TEACHER'S MANAGEMENT OF CLASSROOM INTERACTIONS WITH ENGLISH LANGUAGE LEARNERS: A CASE STUDY OF A MAINSTREAM TEACHER'S PRACTICES AND BELIEFS

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ABSTRACT

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In the past few decades, public schools in the United States have witnessed a fast-growing student population of English language learners (ELLs), who come from homes where a language other than English is dominant. The dual task of content and the English language learning has brought ELLs huge academic challenges, such as one-size-fit-all expectations, high-stakes tests, and unsatisfactory academic support, among many others. In addition, ELLs are often mainstreamed into content area classes where teachers are underprepared to accommodate their learning needs. Thus, how mainstream teachers deal with ELLs for their content and English language learning merits further study.

Educational scholars have paid increasing attention to the construct of teacher belief about teaching and learning. So far, studies on teachers' beliefs suggest that the complex relationship between teacher beliefs and practice are not always static but rather emergent and likely to be moderated by contextual factors (e.g. Negueruela-Azarola, 2011). As Priestley, Biesta, and Robinson (2015) argued, examination of the issue should recognize the immediate situated context and focus on the beliefs-in-action to probe why the teacher makes decisions in that particular moment and for what purposes. Learning, from a sociocultural perspective, is achieved through the interactions between the teacher and students, as well as among the students themselves. In the classroom, teachers usually dominate the flow of the discourse and their beliefs on teaching and learning, to some extent, can shape the way of such teacher-student

interaction and students' learning. Classroom interaction is highly contextualized, spontaneous, and out of expectations. How the teacher manages this interactive practice and provides mediated support toward ELLs for both their content and language learning warrants further attention.

This study draws upon a sociocultural perspective on learning, and a perspective that teachers' decision-making is fluid, situated and context dependent. The present study examines how a mainstream teacher in a U.S. urban school manages her interaction with ELLs to scaffold their English and content learning and how these practices reflect her beliefs-in-action. This case study, using data generated from stimulated recall interviews, classroom videos, and observation notes, reports this teacher's discursive practices with ELLs, along with her ongoing decision-making or her beliefs-in-action in this interactive process.

The findings revealed that in this highly structured and teacher-dominated class, the interactive practice between the teacher and ELLs were limited. The teacher's feedback on ELLs' responses was not based on their learning needs but was impacted by some other contextual factors. The teacher's strategies to scaffold ELLs' learning were not as effective as she might expect: some are supportive of their learning, while others could impede their learning. Overall, the teacher's challenges and dilemmas that arise from her interactive practice with ELLs were largely due to her lack of formal training in second language teaching.

This study sheds light on the complexity of mainstream teachers' beliefs and practices about ELLs. Furthermore, it advances our thinking on teachers' practices and beliefs by bridging the link between teacher beliefs and classroom interaction in an interactive, moment-by-moment manner through the fine-grained analysis. In addition, it offers implications on better supporting and preparing mainstream teachers working with ELLs in a culturally and linguistically diverse environment.

This thesis is dedicated to my parent.

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KEY TO ABBREVIATIONS

CCSS Common Core State Standards
The Common Core State Standards (2009) Initiative is an educational initiative that sets the academic standards for K-12 students to achieve upon graduation. It standardizes the content to be taught across the country for the subjects of mathematics and English language arts.

DA Discourse Analysis
Discourse analysis is an analytic tool to study language in use (either naturally occurring speech or written texts) to reflect the socially constructed reality.

ELLs English Language Learners
English language learners in this study refer to those students who come from non-English-speaking backgrounds with limited English proficiency and need language support in order to fully participate in academic (content area) classes.

ESL English as a Second Language
English is used as learners' language other than their native or home language.

IRF Initiation-Response-Feedback
IRF refers to the triadic sequence of class interaction between the teacher and students. Namely, it includes the following three steps: teacher initiating a question, students' response to the teacher's question, and the teacher's feedback on students' responses.

L1 First Language
It refers to the learner's native or home language.

L2 Second Language
It refers to the learners' language other than their home or native language. In this study it refers to the language of instruction used at school.

NCLB No Child Left Behind Educational Act
The No Child Left Behind Act (2002) of is an educational initiative to ensure all students in the United States achieve high academic standards. Schools have to meet federally mandated requirements on skills and knowledge defined by the grade-level standards and benchmarks.

NGSS Next Generation Science Standards
The Next Generation Science Standards (2013) is a set of educational standards that aim to improve science education by setting up specific benchmarks for all students.

SES Socioeconomic Status
Socioeconomic status is a term used to describe an individual's social position based on his or her occupation, education, and income in access to power and resources.

SIOP Sheltered Instruction Observation Protocol

Sheltered Instruction Observation Protocol is an instructive model used to support ELLs' content learning and language development. It emphasizes the integration of language learning objectives into their content instruction and proves to be effective in addressing ELLs' learning needs across the U.S..

SRP Stimulated Recall Protocols

In educational research, stimulated recall protocols is an approach used to invite participants to recall their concurrent thinking and decision making during teaching. These interviews are used to gather the participant's insider perspectives which cannot be obtained from observations.

ZPD Zone of Proximal Development

Zone of Proximal Development (ZPD) is defined as the difference between children doing a task independently and them getting support from an expert. It is the area between the development level of an individual for problem solving without assistance and the development level of an individual's problem solving when assisted by another person.

CHAPTER 1

INTRODUCTION

An increasing number of students with limited English proficiency, known as English language learners (ELLs), are making schools linguistically and culturally diverse in the United States. Earlier estimates showed that about 4.4 million ELLs are currently enrolled in U.S. K-12 public schools (National Center for Educational Statistics, 2015), and ELLs represented about 21% of all school-age children and 11% of all public school enrollments nationally (U.S. Department of Education, 2010). This burgeoning group of students usually comes from homes where a language other than English is dominant, and they acquire English as an additional language with limited resources and support, which constitutes an important reason that ELLs' academic achievements often lag far behind their English-speaking peers or are at-risk (Cummins, 2001; Goldenberg, 2010; Harper & de Jong, 2009; Reeves, 2006). Thus, how to better educate ELLs has become a major issue for educational policy makers and practitioners.

According to NASEM report (2017), the number of ELLs at schools is on the rise whereas the quality of their education is incommensurate. At school, ELLs face many academic challenges, among many other challenges that are more social and cultural in nature. Not only is there a need for ELLs to develop English proficiency for everyday social and communicative functions, but also they have to acquire the language of schooling or academic English for classroom participation and content learning (Bailey, 2007; Schleppegrell, 2004). The dual tasks of ELLs acquiring both registers of English language (i.e., everyday versus academic) on the one hand and using English for discursive participation and content learning (e.g., math and science) on the other have posed tremendous challenges to schools and teachers. Those challenges are becoming more salient in the current sociopolitical and socio-educational environment where

public schools are held increasingly accountable for students' achievements. Under accountability policies like No Child Left Behind (Menken, 2009), schools have been required to report to the state on students' yearly progress. ELLs, regardless of their length of stay in the U.S., are required to take high-stakes tests, which are designed for those with sufficient English proficiency; as a result, testing biases against ELLs are unavoidable (Abedi, 2002; Menken, 2009).

Historically, to accommodate ELLs' learning needs, a number of programs or instructional models have been promoted across the country (e.g., Evans & Hornberger, 2005; Rios-Aguilar, Canche, & Moll, 2012). For example, both the "pull-out" model and the "push-in" model have been widely used in some classrooms and have proved to bare both advantages and disadvantages: in a "pull-out" model, ELLs are pulled out of the mainstream classroom and come to English as a Second Language (ESL) classes for English remedy at the sacrifice of their content learning opportunities. There was a report that ELLs still felt it challenging to participate and learn effectively in academic classes after exiting their ESL programs (Chamot & O'Malley, 1994; de Jong, 2014). On the other hand, in a "push-in" model, the mainstream teachers and ESL specialists work together in providing support for ELLs. In reality, the actual practice of this "push-in" model, according to McClure and Cahnmann-Taylor (2010), in a way fails to "provide any substantive or lasting educational improvements" (p. 102). So far, there is still a lack of constructive dialogues between mainstream and ESL teachers to achieve instructional aims productively (Creese, 2006; McClure & Cahnmann-Taylor, 2010).

A consideration of the benefits and concerns about both "pull-out" and "push-in" models would support an instructional model in which mainstream teachers integrate language learning objectives into their content instruction, such as the Sheltered Instruction Observation Protocol

(SIOP) model (Echevarria, Vogt, & Short, 2004; Inceli, 2015; Short & Echevarria, 2004). In fact, ELLs spend about 80% of their school day with their mainstream teachers (de Oliveira & Shoffner, 2016; Dong, 2002). It would be desirable to have mainstream teachers shoulder the responsibility for instructing ELLs to support their learning of language and content concurrently (Karathanos, 2010; Schleppegrell & O'Hallaron, 2011). The implementation of such a model would arguably place a high demand on the quality of mainstream teachers, and the challenges would be apparent due to the reported lack of professional preparation among those teachers (de Jong, 2014; Harper & de Jong, 2009). For example, mainstream teachers are less confident in "conveying subject matter through L2" (Hajer, 2000, p. 265), providing teaching strategies specific for ELLs, and even in "differentiating curriculum, instruction, and assessment for the needs of ELLs" (de Oliveira & Shoffner, 2016, p. 2). Those challenges are often exacerbated by the fact that ELLs are often a heterogeneous group of students with diverse socioeconomic, linguistic, and cultural backgrounds.

Given the increasing demands and pressure for mainstream teachers to accommodate the multiplicities of learning needs of ELLs, diverse conceptualizations have been made that highlight the knowledge base that those teachers need to have. In this regard, some scholars hold that mainstream teachers should possess "special knowledge and skills" (Lucas, 2011, p. 6) to meet ELLs' academic needs. For example, some scholars proposed that teacher preparation programs add some courses on foundational knowledge in "linguistics and second language acquisition (SLA)" (Bunch, 2013, p. 304), "educational linguistics" (Fillmore & Snow, 2002), content-based language instruction (Stoller, 2004), and/or culturally relevant or responsive teaching (Gay, 2002; Ladson-Billings, 2011) in order for mainstream teachers to effectively work with ELLs.

The knowledge-based paradigm for addressing the needs of teachers for working with ELLs, however, does not go without critiques. For example, offering a few courses or adding more courses to an already packed teacher preparation curriculum might not be as effective as expected, because knowledge-based training does not result in automatic translation of pedagogical knowledge into actual classroom practice (Ball, 2000; Leikin & Levav-Waynberg, 2007; Lucas, 2011). In this regard, some scholars have called for a paradigm shift from knowledge-centered to person-centered teacher education in the 21st century (Dyson; 2010; Roberts, 2016). One argument holds that it is fundamentally important to investigate teachers' internal mind on what "they think they believe in, or hold to be true, about themselves and about learning and teaching" (Dyson, 2010, p. 3). Without probing into mainstream teachers' own perspectives on teaching, it would be hard to make sense of why mainstream teachers' accommodations for ELLs did not achieve their intended outcomes (e.g., satisfactory school achievement), as reported in the literature (Echevarria, Vogt, & Short, 2004; Platt, Harper, & Mendoza, 2003; Reeves, 2006).

