalutativist (n=4) equally.

Sentence context. This code was used as a rationalization for three participants (n=3) who explained that contradictory vocabulary definitions can both be correct depending on context of the sentences or what the vocabulary means in a given sentence. One participant explained that “[i]t's not about the definition, it's about the sentence. Where you put the word in. So the definition is the same” (P19-25M). Another participant explained that it depends on the sentence, stating “[i]t can be right, but depending on which I can put it in the sentence and how I can use it. Maybe they are contradictory but I can use this in here and this in here” (P20-18M). All participants who used this rationalization demonstrated a multiplistic level of epistemic understanding. It
should also be noted that these participants are highlighting the importance of textual context, which is important for the development of reading comprehension.

Variations (n=2). Two participants (n=2) responded that there might be variations in the language but that different and contradictory definitions cannot be equally right. For example, one participant showed how variations in vocabulary are not possible:

Both definitions is not right, because if two vocabulary words has two different meanings it is used in two separate ways, two separate environments, so I think one vocabulary has two different meanings, but it is not used in two different places. So it is not right. (P16-19M)

Another participant discussed that she thought both definition could not be right and elaborated by stating “I don't think so. I think we can use that vocabulary in different sentence, but that's not same. That's usually the same, it may varies (...) it can vary from different meaning and in different sentence” (P17-19F). Both of the participants displayed absolutistic beliefs by suggesting that only one definition can be right.

Multiple meanings. Two participants (n=2) stated that a definition of a word could have different and contradictory meanings because the word has multiple meanings. For example, one participant demonstrated this belief by responding:

Yeah, it has the situation in our word. Because you have different tones or tunes? You express the different things. So maybe you said that word is the same thing, but what you want to express your mode or ideas is completely different. And you can, it is also, I mean, you can speak and start and continue. It can express opposite idea. Both definitions are like right. The difference is, like for example, they different meanings but both are right. (P13-18M)

Another participant stated that:

I think it's, I think that the only thing that they have is that they have different meanings. It doesn't matter if they sound the same or they write the same. They have different meanings. That doesn't mean like because of that they have, they are not right, I think that both are right. Because we use that vocabulary like every day or not every day, but we use them. And, I don't know. I think that it's not right, just different meaning. But both of them are right. (P3-18F)
Both participants expressed multiplistic beliefs about knowing vocabulary meanings, stating that all definition of a vocabulary word can be equally right.

*Popularity, Non-changing, Meaning, Agreement, and Authority.* Each code was used to label one participant’s rationalization for why a vocabulary word can have different and contradictory definitions. *Popularity* was used to label one response that indicated that a vocabulary word can have contradictory definitions of a word because one vocabulary definition might be more popular or commonly used than another. For example, Participant 2-22M stated “[i]t's if you look to the meaning and you use the word by what you mean. It can be like one definitions is more useful, like its common in the people, rather than other one. But not like correct than that one”. *Non-changing* was used to label one response that indicated that a word can have contradictory definitions because vocabulary is not changing. This participant stated “I think it’s right. I believe both of them [are right], cause vocabulary thing. Well, you know, all of people know many years ago it's like a formed, so it does not changed.” (P11-19F). Another participant stated that vocabulary word can have different or contradictory definitions depending on the meaning being used. This participant explained “I think in most case they are accurate, but some vocabulary is not accurate, (…) I think most vocabulary has right definitions, opposite meanings, but some vocabulary is...this vocabulary is right, but this vocabulary is not right as an opposite meaning” (P4-22M). *Agreement* was used to label responses that indicate that both definitions could be right, but one could be more right based on the agreement of people using the word in the communicative event, “I think sir the right definition is that which, actually, all everything is for the people, so when most of the people get the definition it’s the right definition” (P5-26M). *Authority* was used to
label one response that indicated both definitions could be right, but one could be more right based on the based on an authority’s definition of a word, such as a textbook's definition of a word. Participant 15-19M exemplified this belief, “I think textbook definition is very right. I think the textbook has a preferred definition of vocabulary and they indicate the proper vocabulary”.