Statement of Problems

Among myriad factors that have been found to be related to a teacher's teaching in the classroom, teacher beliefs have received tremendous attention in educational research over the past half-century (Bandura, 1996; Borg, 2003; Fang, 1996; Griffiths, 2007; Pajares, 1992; Skott, 2015). There are diverse conceptualizations of what constitute teacher beliefs (Borg, 2001, 2003, 2011; Fang, 1996; Kagan, 1992; Nespor, 1987; Pajares, 1992; Richardson, 1996), but overall, they refer to a teacher's hidden assumptions and generalizations that could be related to his or her perceptions and pedagogical decision in the classroom. One of the important issues for research on teacher beliefs is how, if at all, teacher beliefs may have an influence on what a

teacher teaches and how s/he teaches (White, 2009, 2010) (See Graph 1 for the traditional view). A large body of scholarly work has examined how teacher beliefs and practice may be related by drawing upon a distinction between what a teacher states on teaching (i.e., stated or professed beliefs) and what is actually reflected in the teacher's practices (i.e., enacted beliefs) (Baurain, 2012; Mak, 2011; Skott, 2009, 2015; Souto-Manning & Swick, 2006). While some studies revealed consistencies between the two types of beliefs, suggesting an impact of the former on the latter (e.g., Baurain, 2012; Mak, 2011), others often documented inconsistencies between them (Li & Walsh, 2011; Speer, 2005). Those consistencies and inconsistencies suggest that the complex relationship between teacher beliefs and practice are not static but rather emergent and likely to be moderated by contextual factors (e.g. Negueruela-Azarola, 2011; Nespor, 1987; van Driel, Beijard & Verloop, 2001).

The different, and sometimes divergent, findings on influences of teachers' (stated) beliefs on classroom practice have led some scholars to argue that the examination of the issue should recognize the immediate situated context of the teacher's practice, as teachers' beliefs are context-sensitive and always display in the "immediate classroom environment" in which teachers act (Priestley, Biesta, & Robinson, 2015, p. 368). As some scholars (e.g. Ajzen, 2002; Mansour, 2009) argued, immediate contextual factors, such as individual classroom, curriculum, learner behaviors, and available resources, may alter a teacher's previously stated beliefs. Therefore, research on beliefs should focus on the teacher's enacted beliefs or beliefs-in-action contextually rather than decontextualized beliefs (Ernest, 1991; Skott, 2001). In this sense, teacher's enacted beliefs, or beliefs-in-action, are dynamic, fluid, and emergent in the very act of making sense of classroom practice in a certain situated context (Negueruela-Azarola, 2011). The challenge is to capture the fluidity of teachers' enacted beliefs in a moment-by-moment

manner to account for how such beliefs function in shaping teaching and learning activities (Barcelos, 2003; Negueruela-Azarola, 2011).

Therefore, studying teacher beliefs without taking into account the situated context suggests the rigidity of a research perspective, and there is a need for an alternative conceptualization and approach to explore how beliefs filter, frame, guide or even hinder teachers' decision-making (Gill & Fives, 2015). As Windshitl (2002) noted, teacher beliefs are developed and maintained through participation in the conceptual, pedagogical, cultural, and political affordances and constraints of their situations. Thus, only by contextualizing teachers' beliefs and practices, could we best understand the salient features of how the teacher copes strategically with students' learning in different situations.

Overall, our knowledge is very limited of how mainstream teachers accommodate, if at all, ELLs' challenges of concurrent learning of English and using English to learn. While whether instructional accommodations exist, and if so, how they are provided, is possibly under the influence of how a mainstream teacher perceives his/her students, teaching, and second language (L2) learning, the teacher's decision-making could also be constantly shaped by his/her instantaneous perceptions of the immediate classroom context. As Zheng (2015) argues, teachers' decision-making in the classroom is largely complicated, contextually situated, and dynamic in nature.

To unpack mainstream teachers' beliefs-in-action about ELLs and accommodation of their English language and content learning needs, it is important to approach the social interactions in real classroom contexts (Baurain, 2012). From a sociocultural perspective, learning in the classroom is socially mediated and can be best achieved through the shared interaction between the teacher and students. As a form of classroom discourse, classroom

interaction displays through different "communication patterns and participation structures" (Sharkey & Layzer, 2000, p. 360). In this interactive process, the teacher, as the class facilitator, manages the flow of the discourse, such as through diverse questioning and responding strategies. In a classroom with ELLs, how the teacher structures the discourse has many implications for ELLs' discursive participation and learning of both English and content. Unfortunately, little is known in the literature about mainstream teacher's interaction with ELLs through the lens of interactive questioning and responding (Chin, 2006). Particularly, how teachers' decision-making, with respect to the structuring and flow of teacher-student interactions for creating learning opportunities for ELLs, and their beliefs about ELLs and their L2 learning needs are dynamically related. Thus, it is necessary to examine how the mainstream teacher orchestrates his/her questioning and responding behaviors in a way that promotes ELLs' discursive participation and scaffolds their integrated learning of language and content, as well as how teachers' moment-by-moment decision-making cognitions are contextually constructed and dynamically related.

Purpose of the Study

This study draws upon a sociocultural perspective on classroom interaction and learning (Lantolf, 2011; Vygotsky, 1978) and a perspective that teacher beliefs and classroom decision-making are situated and dynamic (Zheng, 2015). It examines how a middle-school science teacher manages her interaction with ELLs to scaffold their learning of English language and content. This study addresses how her decision-making toward accommodating the learning needs of ELLs or beliefs-in-action are situated in the classroom context. Specifically, using data generated from stimulated recall interviews, classroom videos, and observation notes, this case study aims to reveal the patterns of this teacher's discursive practices with ELLs and how these

practices reflect her dynamic decision-making that involves her situated beliefs about ELLs, teaching, and student learning.

Focusing on how the teacher manages her classroom interactions with ELLs, this project bridges the link between teacher beliefs and classroom interaction in an interactive, moment-by-moment manner. It brings teacher beliefs and classroom interactions into conversation with each other and hopes to reveal the complexities of her beliefs-in-action by probing what contextual factors might come into play with her beliefs about ELLs, teaching, and student learning, as well as how her beliefs and decision-making and discursive behaviors are related in this specific sociocultural setting.

Research Questions

Specifically, this study is guided by the following two questions:

(1) How does a mainstream teacher manage her interaction with ELLs that may function to promote their discursive participation and learning of English language and science?

(2) How do the mainstream teacher's interaction with ELLs and her provision of scaffolded support reflect her beliefs-in-action?

Significance of the Study

ELLs represent the fastest growing student population in U.S. public schools. Meeting the educational needs of these students has become an increasingly important concern for educators and policy makers alike. Through analyzing a mainstream teacher's beliefs-in-action and her interactive practice with ELLs, particularly, the teacher's self-explanation of why she does that for what purposes in her classroom practice, this study enhances our understanding of the complex relationship between teachers' stated beliefs and their real practice in a situated context.

Methodologically, it helps probe the relationship between beliefs and practices through a moment-by-moment, and turn-by-turn examination of interactions in a dynamic manner. The findings of this project, in particular, could increase our understanding about the ways mainstream teachers can assist ELLs' content learning and language acquisition. The findings will also shed light on the practice of teacher education programs with respect to preparing teachers to work in linguistically and culturally diverse settings, particularly on how to translate teacher knowledge, skills, and beliefs into practice in the real school context.

Definition of Terms

This section defines a few key concepts used throughout the study: English Language Learners (ELLs), mainstream teacher, learning, interaction, and teacher beliefs.

English Language Learners (ELLs)

ELLs, in this dissertation, refer to those students who come from culturally and linguistically diverse backgrounds: "an environment where a language other than English is dominant" (Sable, Thomas, & Sietsema, 2006, p. 4). They have limited English proficiency for effective communication, attend classes with English as the medium of instruction, and need to learn English as well as use it to learn in content-area subjects. Other than ELLs, scholars and educators have used a variety of other terms to refer to this student population, including English learners (ELs), limited English proficient (LEP) students, non-native English speakers, language-minority students, culturally and linguistically diverse (CLD) students, and emerging bilingual students. These terms, while bearing different connotations, are often used interchangeably. Given that "English Language Learners" is a comon term among educational researchers (Evans & Hornberger, 2005; Li & Wang, 2008), it is used in this study to refer to those students who

come from non-English-speaking backgrounds and need language support in order to fully participate in academic (content area) classes.

Despite sharing some similarities with their limited English proficiency, ELLs are by no means a homogenous group of students in U.S. schools; rather they are a diverse group of students in terms of ethnicity, religion, socioeconomic status, first or ethnic language background, culture, prior schooling experiences, among other socio-demographic, sociocultural, and socio-educational backgrounds. For example, some ELLs may be born in the United States to middle class families, with their first schooling occurring in U.S. schools. Others may have come to the U.S. with their immigrant-worker parents and have some prior schooling experience in their ethnic language. Still, others may have come as refugees with limited or no formal educational experience at all in their home countries. These diversities among ELLs pose huge challenges for mainstream teachers to accommodate their learning needs as described earlier in the Introduction.

Mainstream Teachers

Mainstream teachers, in the U.S. school context, are defined as those who teach core or elective classes and specialize in one or more traditional subject areas, such as science, mathematics, physical education, English, or social studies. Due to the demographic shift in the classroom, nowadays, it is common for mainstream teachers to have ELLs of diverse grounds to sit together with other non-ELLs in the same classroom. Thus, mainstream teachers have attempted to accommodate ELLs' learning needs due to their lack of English language proficiency. Some researchers pointed out that the use of the term "mainstream teacher" may be problematic because it implies that nontraditional subject area classrooms are irregular, peripheral, or non-mainstream (Gitlin, Buendia, Crosland, & Doumbia, 2003; Platt, Harper, & Mendoza, 2003). Nevertheless, in the absence of a finer term in the literature, and since

mainstream is still the most frequently used term among scholars (Reeves, 2006), I use this term, sometime interchangeably with subject teacher or content teacher, in this dissertation.

Mainstream teachers, like any other educators, differ with respect to personal and academic backgrounds, teaching experiences and qualifications, training and professional development experiences, among many others; all of which should have implications for how they think about teaching, students, and student learning, and how they teach. Although mainstream teachers do teach "non-mainstream" ELLs, they have been reported to be underprepared to work with those students. Furthermore, mainstream teachers might not even perceive as an important component of their charge or their charge at all providing English-language support for those students (Bunch, 2013; de Jong & Harper, 2005; Goldenberg, 2010; Karathanos, 2010; Lucas, 2011; Reeves, 2006), despite the recent argument that they should be on the frontline of doing so, as discussed earlier.

Learning

Learning is central to the civilization of humanity, and it has been defined from multiple perspectives. In this study, I approach learning from a sociocultural perspective, which conceptualizes learning as a mediated social activity. According to this perspective (Lantolf, 2011; Vygotsky, 1978), learning is a social process and is achieved through socially and culturally structured interactions (Lantolf, 2011; Lantolf & Thorne, 2007; Vygotsky, 1978) by means of language and other semiotic means (Chin, 2006). From this perspective, learning occurs in the process of collaborative interaction between the student and the expert in a highly situated context. Rather than a closed cognitive mechanism, learning is regarded as a dynamic social process in which participants interact with each other to acquire, perform, and possess "new skills or new knowledge" (Walsh, 2011, p. 49).

In this interactive process, participants jointly contribute to meaning making and knowledge construction, and learning emerges because of these social interactions. More specifically, students communicate and collaborate with more knowledgeable or capable others (parents, teachers, peers, etc.) to solve problems through joint activities or shared tasks. In a classroom setting, the teacher, as a more knowledgeable other, should be aware of what students already know and what they aim to achieve next and offer contingent support that helps students mediate between "the known" and "to be known." This support is achieved through scaffolding or collaborative knowledge construction within classroom interactions (Lantolf, 2000). Such interactions need to occur within the Zone of Proximal Development (ZPD), defined as the area between the development level of an individual for problem solving without assistance and the development level of an individual's problem solving when assisted by another (Vygotsky, 1978). Along this line of reasoning, students' learning is contextually and socially constructed through interactions with the teacher and their peers. In a mainstream classroom, the teacher's discursive strategies –what strategies s/he uses and how s/he uses them for what purposes –thus play a fundamental role in promoting ELLs' dual learning goals of English language and content.

Interaction

Interactions are "reciprocal events that require at least two objects and two actions" (Wagner, 1994, p. 8). The nature of interaction is "reciprocity and mutual influence" (Heins, Duensing, Stickler, & Batstone, 2007, p. 281). From a sociocultural perspective (Vygotsky, 1978), this study considers interaction as a prerequisite of learning in that meaning is created and co-constructed in "an active, creative and socially interactive process" (Ruschoff & Ritter, 2001, p. 206). One contention holds that it is through interaction that students could perform a learning

task that they would otherwise not be able to perform independently cross the ZPD, and internalize the learning task in an active and meaningful way.

In a classroom context, interaction could take place between the teacher and students and between the students themselves. While recognizing the critical importance of both types of interaction in promoting student learning, the focus of the present study is on teacher-student interaction, particularly, teacher-initiated interaction with students. Morge (2005) distinguished three research orientations on the study of "teacher-student interaction" in the classroom: (1) teacher's discourse perspective (examining how teacher's talk can affect students' learning); (2) teachers and students' verbal behaviors perspective (analyzing both the teacher and the students' talk without reasoning "the circumstances surrounding their participation, and the way they affect the interaction" (p. 937)); and (3) the structure of the teacher–students interaction perspective (identifying the moves of such situated interaction in a dynamic manner). The present study takes the third perspective that examines teacher-students interaction with a focus on both the discourse pattern/moves and why such moves occur between the teacher and students in a dynamic manner. In this way, it contests the traditional, rigid form of classroom discourse (e.g., the triadic sequence of initiation-response-feedback (IRF) (Cazden, 1988; Sinclair & Coulthard, 1975) and focuses on how teacher-students interaction unfolds (through the teacher's careful management of it) in a dynamic matter.

Teacher Beliefs

Beliefs are a concept difficult to define because they are closely linked to a person's mental life, that is not easily identifiable and measurable (Pajares, 1992). Despite that difficulty, teacher beliefs, as stated by Kagan (1992), refer to "unconsciously held assumptions about students, classrooms, and the academic material to be taught" (p. 65). Souto-Manning and Swick

(2006) held that teacher beliefs include “many hidden assumptions and generalizations that are influenced by often isolated experiences and factors” (p.187). In other words, teachers’ beliefs are “based on judgment, evaluation, and values and do not require evidence to back them up” (Rimm-Kaufman, Storm, Sawyer, Pianta, & La Paro, 2006, p. 143). In the absence of a clear and consistent definition of teacher beliefs, several reviews on the concept are useful in developing a working definition for this study (Baurain, 2012; Borg, 2001, 2003, 2011; Fang, 1996; Hativa & Goodyear, 2002; Kagan, 1992; Nespor, 1987; Pajares, 1992; Richardson, 1996; Souto-Manning & Swick, 2006).

Following Richardson (1996), this study defines teacher beliefs as teachers’ “psychologically held understanding, premises, or propositions about the world that are felt to be true” (p. 103) that drive their actions and support decisions and judgments (Pajares, 1992). In other words, teacher beliefs profoundly influence their classroom practices (Johnson, 1994). Based on this definition, teacher beliefs are a psychological construct and bare some kind of linkages to personal events, episodic knowledge, and emotional experiences (Friedrichsen, van Driel, & Abell, 2011; Nespor, 1987). As some scholars (e.g. Ajzen, 2002; Mansour, 2009) argued, immediate contextual factors, such as individual classroom, curriculum, learner behaviors, and available resources, may alter a teacher’s previously stated beliefs. Therefore, this study holds the view that a primary way to understand the complexity of teacher beliefs is a focus on the concrete situation where instruction takes place, and research on beliefs should focus on the teacher’s enacted beliefs or beliefs-in-action contextually rather than decontextualized beliefs (Ernest, 1991; Skott, 2001).

CHAPTER 2

REVIEW OF THE LITERATURE

The large influx of culturally and linguistically diverse student population known as ELLs has shifted the homogeneity of the classroom environment in the United States. How to better support ELLs' learning of both the content and language has brought their teachers huge academic challenges, particularly for those mainstream teachers with less expertise in second language development. The classroom is a major setting where learning takes place. Classroom discourse, presumably dominated by the teacher, is co-constructed by both the teacher and students through their interaction. This interactive practice, from a sociocultural perspective, is realized through the teacher's scaffolded support based on students' current proficiency. Teacher questioning and responding is a good lens to examine how the teacher manages his or her interaction with ELLs toward their content and language learning. Meanwhile, the teacher's decision-making on how to interact with ELLs and their learning is impacted by the beliefs he or she holds. Thus, an understanding of teachers' beliefs, particularly the beliefs-in-actions in a specific teaching context, is important to unpack the teacher's decision-making on why he or she does what for what purposes.

In this section, I primarily frame my discussion on how the constructs of classroom interaction and teacher beliefs are interwoven to play a role in ELLs' language and content learning. Before coming to these two theoretical constructs, a brief discussion on ELLs, their learning, and the mainstream teacher is necessary to situate the present study.

English Language Learners (ELLs) and Mainstream Teachers

Demographic Change and ELLs' Academic Challenges

The globalization of world economy and the mobility of people have made the demographics of today's classrooms around the world more diverse than ever before. Over the past few decades, public schools in the United States have witnessed a fast-growing student population of ELLs, who come from homes where a language other than English is dominant. Statistics (NCELA, 2008) indicated that the ELL population has been steadily on the rise in the country's most populous states like California as well as in some states in the Midwest where traditionally that population had been small (Bunch, 2013; Valdes & Castellon, 2011). The dual task of acquiring the English language while at the same time learning the content of subjects, has brought ELLs huge academic challenges, such as unsatisfactory academic support, one-size-fits-all expectations, high-stakes tests, among many others.

Historically, ELLs, despite the myriad challenges, has received limited academic support in and out of the classroom; and as a result, their academic achievement has been much lower than that of their English-speaking peers. Recognizing ELLs' achievement gaps, policy makers and educational experts have begun to make efforts to improve their academic performance. These efforts, such as accommodation instruction for ELLs (for a review of the models of accommodation instruction, see, for example, Cummins, 2001; Goldenberg, 2010; Lucas & Villegas, 2011), however, did not turn out to be as effective as expected. For example, as one way of instructional accommodation, ELLs are often pulled out of their regular classroom for instruction on English language taught by ESL specialists (i.e., the "pull-out" instructional model). However, the language they acquired through those ESL classes is more conversational or oriented toward developing proficiency for everyday communication more than academic in

nature for effective learning of subject matter. In this sense, Cummins (1980, 2001) distinguished two types of language proficiency in the name of Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP). The former refers to the language we use in conversational communications, such as greetings, asking for information, or requesting something, whereas the latter refers to a more abstract and decontextualized way of language used in a formal occasions, such as classroom presentations and discussions, conference speeches, and academic paper writing. In the latter, the language is treated as a system of semiotic symbols; the learner needs to decode the linguistic system for understanding and then reorganize the linguistic structures and vocabularies to produce the desired output for information delivery, which is cognitively demanding and requires learners have a high command of the language for information transmission and knowledge construction. In this meaning-making process, the language, particularly the academic language, plays a vital part in producing the message, either in the form of oral presentation or in a text. In short, the academic language of a subject is different from everyday discourse because these are two types of language, or "register" (Halliday, 1994). Consequently, many ELLs have been unable to meet the language demands of mainstream classrooms after exiting ESL support programs (Chamot & O'Malley, 1994). In addition, while in their ESL classes, ELLs have many opportunities to talk and participate in class discussion; after they come back to their mainstream classrooms these opportunities are effectively gone and ELLs often largely become invisible (Harper & de Jong, 2009).

The implementation of accountability policies in U.S. public schools over the past few decades, such as the No Child Left Behind Act (NCLB, 2002) and the Common Core State Standards (CCSS, 2009), seemed to have further marginalized ELLs and their learning (Menken,

2009). Although these policies have set high expectations to ensure that all children, including ELLs, have a fair, equal, and significant opportunity to obtain a high-quality education and reach the specified academic standards, their implementation is argued to have treated ELLs the same as those proficient in English, with the former's language barriers ignored (Menken, 2009). The ongoing push for English-only programs is one trend that has significantly increased the placement of ELLs into mainstream classrooms, despite the inadequate proficiency that they have for participating in those classrooms. These programs are based on an assumption that ELLs, like native speakers of English, will acquire English naturally through social interaction necessary to talk in order to learn (Dalton, 1998). Policymakers hoped that ELLs receiving all-English instruction would benefit from having to deal with language barriers themselves so that they could eventually become proficient in English and use English to learn academic content (Bunch, 2013; Cazden, 2001; Mehan, 1979; Schleppegrell, 2004). In reality, however, ELLs vary tremendously in age, country of origin, as well as linguistic, cultural, economic and educational backgrounds. Any "one-size-fits-all" approach to instruction minimizing ELLs' cultural and linguistic diversity would fail to achieve the expected goals (Harper & de Jong, 2009; Reeves, 2006).

To add to the aforementioned concern, ELLs are often mainstreamed into content area classes where teachers are underprepared to accommodate their learning needs. Harper and de Jong's (2009) study indicated that "placement in mainstream classrooms without appropriate preparation of teachers and instructional accommodations" could lead to the social isolation of ELLs (pp. 138-139). According to Harley (1993), if the mainstream teacher doesn't make language instruction explicit, ELLs would lose their opportunities to develop their communicative competence because English is "an invisible medium" (Diaz-Rico & Weed, 2002,

p. 117). In a class without explicit instruction from the mainstream teachers, ELLs' learning opportunities to the grammatical aspects of communicative competence are not addressed (Pica, 1994). In a way, according to Harper and Jong (2004), "the language demands of content instruction are often invisible to mainstream teachers" because most mainstream teachers are "not accustomed to thinking of themselves as language teachers" (p. 154). Other results, such as a lack of class participation, meaningful peer interactions, teacher feedback, opportunities for language development and academic achievement, have also been reported in the literature (Platt & Troudi, 1997). This issue of the quality of the teaching force will be revisited in more detail in the forthcoming subsection that approaches the challenges from the teacher's perspective.