In sum, there were nine rationalizations that emerged supporting participants’ epistemic beliefs about contradictory definitions of vocabulary words: Context (n=8), Sentence Context (n=3), Variations (n=2), Multiple Meanings (n=2), Popularity (n=1), Non-changing (n=1), Meaning (n=1), Agreement (n=1), and Authority (n=1). The majority of participants believed that context was the reason why a vocabulary word could have multiple and contradictory meanings of a word. Several other rationalizations emerged that supported participants’ stance, but only one rationalization emerged for the absolutists: Variations. The absolutist believed that there could only be one correct definition of a word, despite variations in the language.

**Ill-structured scenario: Question 5.** During this part of the procedure, participants were asked to provide different strategies for the student in this scenario, Chris, to use to ensure there was no miscommunication next time. That is, participants were asked, “In what ways could Chris use to ensure the best phrase was being used?” This question encourages students to think of strategies for determining the most accurate phrase to use in an ill-structured scenario. Five different strategies emerged from data analysis: Change Phrases (n=8), Talk to People (n=7), Watch Movies (n=2), Search Internet (n=2) and Judge Source (n=1).
Change phrases. Eight participants (n=8) believed that a good strategy to ensure a better phrase was being used was to change the phrase. This code was also used to label responses that indicated a person should use a different phrase or use simple language. For example, one student exclaimed “[h]e should learn to say "How are you?" to someone, instead of using this” (P10-20F). Another student demonstrated a similar sentiment, exclaiming “I don't know actually. I think he's supposed to know another way to say it, so once he saw the professor not understand it, he will use another one” (P2-22M).

Talk to people. There were seven participants (n=7) that believed that Chris should talk to people to know what phrase to use next time. More specifically, this code was used to label responses that indicated that you should ask people, speak with natives, or use the language. One participant elaborated on this idea:

I think if Chris ask somebody, like I don't know the English Professor, or something like that. He will know, or even if he's like an international student, he can speak like with like any guy or any girl and ask her or ask him if he's saying that in a good way. (P3-18F)

Another participant explained that he thinks a good strategy would be “[s]peaking to English people, like native. This is the first step” (P19-25M).

Watch movies. Two participants (n=2) believed that Chris should watch movies to ensure that the most accurate phrase was being used. One participant stated specifically, “[h]e can watch movies” (P19-25M), while another participant explained “I think Chris has to watch the movie because there are lot of reality conversations in that” (P11-19F). This strategy aligns with previous sources mentioned, such as visual media and media in general.
Search internet. There were two participant (n=2) who believed that Chris should search the internet to ensure the most accurate phrase was being used. For example, one participant explained “[h]e might learn about the internet” (P17-19F), while another participant discussed that Chris should “[g]o online. There must be some explanation for greetings or phrase” (P6-18M).

Judge sources. One participant (n=1) believed that Chris should judge sources to determine which sources provides the best phrase to use in this situation. More specifically, this code was used to label responses that stated a person should ask other people to determine if original source or people were accurate. This participant explained “[a]sking the same question to someone else to see how they react about it” (P1-18F).

This process also identifies a level of trial and error when learning to communicate in a second language.

In sum, there were five strategies that participants mentioned that would be helpful to ensure accurate phrases or vocabulary were used: Change Phrases (n=8), Talk to People (n=7), Watch Movies (n=2), Search Internet (n=2) and Judge Source (n=1). Change sources and talk to people were the most frequently mentioned strategies. The strategies Talk to People, Search Internet and Judge Sources align with different strategies that participants have mentioned previously. Following is a discussion of the alignment between the strategies for the dimension of knowing.
Appendix I

Developmental Levels of Epistemic Beliefs

There were three procedures used to analyze English language learners’ developmental level of epistemic understanding in the domain of English vocabulary knowledge: Interview Question Set 2, Ill-structured Scenario, and the Epistemological Thinking Assessment (Research Question 2b). Each procedure was designed to understand ELLs’ developmental level of epistemic understanding slightly differently. That is, Interview Question Set 2 asked participants general interview questions to elicit epistemic thinking about vocabulary knowledge in general. Three interview questions were asked to answer this research question: Question 12, Question 17, and Question 18.