In addition, the requirement for ELLs to participate in high-stakes state tests further impact their learning. As indicated by Menken (2009), all students, regardless of their home languages and ethnic origins, are required to take the yearly progress test. ELLs use the same standardized tests "as those already being used to assess native-English speakers" (Menken, 2009, p. 106). These demands on language and literacy practice "clearly present challenges for all students, but particularly for students who are still in the process of learning the language of instruction" (Bunch, 2013, p. 299). Some scholars (Harper & de Jong, 2009; Harper, de Jong, & Platt, 2008) have reported the negative consequences of standardized tests in English for ELLs, including ELLs' higher dropout rates and teachers' practice of narrowing the curriculum and "teaching-for-the-test." In addition, despite the accommodation measures for ELLs to take the tests, such as extending test-taking time and using bilingual dictionaries, some scholars criticized that such "flexibilities" had not fundamentally helped with the language difficulty problems of the tests (Abedi, 2002; Wright, 2005).

Last but not least, compared with the increasing heterogeneity of student populations, teachers in U.S. schools are predominantly white (Latham, 1999). Some scholars (Crawford, 1999; Garcia, 2009) pointed out that the presumably monolingual teaching force inevitably privileges the long-dominant stereotype of linguistic homogeneity in the classroom. It thus seems natural that teachers filter the curriculum through their own cultural experiences and teach in the same way they were taught (Feistritzer, 1996). This mismatch between the racial and ethnic profiles of students and teachers reduces the likelihood that teachers will connect learning to all their students in a meaningful way (Latham, 1999). As Lee (2004) contended, "(science) teachers also need to recognize who the students are in terms of their linguistic and cultural experiences so as to foster a personal connection in the classroom" (p. 68). Ideally, teachers of ELLs are expected to engage in culturally appropriate communication and interactions by connecting students' life experiences to the curriculum with cultural artifacts, examples, analogies, and community resources (Gay, 2002; Villegas & Lucas, 2002). In reality, however, this expectation has not necessarily been fulfilled in mainstream classrooms (Harper & de Jong, 2009; Villegas & Lucas, 2002).

Mainstream Teachers' Challenges in Working with ELLs

In the United States, as in many other countries, the classroom is becoming increasingly diverse. It has become common for teachers not specifically trained in English as a second language (ESL) to have ELLs in their classrooms. The teaching of ELLs for developing their language and literacy skills is not the sole responsibility of ESL teachers but rather a shared task of both language specialists and mainstream teachers, which requires a pedagogical shift in instruction (Windschitl, Thompson, & Braaten, 2011). Gibbons (2003) asserted that every public school teacher is a language teacher. Similarly, Bunch (2013) claimed that almost all teachers in

U.S. public schools encounter the challenge of supporting ELLs "in meeting subject-matter academic expectations that require increasingly demanding uses of language and literacy in English" (p. 769). In this sense, teachers, particularly mainstream teachers, need to have mastered instructional strategies that help all students including ELLs in attaining much higher standards than have previously been in place. In particular, mainstream teachers should make academic content as accessible as possible for ELLs and promote oral and written English language development as students learn academic content.

Despite this need, mainstream teachers, are often not appropriately trained to provide instructional accommodations to meet ELLs' unique needs (Lucas, 2011). According to a report from National Center for Education Statistics (NCES), 42 percent of the teachers surveyed indicated that they had ELLs in their classrooms, but only 12.5 percent of these teachers had received more than eight hours of professional development specifically related to ELLs (NCES, 2015). In a similar vein, de Jong (2014) asserted that more than 80 percent of mainstream teachers teach ELLs despite the fact that they lack foundational knowledge and professional training about ELLs. de Jong and Harper (2005) also noted that mainstream teachers have insufficient knowledge and little experience to provide strategic instruction unique to ELLs, who "often need more explicit scaffolding, particularly in performing academic tasks" (p. 104). More specifically, Lucas (2011) noted that the special knowledge and skills that mainstream teachers should possess to become "linguistically responsive teachers" (Lucas & Villegas, 2011) and to meet ELLs' academic needs include "linguistics and second language acquisition (SLA)" (Bunch, 2013, p. 304) or "educational linguistics" (Fillmore & Snow, 2002).

The debate on how to teach ELLs, both the content and language, is still ongoing. For example, in the "pull-out" model, ELLs are taken out of the mainstream classroom and sit

together with ELLs from different grades taught by an ESL specialist. In this way, ELLs get more chances to practice their English skills. Superficially, ELLs can improve their communicative skills within a short period. In a deep sense, ELLs spend too much time in this remedial class and they are deprived of the time with their peers in the mainstream classroom. Critically, this model treats ELLs as deficient learners; and even after they exit from the ESL programs, they still have some difficulties in participating in content classes. In the same vein, Harper and Jong (2004) argued that "mere exposure to the target language is largely insufficient to develop grade-level L2 proficiency" (p. 153).

In addition to the "pull-out" model, other models such as "push-in" model and the content-based model have been practiced in some places. In a "push-in" model, ELLs sit together with their ESL specialist in the same classroom: the mainstream teacher teaches the content subjects whereas the ESL teacher comes to provide some language support to ELLs. Due to issues of coordination and co-teaching, some educational experts have criticized its efficiency of this model. Over the past decades, the content-based instruction began to gain popularity at elementary and secondary school settings (Lee, Quinn, & Valdes, 2013). This model, in a way against the traditional "form-only" and "content-less" model of instruction, proposes to integrate language and academic subject in teaching practice (Lee, Quinn, & Valdes, 2013; Schleppegrell, 2004). The content-based language instruction is intended to "provide students with increased motivation in subject matter as well as opportunities to experience larger discourse-level features and social interaction patterns essential to language use" (Lee, Quinn, & Valdes, 2013, p. 228). Language work in content-based pedagogy is prioritized in the teaching of subject content. However, this model, whether taught by mainstream teachers or ESL teachers, due to the lack of

the expertise and knowledge in either the language or the academic subject, begins to shift to the sheltered model.

According to the sheltered model, mainstream teachers take the responsibility of teaching ELLs with some training in language pedagogies. In this regard, the sheltered instructional model for ELLs, such as the Shelter Instruction Observation Protocol (SIOP), might work in some areas. For this model, mainstream teachers need to take more responsibility for students' subject and language development. In other words, there needs to be a shift away from the content-based language instruction to a focus on language-in-use environments, and a shift away from "teaching" discrete language skills to a focus on supporting language development by providing appropriate contexts and experiences. Mainstream teachers need to understand the linguistic demands of ELLs in content learning and carefully structure learning tasks according to their needs (Gibbons, 2003). However, in reality, according to Harper and de Jong (2004), most mainstream teachers feel "less confidence to meet the language demands for ELLs while simultaneously providing opportunities for ELLs to develop the necessary academic language skills" (p. 158). Critically, teachers must learn to examine the role of language in teaching and learning. As classroom practices align with national content standards and content learning occurs through extensive oral and written discourse (i.e., talking to learn), teachers must know how to provide appropriately scaffolded opportunities for ELLs to learn to use academic language (i.e., learning to talk).

In short, the good teaching practice of mainstream teachers should "incorporate techniques that teach language as well as content" (Diaz-Rico & Weed, 2002, p. 17). Teachers must recognize similarities and differences between L1 and L2 learning and understand the implications for their own instructional practices. They must also be able to identify how

language is used as a medium of instruction and not assume that ELLs have the same access to the language of the classroom as native English speakers. Finally, teachers must understand the role that language plays in learning and acknowledge that language development must be integrated as a goal of instruction when teaching ELLs. Effective ELL teachers should therefore integrate language and content objectives and organize their instruction accordingly.

Interaction, Mediation and Learning

Sociocultural Perspective on Learning

This study draws on the sociocultural view of learning, which contends that learning is not simply a cognitive process of the mind, but rather the interaction between oneself and the outside world (Lantolf, 2011; Lantolf & Thorne, 2006; Vygotsky, 1978). In this perspective, learning takes place in the process of collaborative interaction between the student and the expert in a highly situated context. It is primarily a dynamic social process in which participants meet each other to acquire, execute, and possess "new skills or new knowledge" (Walsh, 2011, p. 49). According to Vygotsky (1978), knowledge is not received passively, but actively built by its participating members. Vygotsky (1997) claimed that a child's psychological development occurs on two planes: "first social, then psychology, first among men as a mental category, then as a psychological category within the child" (p. 106). This perspective means that the child's intellectual development, intellectual growth and knowledge construction cannot go without social interaction with other people.

The essence of Vygotsky's theory of mind is captured in "the notion that human mental functioning results from participation in, and appropriation of, the forms of cultural mediation integrated into social activities" (Lantolf & Beckett, 2009, p. 459). In this interactive process, participants jointly contribute to meaning making and knowledge construction, and learning

emerges as the result of these social interactions. In a classroom context, the core idea of these social interactions is "an integral part of learning characterized by the teacher as facilitators and students who actively construct their own understanding based on their existing knowledge" (Powell & Kalina, 2009, p. 245). In this process, students communicate and collaborate with the teacher (and their more knowledgeable peers) to solve problems through shared tasks. Such interactions need to occur within the Zone of Proximal Development (ZPD), which refers to the area between the development level of an individual for problem solving without assistance and the development level of an individual's problem solving with assistance by others (Vygotsky, 1978) (see further details below).

As a primary source of information input in the classroom, the interaction between the teacher and students constitutes the main form of learning (Chin, 2006). Classroom interaction is, in this sense, "a central tool for teaching and learning" (Dippold, 2015, p. 12), as it determines how the content is communicated, how the meaning is mediated, and most importantly, what kind of social relationships can be maintained among participants. Therefore, "learning, at least in part, is a social process which is embodied in interaction" and "any attempt to study learning must therefore begin by studying classroom interaction" (Seedhouse & Walsh, 2010, p. 127).

The sociocultural perspective delineated above provides a valuable insight in understanding classroom interaction for the teaching and learning of a subject within a school context. In this discursively interactive process, the teacher plays a critical role in managing the pattern of the interaction in terms of orchestrating the talk, interacting with students, and enhancing students' learning (Mortimer & Scott, 2003). The knowledge of classroom interaction can help the teacher create rich language and content input, facilitate students' learning, and make adequate decisions on assessment in the classroom. Essentially, effective classroom

instruction is based on engaging interactions between the teacher and students (Chin, 2006). Both researchers and practitioners regard classroom interactions as a prerequisite for learning.

Mediation. Mediation is one of the central constructs of sociocultural theory. It refers to "the process through which humans deploy culturally constructed artifacts, concepts, and activities to regulate the material world or their own and each other's social and mental activity" (Lantolf & Thorne, 2006, p. 79). Gibbons (2003) argued that mediation occurs "in situations characterized by difference, difficulty, or social distance" (p. 248). As "the instrument of cognitive change" (Donato & McCormick, 1994, p. 456), mediation offers the tool to study how learning is situated in a social network. The tool can be any material tool human beings ever invented, or it can be a symbolic tool in our society, such as the language or gesture used for interpersonal communications (Vygotsky, 1978). These materials and abstract tools can alter the flow and structure of mental functions and transform human action (Vygotsky, 1978). According to Vygotsky, in an interactive learning process, a child can achieve the learning goal with the aid of mediation in the form of tools or expert support. These tools, in a classroom setting, can be represented in the forms of handouts, visual aids such as slides presentation, materials for background information, and more importantly, the language the teacher uses for interactions with students.

Scaffolding. Scaffolding literally refers to a supporting structure planted around a building under construction until the building is strong enough. In the field of education, the term scaffolding is used to explain the process by which an expert helps a novice perform some task or achieve a goal that the novice cannot achieve alone (Wood, Bruner, & Ross, 1976). Donato (1994) defines scaffolding as a "situation where a knowledgeable participant can create supportive conditions in which the novice can participate, and extend his or her current skills and

knowledge to higher levels of competence" (p. 40). Similar, Schuman (2006) maintained that scaffolding was "providing support for students in their language, and then gradually diminishing the support as students become more independent" (p. 530). In a classroom setting, according to Walqui (2006), scaffolding has three categories or levels: 1) macro-scaffolding, which refers to the scaffolding at the curriculum level; 2) scaffolding at the lesson plan level, and 3) micro-scaffolding, which refers to the spontaneous, moment-by-moment scaffolding that takes place during interaction between the teacher and students. Of these three levels of scaffolding, the situated, moment-by-moment scaffolding during the interactive process between the teacher and students is supportive to students' learning. As such, the teacher has a better understanding of students' learning difficulties and needs by offering timely assistance or adjustment.

As discussed above, scaffolding is the temporary support for students and it should be gradually removed once students become independent or self-regulated. Therefore, scaffolding is not a predetermined, static instructional condition but dynamic, built-in support to students' learning needs in the classroom. As a process to assist students' intellectual skills for intentional learning, scaffolding is best approached and analyzed within the authentic classroom interactive process.

Zone of Proximal Development. Zone of Proximal Development (ZPD) is defined as the difference between children doing a task independently and them getting support from an expert. According to Vygotsky (1978), "learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers" (p. 90). ZPD has proved appealing to educators and psychologists due to "the aspect of assisted performance that is an integral part of its construct and which unites the two important elements of development potential and achieved

development" (Benati & Angelovska, 2016, p. 121). According to Vygotsky (1978), "what children can do with the assistance of others is even more indicative of their mental development than what they can do alone" (p. 85), which suggests that in a classroom context, the teacher plays an important role to provide students with scaffolding to trigger student's knowledge domains and develop complex skills.

Classroom Interaction: Classroom Discourse and Learning

The function of classroom interaction on students' learning and cognitive development has been well-documented (Lemke, 1990; Mehan, 1979; Sinclair & Coulthard, 1975). By taking a process-based approach to analyze the interaction between the teacher and students, previous studies have focused on how these interactions can help students' learning in a dynamic way (e.g., Dippold, 2015; Ridley, 2004; Sert & Walsh, 2013; Turner, 2011).

Methodologically, the text-based and the teacher-talk approaches to classroom interaction are problematically monologic and "acontextual" with their focus on analyzing the data generated from classroom interactions alone. In reality, the classroom interaction is dynamic and fluid and the "sequential context and extralinguistic context can play a role in determining utterance function" (Seedhouse, 2004, pp. 57-58). Therefore, the teacher-student interactive perspective approaches classroom interactions in an interactive and participant relevant manner, in which data are described and analyzed through a micro-level, moment-by-moment mode of analytical inquiry in its situated context (Doehler, 2010) so as to reveal how these dialogical turns, and to what extent, can increase or reduce students' learning opportunities. This study takes the process-based perspective to examine the teacher-student interactive practice, together with the teacher's self-report of the scenario of what is taking place in the interactive process.

Thus, the complexity of the classroom interaction is captured in a fluid, context-specific, and dynamic manner.

Teaching Questioning and Responding. As discussed above, as a form of classroom interaction, the teacher's questioning of and responding to students is crucially important to students' learning. Generally, questioning creates a context by connecting with the goal of learning, and it challenges students' critical thinking skills by formulating an answer with multiple possibilities (Chin, 2006). On the other hand, responding, as a form of feedback given by the teacher, is to assess students' understanding of the goal of learning. In the classroom, responding to students' answers is usually given in a situated context based on students' proficiency and specifically with their moment-by-moment reaction and needs.

In this study, the mainstream teacher's management of classroom interactions (Chin, 2006; Lemke, 1990; Waring, 2012) refers to the way she manages her questioning of and responding to ELLs' answers for facilitating their learning. In this interactive process, her questioning is a form of assessing those students' learning and scaffolding their thinking; her responding refers to the feedback provided to students' answers to further their thinking and learning. As Schleppegrell and O'Hallaron (2011) proposed, this socially mediated classroom interaction not only improves students' content learning but also helps enhance their language skills.

Teacher questioning. As an essential part of classroom interaction, teacher questioning accounts for roughly one third of class time (Chaudron, 1988). Questions have been effective teaching tools and have "the greatest effect on student achievement" (Pagliaro, 2011, p. ix). Teachers ask questions "to diagnose students' difficulties, to recall facts, to test knowledge, to direct attention and to maintain control" (Albergaria-Almeida, 2010a, p. 308). Through

questioning, teachers get immediate feedback from students, help keep students on the right track, reinforce key points, and adjust the teaching pace and level of difficulty accordingly. The quality of the teacher's questions can influence students' thinking for knowledge construction, their learning opportunities, and consequently, their achievements (Black & Harrison, 2001; Hattie, 2009). What types of question should be asked and how to ask questions have garnered most attention from scholars and practitioners, as different questions can trigger different mental activities from students. Based on different criteria, a variety of questions taxonomies have been proposed (e.g. Barnes, 1976; Bloom, 1956; Carr, 1998; Chin, 2006; Long & Sato, 1983). Among those classifications, based on the answers expected, some scholars distinguished between display and referential questions.

Display questions refer to questions having ready-made answers from either the teacher's previous talk or the textbook. Display questions are often with only one desired answer and students' answers are usually short and lack of opportunities for engaging participation; for example, "Where are you from?" Display questions are perceived as performing "gate-keeping functions" that only afford minimal interaction opportunities to learners who can respond, thus putting restrictions on the rest of the class from participating (Gutierrez, 1993; Hall, 1998).

Referential questions, on the other hand, refer to questions without ready-made answers and are used for information seeking. They usually elicit thought processes and guide learners toward deeper exploration and understanding. The teacher does not know the answers and students are empowered to make links with the world outside the classroom. One such example is, "What did you do over the weekend?" Referential questions are generally viewed as a tool to promote active learning participation (Tharp & Gallimore, 1988), to elicit higher cognitive

thinking for problem solving (Moore, 1998), and ultimately "to produce deeper levels of learning" (Albergaria-Almeida, 2010b, p. 754).

Teacher responding. Another aspect of classroom interaction involves the teacher's responses to students' answers, which are often known as feedback. In this study, I use "feedback" and "responding" interchangeably, with the latter only referring to teachers' responses to students' answers, unless otherwise specified in certain situations. As Fanselow argues (1987), "to teach is to provide feedback" (p. 267), feedback is generally "considered to be a form of negative evidence" (Gass & Mackey, 2006, p. 7), and as a result, much scholarly and pedagogical attention has been devoted to negative or corrective feedback in second language acquisition (Gass & Mackey, 2006; Wong & Waring, 2009).

As an important feature of teacher-student interaction, feedback can be realized in multiple ways. Minimally, feedback can be an assessment without elaboration. However, this type of assessment without elaboration is viewed as restricting opportunities for further interactions and, in turn, hindering potential learning opportunities (Hall & Walsh, 2002). In most cases, feedback using evaluative comments such "all right" or "okay" signals affirmation or acceptance of students' answers. These positive utterances mostly mark the official transition from the current sequence to the next (Schegloff, 2007). Similarly, the teacher's use of positive remarks such as "very good" signals the closing of the sequence regardless of any further questions or additional comments on the topic (Waring, 2008; Wong & Waring, 2009). This practice is particularly evident in Waring's (2008) study on teachers' use of some positive remarks in an EFL classroom. In the study, after a positive feedback has been given by the teacher and the topic closed, one student still had a question regarding the correctness of the answer provided, leading to a series of questions from other students. Scholars following a

sociocultural perspective on learning claim that without further elaboration, such actions of teacher feedback do not foster learning or development, particularly as learners are not guided toward a clearer understanding of the topic (Lantolf, 2000; Long, 2007). In short, there are several functional roles the responding turn of the teacher can play, such as offering evaluation or follow-up on the student's turn (Carlsen, 1991; Cazden, 1986; Nassaji & Wells, 2000).

The prior literature has recognized the complexity and function of the third turn position (Hall, 1998; Nassaji & Wells, 2000) in terms of a positive (acceptation), negative (denial), neutral categories (Dekker-Groen, Van der Schaaf, & Stokking, 2015). So far, most studies have focused on the teacher's feedback on the negative feedback of students' answers known as corrective feedback, which is defined simply as "responses to learner utterances containing an error" (Ellis, 2006, p. 28). In contrast to the large body of literature on corrective feedback, work on positive feedback, such as the expressions of "very good," "great," and "excellent," is difficult to find (Wong & Waring, 2009). Pedagogically, the teacher's use of these positive feedbacks, on the one hand, provides a positive feedback on students' learning achievement; on the other hand, in some cases, it might have the potential of hindering students' learning opportunities (Mehan, 1979; Seedhouse, 2004; Wong & Waring, 2009). For example, as Wong and Waring (2009) argued, in some cases feedback tokens such as "very good" should be used sparingly, as they might also inhibit students' learning opportunities by closing the sequence or not inviting further elaboration (Seedhouse, 2004; Warning, 2008). In reality, our knowledge of the teacher's behavior and beliefs on the uses of these positive feedbacks is limited. What teachers do in the third turn is not predictable and is based on the immediate second turn context (Lee, 2007), that is, on students' answers to the teacher-initiated questions. Therefore, a moment-by-moment analysis of the teacher's third turn feedback is essential in understanding why he or

she provides that feedback to that particular answer. The present study will take an initiative in this direction with an attempt to probe whether the use of these feedbacks in a content area class with ELLs might encourage or inhibit ELLs' learning opportunities.

From IRF Model to IRFRF Model. In describing patterns of classroom discourse, the initiation-response-feedback (IRF) triadic sequence that is, teachers' initiation (questioning), students' answers, and teachers' feedback has been identified by scholars as the main form of classroom interaction (Cazden, 1988; Lemke, 1990; Sinclair & Coulthard, 1975). The IRF sequence or "triadic dialogue" (Lemke, 1990) has been used as a useful vehicle to describe the discourse flow between the teacher and students in the classroom. In this sequence, the third turn is considered to be critically important for giving feedback on the second turn produced by students (Cazden, 1986). This third turn usually goes back to the teacher for the adequacy of students' second turn answers, because "its position implicates the teacher's uptake of the students' second turn response" (Lee, 2007, p. 1205).