The Ill-structured Scenario targeted participants’ developmental levels in an ill-formed scenario creating a space for participants’ to engage in critical thinking. One interview question was asked, Question 6, “Are there other phrases Chris could have sued in this scenario? Would both phrases be equally accurate to use? If so, is one phrase more right than another?” The Epistemological Thinking Assessment (Kuhn & Weinstock, 2004) was administered in the form of a questionnaire asking participant to make judgments about a pair of statements related to vocabulary. Three (Question 12, Question 14, and Question 16) of the eighteen questions on the Epistemic Thinking Assessment targeted epistemic thinking about vocabulary knowledge in particular.

**Interview question set 2: Question 12.** For this procedure, participants were asked to explain the strategies that they believed were helpful do determine the accuracy of their understanding of English vocabulary: How could you make sure that you have the understanding of a vocabulary word? What strategies do you use to determine if your
understanding is accurate? Are some strategies better than others? Please explain. Use an example. This interview question also takes aim at participants’ developmental level of epistemic understanding by asking them to determine if some strategies are better than others to use. Of the three primary developmental levels (Kuhn, 1999), nine were Evaluativist (n=9), six were Multiplist (n=6), and four were Absolutist (n=4).

**Evaluativist.** Nine participants (n=9) provided evaluativistic responses regarding strategies used to understand new vocabulary. That is, this code was used to label responses that stated that multiple strategies could be used to determine if understanding is accurate but that one strategy is better, more accurate, or more appropriate than others. For example, one participant explained:

> Yeah, always my strategy is like the, I don't know, look on the internet or something like that. Even if, for example, if like a new word, so I think and write it down and then if like um I didn't understand this, so then I look on the internet, but then I will realize that the professor can explain it better. Something like that. Because I don't know, sometimes the internet like skips a lot of things. (P3-18F)

This participant also demonstrated why she believed one strategy might be better than another. A different participant showcased his evaluativistic understanding of strategies to understand a new vocabulary word, stating “I think it depends on different person. Like me, I use simple way just to repeat. I'm sure there are better way to understand and memorize vocabs and I like to learn about it” (P6-18M). This participant highlighted that there are likely better ways to know a vocabulary word, demonstrating an open mind about the strategies used to learn English vocabulary.

**Multiplist.** There were six participants (n=6) who displayed multiplistic beliefs about strategies for understanding new vocabulary. This code was used to label responses that stated that more than one strategy can be helpful to know if understanding is
accurate, but there is not one strategy that is better than another; it depends on the person's preference or the context of the usage. One participant, for example, explained that multiple strategies have some usefulness, “[b]ecause you learn something from every strategy. Like you may prefer one, but I don't think it's better than the other cause they both teach you something” (P1-18F).

**Absolutist.** There were four participants (n=4) who demonstrated *absolutistic* beliefs. That is, participants were assigned this label if they stated that there are no better or other strategies to use to understand a new vocabulary word. Moreover, this highlights the belief that the individual's strategy is the best strategy to use. When one participant was asked if there are better strategies to use, he stated “[n]ot really” (P8-24M), thus implying that he only believes there is one good strategy to use.

In sum, of the nineteen participants who answered this interview question, nine were *evaluativists* (n=9), six were *multiplists* (n=6), and four were *absolutists* (n=4). It is clear that a large number of the participants discussed a more *evaluativist* understanding of strategy use to know English vocabulary. There were six *multiplists* (n=6) who demonstrated the belief that multiple strategies are good to understand new vocabulary and could be helpful for them when learning English vocabulary. Nevertheless, there were four participants (n=4) who showcased absolutistic beliefs about learning new vocabulary.

**Interview question set 2: Question 17.** During this procedure, participants were asked to discuss their epistemic beliefs about the meaning of vocabulary words, and if vocabulary words can have contradictory definitions, “Sometime there can be different and contradictory definitions of vocabulary. Do you think both definitions can be right? If so, is one definition more right than another? Please explain”. This interview question
taps into the epistemic beliefs of the dimension of justification, as well as determining the
developmental level of epistemic understanding by asking participants to explain
reasoning about the possibility of a vocabulary word having a different or contradictory
meaning. There were eleven Multiplists (n=11), seven Evaluativists (n=7), and two
Absolutists (n=2).