Other than "feedback," different terms such as "evaluation" (Mehan, 1979) or "follow-up" (Lee, 2007) have also been used by scholars to refer to the third turn. Some scholars (Sinclair & Coulthard 1975; Waring, 2008) distinguished between IRE (evaluation) and IRF (feedback) and claimed that "evaluation" might not be the proper word to use since it positions the teacher's dominance in the classroom discourse and acts as the only knowledge bearer. On the other hand, "feedback" in the IRF sequence can have "a more inquiry-based understanding of learning, which values the activities of exploration, hypothesis testing, and problem solving" (Hall & Walsh, 2002, pp. 196-197). Thus, most scholars prefer to use "feedback" as the third turn in a dynamic, information-sharing sense.

Pedagogically, the IRF sequence is not without any shortcomings and has been challenged by some scholars on its effectiveness. They argued that the IRF sequence, despite the aforementioned rationale of having "feedback" as the third turn, seems to still reinforce teacher-centered teaching and knowledge transmission pedagogy in the classroom. For example, Cazden (1988) criticized that the use of the IRF pattern in reading lessons promoted teachers' control of the interaction rather than student learning of the content. Similarly, based on examinations of classroom discourse from several classrooms, Barnes (1976) found that the frequent use of the IRF sequence reflected a constricted transmission model of learning and failed to provide opportunities for the communication between the teacher and students. Nystrand's (1997) examination of 112 eighth- and ninth-grade English Language Arts classrooms revealed that the use of the IRF sequence was more prevalent in lower-track classes, leading to significant inequalities in student opportunities to develop intellectually complex knowledge and skills. The author found that the pervasive use of this pattern of discourse led to mechanical, teacher-led talk with limited student involvement.

The foregoing discussion suggests that the IRF model seems to reduce students' class participation and limit their learning opportunities, which led to some scholars to propose a variety of alternatives to the model in different contexts. For example, van Zee and Minstrell (1997) preferred the pattern of "student Initiation-teacher Feedback-student Response" as the unit of analyzing classroom interactions. In such sequences, the teacher invites students to articulate their ideas with their own initiated questions; the teacher offers feedback to students' questions and then returns to students for further elaboration. In these interactive exchanges, the teacher supports students' understanding and develops their thinking skills during the meaning negotiation process.

Mortimer and Scott (2003) expanded on the IRF structure by identifying the IRFRF (Initiation-Response-Feedback-Response-Feedback) pattern where two further turns have been added: following the teacher's elaborative feedback, an additional response from the student is expected, and then followed by another comment or feedback from the teacher. This chain of discursive interactions can invite more students to participate and get more voices heard. For example, the teacher can repeat or revoice (Chapin, O'Connor, & Anderson, 2003; Chin 2006) a student's response and make it available to the whole class, and then encourage more students' involvement through further elaborations. On the one hand, the strategy of revoicing students' comments can further elicit their participation; on the other hand, the repetition of students' responses may allow students with learning difficulties, such as ELLs, "the opportunity to co-construct a response with their teacher and peers" (Chin, 2006, p. 1340). Briefly, this extended chain of classroom interaction, according to Chin (2006), can explore, diagnose, and extend students' ideas and contributions.

As discussed earlier, the teacher is the discourse dominator in the classroom. Other than teaching questioning and responding, in either the IRF or the extended IRFRF pattern, how the teacher allocates turns for students to participate, decides the length of the wait time, and makes evaluations on students' answers all play a decisive part in promoting or hindering students' learning opportunities. For example, in the process of classroom interaction, in most cases, the teacher manages and regulates the interaction by appointing the speaker (Gutierrez, 1993; Markee, 2000; Mehan, 1979). According to Xie (2011), empirical studies have evidenced that teachers' turn-allocation pattern can affect students' speaking floor and participation and consequently, shape students' affordance on their learning opportunities. Similarly, in the process of classroom interaction, in addition to teachers' questioning and responding, some non-

verbal communication modes also play an essential part in meaning making. Among these non-verbal communicative modes, wait time is a typical one closely related to the questioning and responding particularly goes together with the IRF model (Carlsen, 1991; Rowe, 1974; Waring, 2012). Studies have indicated that extending wait time can fundamentally encourage more students' participation (Swift & Gooding, 1983; Tobin, 1986), extend the length of student utterances (Tobin, 1986), and increase complexity and cognitive level of student responses. This extension is particularly useful when it comes to ELLs, who might need longer times to structure the answers due to their limited English language competence. In short, increased wait time can maximize interactional space between the teacher and students and is a prerequisite to promote students' higher cognitive skills, as is evidenced by large a body of literature about wait time (Rowe, 1974; White & Lightbown, 1984).

Classroom Interaction and ELLs' Learning

Scholars have agreed that the educational success of ELLs is to ensure that they learn the content of subjects associated with the acquisition of English language skills simultaneously. In this sense, ELLs' learning involves the concurrent learning of both content and English language following benchmark knowledge and skills defined in state and/or national standards, as reviewed earlier in the first section of this chapter. The dual task of learning both content and language is, however, strenuous. Given the limited resources outside of school (e.g., lack of home support), ELLs' school achievement or academic success depends much on their teachers, particularly mainstream teachers' instruction. Consequently, in reference to the importance of classroom discursive participation for learning discussed earlier, ELLs' classroom interaction with their teachers and peers is the major mechanism in which they learn English as well as use

English to learn. Thus, for ELLs, classroom interaction with the teachers and their peers is the main setting as well as the major source of their content and language learning.

As discussed above, the classroom is the place where ELLs get most of their academic language input. Thus, classroom interactions between the teacher and students, as a constructive and social process, become the central component of ELLs' language development and socialization. In this regard, mainstream teachers–the input they offer–play a critical role in ensuring the objectives of ELLs' learning are met. As Gibbons (2006) indicated, the mode of teacher talk to some extent determines the quality of language input for ELLs and the quality of their language acquisition in general. If the teacher uses more academic-oriented language in the classroom with ELLs for their meaning negotiation, ELLs will be much faster with their acquisition of the language of schooling (and the learning of content). On the contrary, if the teacher uses language that is more conversational, ELLs' language and content learning will be hampered. In addition, ELLs often need assistance with the language of classroom discourse and classroom participation; the assumption that the mere exposure and interaction with native English speakers is sufficient for language acquisition is simply not enough. ELLs need more opportunities to practice using the new language to negotiate meaning in interactive settings (Gibbons, 2006). In short, teachers should provide ELLs with a rich (academic) language environment and some explicit guidance during the teacher-student interaction is still necessary.

Scholars have studied the relationship between classroom interactions and learning and agreed that effective interactions can contribute to students' learning in the field of second language acquisition (Walsh, 2011). However, relatively limited attention has been paid to the study of this interactive process in the field of science research and practice (Mortimer & Scott, 2003). Mortimer and Scott (2003) argued that the starting place to investigate how learning

occurs in a science classroom is to analyze the classroom interaction between the teacher and students. In fact, the majority of such interactions in the classroom are realized through the format of questions and responses (Chin, 2006; Wellington & Osborne, 2001) for knowledge elicitation, "prompt[ing] student thinking" (Mortimer & Scott, 2003, p. 2), assessment, learner contribution adjustment, and even classroom management purposes. Thus, in this study, I mainly focus on one form of classroom interaction between the teacher and students: questioning and responding. That is, how the teacher, as the mediator or facilitator of the classroom, asks questions and provides feedbacks on students' answers in a way can provide students with learning opportunities and discursive spaces for class participation. As a major format of classroom interaction, such interactions depend largely on teachers' perspectives on teaching and learning, and an examination of this interactive practice is necessary to reveal the nature of the interactive style and its impact on ELLs' learning.

Effective Teaching Strategies Accommodating ELLs

As discussed above, due to language barriers and other sociocultural factors, ELLs' academic performances at school typically fall behind their English-speaking peers. In a science classroom, for example, ELLs not only need to develop their linguistic competency but also need to use the language channel to engage in some academic communications for content learning. As a result, mainstream teachers should accommodate ELLs' learning needs of both the content and language in their curriculum planning and instructive practices. Thus, how the mainstream teacher creates a language and content integrated learning environment to facilitate ELLs' science and language learning deserve our attention. In other words, teaching ELLs is not a matter of "just good teaching," but it requires some accommodating strategies within "mainstream teachers' existing repertoire" (De Jong & Harper, 2005, p. 102). In a classroom

setting, these accommodating strategies can be approached from three dimensions: namely, linguistic, discourse, and cultural scaffolding in teachers' instructive practices.

Linguistic Scaffolding Strategies. Linguistic scaffolding refers to developing learners' linguistic awareness through systematic explanations of some linguistic knowledge such as words' technical meanings, word formation, pronunciation, and other necessary linguistic skills. Lee et al. (2016) asserted that "the teaching of science and the teaching of language are integrally related" (p. 581). To begin with, the teacher should explicitly explain the meaning of some technical words specific to scientific discipline. As we know, the meaning of such specialized words is different from everyday word usage, and the teacher should help distinguish such meaning differences and provide some support for ELLs to acquire these technical words. In addition, the teacher should explain the word's etymology (word histories), word formation (word stem, root, affixes, inflections), and word's specific meaning (connotations) in different contexts. Such strategies for learning words in a different context can help ELLs memorize word meaning in use, which is more efficient than remembering the wordlist mechanically.

Second, ELLs' pronunciation and phonics support are necessary. If an ELL mispronounces a word, the teacher should point out that mistake and demonstrate the correct one for them. Barr, Eslami & Joshi (2012) suggested that ELLs benefited from the explicit teaching of some basic phonics knowledge and phonemic structures.

Third, the teacher should make a good connection between what ELLs already have and expect to achieve in the classroom. For example, while explaining the word meaning, the teacher can ask ELLs to describe the word based on their previous knowledge. Through this practice, ELLs will be able to establish the semantic connection between new words and other familiar words in their daily lives. In addition, other strategies such as synonyms, antonyms,

superordinate, hyponymy, a wordlist or word bank, and other skills can be used to help "build ELLs' academic vocabulary in English" (De Jong & Harper, 2005, p. 110). In short, all this linguistic support must be accessible to ELLs.

Discourse Scaffolding Strategies. Different disciplines have different discourse conventions. Each subject has its own disciplinary register and ways of communication. Discourse scaffolding refers to utilizing the disciplinary discourse conventions to support learners' class participation in knowledge construction. The learning of a discipline is a process of socialization to familiarize learners with the norms of such academic communications. Take the class talk for example; it is different from our everyday conversation in terms of word choices, sentence structures, and topic relevant to the flow of information exchanges. In a science class, the teacher and students are expected to engage in such meaningful conversation for knowledge generation, critical thinking practice, and valid argumentation.

Specifically, these strategies include encouraging learners to use scientific languages to express themselves when they explain, describe, infer or criticize a certain topic. These scientific languages are not limited to technical vocabularies, but the more complex use of grammatical patterns with accuracy and fluency. The teacher should set a good example to use science disciplinary registers, such as how to use logical connections between sentences, how to list examples, how to conclude a sentence, and how to cite evidence from other sources, and so on. The teacher should have a sense of discourse awareness to help engage students to develop their discourse competency for better academic communication. For example, in the classroom, while doing oral presentations or describing scientific diagrams, graphs or tables, the teacher should provide some discourse scaffolding on how to present such knowledge in a scientific way. Put

another way, this explicit instruction of scientific register is necessary for ELLs to develop their discourse competence.

On the other hand, the teacher should help students analyze the complexity of certain sentence structures and provide some necessary explanations for why such discourse is preferred in the discipline. At the same time, based on the real example of these scientific languages, the teacher should demonstrate how to help students reach that goal by doing similar practices. The teacher's role is to facilitate students' class participation. First, the teacher should make his or her language accessible to ELLs through paraphrasing, repetition, or retelling by another non-ELL. Second, the teacher has to balance the use of scientific talk and everyday language. Sometimes, the teacher might maintain the vigor of scientific discourse by using some multiple modes of aid tools, such as diagrams, tables, and graphic organizers (Lee & Buxton, 2013). Another aspect of such discourse scaffolding is to wait with patience. The teacher might extend a few seconds for ELLs to think of an answer for a certain topic. If ELLs express their answers using incorrect English, the teacher should either ask someone else (possibly another ELL) to repeat the answer or provide the correct answer appropriately.

Questioning is another good discourse strategy used for the teacher to get ELLs engaged in the conversation. Through the question, the teacher can not only get some feedback on ELLs' learning but also he or she can use it to go further from that question: to explain the points systematically. All these discourse strategies suggested for science teachers working with ELLs are used to ensure ELLs are part of the scientific discourse community.

Cultural Scaffolding Strategies. Cultural scaffolding refers to the connection between teachers' classroom instruction and ELLs' home language and culture. Mainstream teachers should make some endeavors to integrate ELLs' language and culture into their practices. For

example, when explaining some scientific terminologies, if possible, mainstream teachers are encouraged to use ELLs' home languages to do so. If mainstream teachers know nothing about ELLs' home language, they might ask some students (bilingual, advanced in both languages) to act as a linguistic broker to bridge the disconnection between English and ELLs' home languages. Sometimes, if necessary, the teacher can invite some experts in ELLs' home languages to help translate some of the lessons for accommodations.

In addition to the language connection, mainstream teachers should make their class more inclusive by connecting ELLs' culture with science classes. For example, while the teacher lists examples, he or she should consider ELLs' learning needs: The teacher can give more detailed explanations of the example or by providing some extra background information before the class. Moreover, the teacher should be passionate about learning new things such as ELLs' life experiences in the past, their educational context, their cultural notes, and so on (De Jong & Harper, 2005). For example, when citing some examples in class, the teacher can intentionally use examples or stories from ELLs' home culture, which make ELLs feel part of the community of practice.

Additionally, this cultural scaffolding, in a broad sense, also refers to teachers' awareness of ELLs' home culture norms. Without such awareness, the teacher might feel puzzled on how to support ELLs' learning. For example, in some cultures, the teacher has an authoritative role and students have to listen to their teacher attentively in the classroom whereas U.S. classroom emphasizes more on students' participation and engagement (Villegas & Lucas, 2002). Some ELLs might not get used to the small group work and class discussion participation. The teacher should have the patience to give more time for ELLs to come up with an idea. Once an ELL

shared his or her opinion, the teacher should give them some complimentary words despite some drawbacks in their answers.

Last but not least, mainstream teachers are encouraged to use ELLs' lived experiences both at home and in the community as part of learning resources, such as their hobbies, food cultures, festivals, and others. These "cultural artifacts and community resources" must be "both academically meaningful and culturally relevant" (Lee et al., 2016, p. 581). These cultural learning experiences, if used appropriately, can elicit ELLs' learning interests and engagement. For example, if the teacher can cite some examples from ELLs' lived experiences in learning scientific concepts, doing so will improve their agency in learning new things: scientific learning is so close to ELLs' daily lives and they are willing to invest more time in scientific explorations.

Teacher Beliefs

Teachers' beliefs, among others factors, play a pivotal role in influencing their instructive behaviors (Bandura, 1996; Griffiths, 2007; Pajares, 1992). As an indicator of the decisions teachers make on teaching goals, procedures, material selection, interaction pattern, as well as students' learning (Kuzborska, 2011; Pajares, 1992; Wallace, 2014), teachers' beliefs could account not only for teachers' classroom performance (Borg, 2003; Li & Walsh, 2011) but also students' class involvement and their learning achievement (Karabenick & Noda, 2004).

Studies on teacher beliefs have occurred over the past fifty years (Song, 2014). As "a form of cognition" (Wallace, 2014, p. 17), the construct of teacher beliefs, has received considerable attention in the field of teacher education. It is until the mid-1970s that studies of teachers solely focused on "teachers' observable behaviors" (Reeves, 2006, p. 141) without paying attention to their mental lives. The development of cognitive psychology has shifted educational researchers' focus from teacher's behaviors (product) to their decision-making

(process) on students' learning, which has led to an increasing interest in the studies of teachers' mental lives (Calderhead, 1996; Reeves, 2006) and brought the construct of teachers' beliefs into spotlight. In a way teachers' beliefs can influence their perceptions and judgments on how teaching and learning operate in the classroom (Borg, 2003; Crookes, Davis, & Clair, 1995; Fang, 1996). It has been widely recognized that teachers' beliefs about their roles and their students, and about teaching and learning, can function as guiding principles toward their work. As Nespor (1987) asserted, "to understand teaching from teachers' perspectives we have to understand the beliefs with which they define their work" (p. 323). Thus, teachers' beliefs became the focus of research, as it is the main predictor "of instructional activity and of student learning" (Skott, 2015, p. 16).

Complexity of Teachers' Beliefs

So far, scholars have used the concept "beliefs" with various connotations or perspectives. For example, some scholars view beliefs as "suppositions, commitments, and ideologies" (Calderhead, 1996, p. 715); others as "confidence, motivation, self-concept, and self-esteem" (Hancock & Gallard, 2004, p. 281); and still others as "perceptions, assumptions, implications and explicit theories, judgments, opinions, and more" (Sahin, Bullock, & Stables, 2002, p.373). Pajares (1992) suggested that beliefs "tend to be eclectic aggregations of cause-effect propositions from many sources, rules of thumb, generalizations drawn from personal experience, beliefs, values, biases, and prejudices" (p. 134). Beliefs form "loosely bounded systems and highly variable and uncertain linkages to events, situations and knowledge systems" (Nespor, 1987, p. 321). The multiple understandings of the word "belief" indicate the complex nature of the term, which is also true of the concept "teachers' beliefs."

Despite scholars' growing interest in teachers' beliefs over the years, there is still lack of consensus on how this construct is defined. As one of the most difficult concepts to define, or a large term narrowly constructed (Baurain, 2012), the term teacher beliefs is not used consistently (Kagan, 1992); it is even regarded as a "messy construct" or "at best a game of player's choice" (Pajares, 1992, p. 309) due to its conceptual connotation with other concepts, such as attitude or knowledge. For example, some scholars equate beliefs with attitudes (Rokeach, 1968); other scholars (e.g., Richardson, 1996) maintain that there should be a separation between attitudes and beliefs. According to Richardson (1996), attitudes refer to "learned predispositions to respond to an object in a favorable or unfavorable way" (p.103), whereas "beliefs involve what should be done concerning the object and beliefs about the object" (Pettit, 2011, p.125). In other words, attitudes focus more on the affective side of personal perception while beliefs focus more on the cognitive side. Similarly, some scholars use beliefs and knowledge interchangeably, or regard beliefs as part of the knowledge system (Borg, 2003), in which a teacher's knowledge is composed of a network "of knowledge, thoughts, and beliefs" (p. 81), while other scholars, such as Skott (2015), hold that beliefs have no associated truth-value whereas knowledge "carries connotations of objective truth" (p. 18). In fact, teacher knowledge research explores how teachers know what they know and how they turn what they know into classroom practice. On the other hand, belief represents individual ideologies and suppositions, not subject to outside evaluation, while knowledge is consensual and subject to the standards of truth (Turner, Christensen, & Meyer, 2013). In short, belief is "associated with opinions and perceptions while knowledge is closely linked to facts" (Li & Walsh, 2011, p. 40).

Some scholars held that teacher beliefs are episodic, often deriving from powerful experiences or critical incidents in the individual's past (Nespor, 1987). For example, Mak's

(2011) study on EFL teachers' beliefs indicated that they are influenced by the teachers' past learning experiences about effective teaching and the teaching environments. In addition to an individual teacher's past experience, the institutional context can also play a role in affecting the teacher's beliefs (Ernest, 1991). For example, Schoenfeld (1992) argued that the environment, particularly the institutional context, could shape teachers' beliefs about the nature of teaching. If the institutional context can shape the teacher's beliefs, then, is a person's belief subject to change over the years with more practice that is professional and learning experiences? So far, no agreement has been reached concerning the mutability of teachers' beliefs. Some educational researchers (Pajares, 1992), claimed that "beliefs are formed early and tend to self-perpetuate, persevering even against contradictions caused by reason, time, schooling, or experience" (p. 324) and belief shift is uncommon even with more professional development in their work. On the other hand, some scholars (for example, Meirink, Meijer, Verloop, & Bergen, 2009) hold that belief change is possible in later life, particularly for those teachers who adopt student-centered approaches and prefer to try new ideas in their work (Lee, 2004). In the same vein, Borg (2011) also supports the view that insightful professional development with personal reflections can shift teachers' beliefs in their work. Currently, according to Meirink et al. (2009), there is still a lack of empirical study on the mutability of shifting teachers' beliefs.

Despite the fact that beliefs influence practice (Bryan, 2003; Borg, 2003; Kagan, 1992; Pajares, 1992; Schumm, 2006), these two constructs "do not necessarily correspond" (Priestley, Biesta & Robinson, 2015, p. 42). That is, there might be a gap between what a teacher believes to be true and what he or she actually does in his or her classroom instruction (Wallace, 2014). In other words, as Rokeach (1968) stated, what a person states as a belief (stated beliefs: the epistemology of how he or she views the nature of teaching or learning) may or may not

represent accurately what the person truly believes (enacted beliefs: spontaneous practices from class observations). Some scholars regard this inconsistency between teachers' beliefs and practice as an indicator of the teacher's ineffectual teaching performance (Anderson & Piazza, 1996; King, Shumow, & Lietz, 2001; Pajares, 1992). In this regard, as Kuzborska (2011) claimed, an awareness of the central role of teachers' beliefs and their relationship with practices are fundamentally important for the successful implementation of a curriculum and teachers' professionalism. Thus, the investigation of teachers' beliefs about teaching and learning can offer important insights into how they make instructive decisions on conceptualizing tasks and delivering knowledge for learners.