**Multiplist.** Eleven participants (n=11) displayed multiplistic beliefs based on their
response to this interview question. That is, these participants stated that there could be
different and contradictory definitions of a vocabulary word, but both definitions can be
equally right. For example, one participant discussed the relativity of the definition of a
vocabulary word, “I think the meaning of word is useful to a certain conversation, certain
condition, but not mean this one is the main meaning and this one is not the main
meaning or something. I think every meaning is equal in certain situations” (P9-24F). A
different participant expressed a similar sentiment, stating:

I think that the only thing that they have is that they have different meanings. It
doesn't matter if they sound the same or they write the same. They have different
meanings. That doesn't mean like because of that they have, they are not right, I
think that both are right. Because we use that vocabulary like every day or not
every day, but we use them. And, I don't know. I think that it's not right, just
different meaning. But both of them are right. (P3-18F)

**Evaluativist.** There were seven participants (n=7) who demonstrated
evaluativistic beliefs about differences in definitions of vocabulary. That is, this code was
used to label responses that stated that both vocabulary definitions could be right, but one
definition could be more right than other. In a discussion between the interviewer and a
participant, one participant demonstrated this developmental level of understanding:
P: Yes, for sure. Like, it's basically like one word mean more than one thing. So there is nothing in my mind right now, but there is some words might mean things, like totally different.
I: Ok, and so if we have two words that have totally different meanings and they both can be right, could one be more right, than the other?
P: Yeah, for sure. Depends on where they use the word.
I: Ok, yeah. That's the context, right?
P: Exactly. (P12-26M)

**Absolutist.** There were two participants (n=2) who espoused *absolutistic* beliefs about contradictory definitions of vocabulary words. This code was used to label responses that indicated that vocabulary words can have only one right definition. One participant espoused this belief, exclaiming:

Both definitions is not right, because if two vocabulary has two different it is used in two separate ways, two separate environments, so I think one vocabulary has two different meaning, but it is not used in two different places. So it is not right. (P16-19M)

In sum, a majority of participants (n=11) espoused *multiplistic* beliefs about definitions of vocabulary knowledge. There were also seven participants (n=7) who espoused *evaluativistic* beliefs, but only two participants (n=2) who espoused *absolutistic* beliefs. This matches research on adolescents’ epistemic development (Kuhn, 1999), which suggest that people do not develop more sophisticated epistemic beliefs until the final years of their education.

**Interview Question Set 2: Question 18.** During this part of the procedure, participants were asked to discuss their epistemic beliefs about source of vocabulary knowledge, and what source they believed were better than others, “How many types of sources do you use to know new vocabulary? Do you think these sources are equally right? Are some sources better than others? Please explain”. This question targets two
aspects of ELLs’ epistemic belief system: the source dimension of knowing and the
developmental level of epistemic understanding. For the purpose of the research question,
the participants’ developmental level of epistemic understanding will be analyzed. For
each of the three levels of development, there were eleven *Evaluativist* (n=11), six
*Multiplists* (n=6), and two *Absolutists* (n=2).

**Evaluativist.** There were eleven participants (n=11) who espoused an
*evaluativistic* level of epistemic understanding. That is, this code was used to label
responses that stated that all sources are equally right, or could be equally right, but that
there are some sources that are better than others based on certain criteria related to the
type of source. One participant demonstrated evaluativistic thinking, by stating “I think
looking at the internet is better than looking at specific books because in the book there
are only one writer and in the internet the sources from different writer.” (P17-19F).

**Multiplist.** Six participants (n=6) demonstrated *multiplistic* beliefs about the
source of vocabulary knowledge. This code was used to label responses that state that all
sources are equally good, right, or correct, and there is no source that is better than
another. One participant demonstrated the belief that it is up to each person individually
to choose a good source for them, stating “[t]hey're both good methods and it depends on
the person. Like if reading is the best way for me to learn quickly then I will go with
reading. But if it's listening I will go with listening” (P10-20F). Another participant
demonstrated a relativistic way of thinking about source of vocabulary knowledge, “I
don't think that some meanings is better than others. They just a way of communication.
So, I mean, there is no bad or good” (P13-18M).
**Absolutist.** Two participants (n=2) espoused *absolutistic* beliefs about the source of vocabulary knowledge. This code was used to label responses that indicated there is one best source to use to know new vocabulary or one objectively good source for vocabulary. One participant exemplified the belief that not all sources are equally right, “[n]o I think these all are not equally right. Sometimes we can find many updated vocabulary from different websites and different books” (P15-19M). A different participant expressed the belief in one absolute source, “[d]ictionary is absolute. Dictionary can explain accuracy meaning, but the record can explain how can I use that vocabulary” (P7-21F).

In sum, the majority of participants (n=11) provided *evaluativistic* epistemic beliefs about the source of vocabulary knowledge. Additionally, six participants (n=6) had *multiplistic* epistemic beliefs about vocabulary knowledge, while two participants (n=2) had *absolutistic* responses about vocabulary knowledge. In total, seventeen participants believed that there could more than one source of vocabulary, while the two remaining participants believed that there was only one, absolute source of vocabulary. These results fall in line with other parts of the procedure, where most of the participants are either in the multiplist or evaluativist level of epistemic understanding.

**Ill-structured scenario: Question 6.** For this part of the procedure, participants were asked to discuss their epistemic beliefs about the use of correct phrasing in the scenario between Chris and the professor. That is, participants were asked, “Are there other phrases Chris could have used in this scenario? Would both phrases be equally accurate to use? If so, is one phrase more right than another?” This interview question specifically targeted participants’ developmental level of epistemic understanding by
asking them to describe what phrases could be used in this scenario and choosing
between phrases to determine the most accurate one. Three levels of epistemic
understanding were identified: *Evaluativist* (n=8), *Absolutist* (n=6), and *Multiplist* (n=5),

**Evaluativist.** Eight participants (n=8) were identified as having *evaluativistic*
thinking. This code was used to label responses that indicate that there are phrases that
could be used and are equally right, but one could be better. One participant, for example,
espoused this level of epistemic understanding, stating:

P: Yes, it can use in different phrases, in different ways. If I know some different
phrases, I can use these phrases in different places. And when I do in
conversation. I can use these phrases from here.
I: Ok, so then would both phrases be accurate or equally right to use?
P: It depends on the phrase, for what I use. It's really, when I use some
vocabulary, some phrases. I have to see if it's right or wrong. Is it matched, is it
circumstance. So if it is matches, I have to use these (P16-19M).

Both responses also highlight the reasoning necessary for deciphering which phrase is
most accurate to use. For example, the first participant (P16-19M) discussed the need for
the phrases to match the outcome of the communicative event, while the other participant
highlighted the importance of the role of the people in the communicative event.

**Absolutist.** There were six participants (n=6) who espoused an *absolutistic* level
of epistemic understanding. This was used to label responses that stated there is no other
correct phrase to use, or that there is another phrase to use, but the phrases are not equally
accurate. Moreover, these participants did not provide reasoning to support their claims.
One participant believed that Chris actually used the right phrase and did not need to
change “I think he used the correct phrase right there. Now that I know that was his
intention to ask like... I think he did it correct” (P1-18F).
Multiplist. Five participants (n=5) were identified as having multiplistic levels of epistemic understanding. This code was used to label responses that stated there other phrases to use and they are equal, but one is not better than another. For example, one participant discussed a person’s perspective in the communicative event playing a factor in different phrases being equally right to use, “[s]ome phrases like that, or he might use like, no actually he might use a lot of phrases but in my perspective, I think generally the phrase he used, anyone could use the same meaning. I mean, anyone could understand what the professor understands” (P12-26M). A second participant described the role of the participants in the communicative event as a reason for the phrases being equally right, “[b]ecause I don't know what exactly about these phrases. Maybe depends on the relationship, they will change their greetings. If the two people know each other very close, they will just say hello” (P13-18M).

In sum, even though Evaluativist emerged as the most common epistemic level of understanding for this topic, there were relatively similar numbers between the levels: Evaluativist (n=8), Absolutist (n=6), and Multiplists (n=5). These results contrast the results regarding epistemic levels of understanding for the other procedures, where there were mostly evaluativist and multiplist responses and few absolutistic responses. This may suggest that the participants are able to espouse more advanced epistemic beliefs to general questions about English vocabulary, rather than to scenario-specific questions.