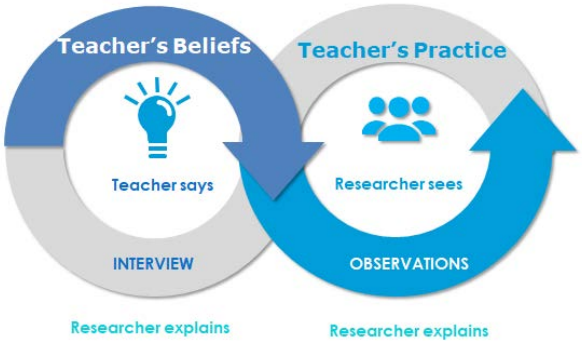
Contextually Situated Teachers' Beliefs and Practices

Traditionally, the study on teachers' beliefs mainly focused on how a teacher views his or her work toward teaching and learning. Then, teachers' stated beliefs are contrasted with his or her actual practices in the classroom (See Figure 1 for more details). In this way, the researchers try to look for consistencies and inconsistencies between beliefs and practice. Methodologically, in those studies, data were generated from interviews with or questionnaire survey on the participating teachers and classroom videos and observation notes of the researcher. Then, it was the researcher's job to account for the research data. For instance, whether there is a gap between beliefs and practices was due largely to the researcher's own interpretation; as a result, there was often a lack of nuanced account of why a teacher makes a certain decision at a certain moment on a certain student. Overall, under this paradigm of research, the participating teacher's voice is missing, and we do not know why he or she makes an instructive choice in what specific context. On the one hand, studying a teacher's belief without the teacher's voice is problematic, as the teacher's self-report or explanation of his or her decision-making is an essential part of the data;

it cannot go without the context where the instructional event is situated. So far, few studies have investigated how teachers' beliefs interact with their teaching decisions and why some beliefs override others. According to Gill and Fives (2015), teacher beliefs should be best approached from the specific grounded context to explore how they filter, frame, guide, or even hinder teachers' decision-making.

Teacher beliefs, influenced by many hidden assumptions (Souto-Manning & Swick, 2006) within an institutional context, are not static but rather fluid, emergent, and likely to be moderated by contextual factors (e.g., Nespor, 1987; Negueruela-Azarola, 2011; van Driel, Beijard, & Verloop, 2001). Existing research on teacher beliefs suggests that the factors

Figure 1: *Traditional Perspective: Teacher Beliefs and Practice*



affecting the formation of a teacher's beliefs and the immediate situated context of the teacher's practice should both be recognized. Borg (2003) asserted that teachers' beliefs are always "practically oriented, personalized, and context-sensitive" (p. 81). Similarly, according to Turner, Christensen and Meyer (2013), teachers' beliefs always display in the "immediate classroom environment" (p. 368) in which teachers act (Priestley, Biesta, & Robinson, 2015). Pajares (1992) warned that "seeing educational beliefs as detached from and unconnected to a broader belief system, for example, is ill advised and probably unproductive" (p. 326). Therefore, the primary

way to understand the complexity of teacher beliefs is the concrete situation where the instruction takes place. Scholars (for example, Ernest, 1991; Skott, 2001) asserted that beliefs should focus on the teacher's enacted beliefs or beliefs-in-action contextually rather than on decontextualized beliefs (i.e., beliefs without taking into account their situated context). Therefore, in examining teacher beliefs, it is imperative to account for the immediate contextual factors that may alter the teacher's previously stated beliefs.

In the same vein, teacher beliefs about student learning are most meaningful when examined in a situated context. As Turner, Christensen and Meyer (2013) claimed, a contextualized view or a more dynamic interpretation of teacher beliefs might offer more promise "about students learning" (p. 370). By contextualizing teacher beliefs and practices, we can better understand the salient features of how the teacher deals with the situation strategically with students' learning in different episodes. As a result, teacher beliefs should be best approached through social interactions in real classroom context (Baurain, 2012) in a moment-by-moment and dynamic manner to unpack the teacher's decision-making processes, which is the position held in the current study.

Teachers of ELLs and Their Beliefs

Studies on teachers' beliefs, according to Reeves (2006), mainly center on the following areas: 1) beliefs about learners and learning; 2) beliefs about the purposes of teaching; 3) beliefs about their views on the subject; 4) beliefs about professional development on learning to teach; and 5) beliefs about self and the teaching role in shaping their classroom practice. For the perspective of teachers' working subjects, teachers' beliefs have been widely investigated in the field of second or foreign language educational fields, with a primary focus on ESL/EFL teachers (e.g., Borg, 2003, 2011; Johnson, 1994; Kuzborska, 2011; Li & Walsh, 2011; Mak,

2011; Nishino, 2012; Song, 2014; Zheng, 2015). In addition, a large amount of research has also been given to teachers of subject areas, such as mathematics (Nathan & Knuth, 2003; Skott, 2009, 2015; Speer, 2005), science (Bryan, 2003; Lee, 2004; Lee, Luykx, Buxton, & Shaver, 2007; Mansour, 2009; Saad & BouJaoude, 2012; Wallace, 2014), social studies and history teachers (Cho & Reich, 2008; Virta, 2002), and so on. There are, however, few studies on how mainstream teachers' beliefs about ELLs and their learning and how those beliefs, if at all, influence their classroom behaviors (Reeves, 2006).

Nevertheless, mainstream teachers' beliefs toward ELL inclusion have been referred to in a number of studies in linguistically and culturally diverse classrooms (Harklau, 2000; Reeves, 2006). According to Reeves (2006), "the portraits of teachers in those studies, although incomplete, grant at least limited insight into teacher experiences with ELLs" (p. 131). These studies centered on teachers' beliefs of the inclusion of ELLs in their classrooms as well as the impact of ELL inclusion on ELLs themselves and the learning environment. Reeves (2006) indicated that teachers in those studies held "ambivalent or unwelcoming attitudes" toward ELLs (p. 131). For example, Pettit's (2011) study on mainstream teachers' beliefs about ELLs revealed that many in-service teachers held some misconceptions about ELLs: They felt frustrated with ELLs and believed that students should be able to acquire English within two years of coming to the United States. Furthermore, many in-service teachers believed that using ELL's first or home language would interfere with learning a second language; it is the responsibility of ESL teachers to teach ELLs. Walker, Shafer, and Iiams' (2004) study, based on a survey of 422 K-12 mainstream teachers in an urban U. S. city, together with the follow-up interviews of six mainstream teachers, revealed that those participants' beliefs toward ELLs appeared "neutral to strongly negatively." About 70% of the mainstream teachers were not actively interested in

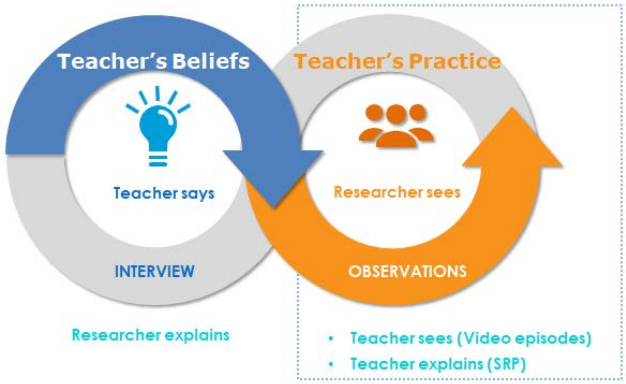
having ELLs in their classrooms. Only 18% of all teachers felt that ELLs academically performed well at school. What were the key factors contributing to such negative teacher beliefs toward ELLs? Walker et al. (2004) listed six factors: 1) Teaching ELLs has become time demanding under the current state assessment requirements; 2) mainstream teachers feel underprepared to teach ELLs; 3) school administrators' negative attitudes toward ELLs influences teachers' position; 4) ELLs are none of their business but the responsibility of ESL teachers; 5) perceptions that ELLs are part of special education; and 6) mainstream teachers' own prejudice or ethnocentric bias toward ELLs.

Similarly, Youngs and Youngs' study (2001) on 143 secondary school mainstream teachers in a community of the Great Plains region in the U. S. indicated that most teachers reported neutral to slightly positive beliefs toward ELLs. Youngs and Youngs (2001) argued that "preservice and in-service teachers should have increased opportunities for exposure to cultural diversity" (p. 97). Then, Youngs and Youngs (2001) suggested that six predictors could play a role in influencing mainstream teachers' beliefs. Namely: 1) general educational experience (for example, teachers with a graduate degree usually have more positive attitudes); 2) specific ESL training; 3) personal contact with diverse cultures; 4) previous working experience with ELLs; 5) demographic characteristics (a person's ethnicity, gender, and age affect his or her social and political attitudes); and 6) personality. In addition, Okhee Lee and her colleagues (e.g., Lee, Luykx, Buxton, & Shaver, 2007) did a study on elementary school teachers' beliefs and practices regarding science instruction in culturally and linguistically diverse classrooms. Their study indicated that changing teachers' beliefs and practices to incorporate students' cultural and linguistic experiences into science instruction is a gradual and challenging process, which requires time and extensive support to develop. The authors also reported that most science

teachers in the study were “insufficiently prepared to meet ELLs’ learning needs” (Lee, et al., 2007, p. 1269) despite the high demand to do so (Bryan & Atwater, 2002).

All these above studies on mainstream teachers’ beliefs about ELLs were based on the stated beliefs of the participants, with data generated from questionnaires and follow-up interviews (as illustrated in Figure 1). There was a lack of attention to the situated contexts of individual teachers and, as a result, why a teacher held what kind of beliefs toward ELLs. Borg

Figure 2: *My Perspective: Teachers’ Beliefs-in-action Perspective*



(2003) stated that different tools for eliciting teacher beliefs (e.g., questionnaires vs. interviews) might yield different or even contradictory answers. Given this caution, it is interesting to note that the majority of previous studies relied heavily on teachers’ self-reported data to examine their beliefs about their students, teaching, and actual instructive practice in the classroom (Borg, 2011; Phipps & Borg, 2009). Few studies focus on how teachers make decisions contextually in their actual classrooms in a particular moment toward their interactive practice with ELLs. Therefore, the present study adopts a micro-analytical approach to investigate how the mainstream teacher interacts with her students and how her decision-making toward her instructive practice reflects her beliefs-in-action (See Figure 2 for my perspective in this study).

Thus, by recognizing the drawbacks of the traditional way of studying teachers' beliefs and practices, in this study, I foreground the teacher's own voices (comments and reflections) on her decision-making during the context-specific interactive practice with ELLs. Through this moment-by-moment, fine grained analysis; we can better understand the teacher's mental thinking and decision-making, and beliefs-in-action. There will be a detailed elaboration on my research perspective in the forthcoming sessions.

Teachers' Decision-Making

Teachers' beliefs about teaching and learning are critical to the decisions teachers make in their practice (Calderhead, 1987). Decision-making involves paying attention to a situation or a matter by selecting a course of action to achieve the overall objectives. Teachers' decisions can guide and shape their instructive behaviors and as a result influence students' learning. According to Jiang (2017), the construct of decision-making has been used as a framework to "provide a cognitive map of the teacher's mental world" on second language teacher education (p. 210). Therefore, an awareness of teachers' decision-making processes can help understand their beliefs system.

Teachers have to deal with multifaceted issues in their teaching practice. Teaching is a process of decision-making. If we categorize the countless decisions the teacher makes during his or her daily practice, they can be approached from different dimensions (Jiang, 2017; Johnson, 1992; Marvin, 1991; Wilen, 2000). For example, based on the time flow of the decision being made, John and Richard (1979) classified instant decisions (during instructive practice) and non-instant decisions (the long-term planning or expectations of the teaching before or after classroom instruction). Similarly, Marvin (1991) categorized teachers' decision-making into planning decisions (before-class on lesson preparation), practicing decisions (in-class instructive

practice), and class management decisions (after-class self-reflection). Based on the dynamic of effective classroom teaching, Wilen (2000) approached teachers' decision-making together with teachers' beliefs and practice. The teachers' beliefs influence their instructive decisions, and in turn, their decisions shape their instructive behaviors. Meanwhile, the dynamic practice with students can go back to teachers' mental processes who adjust their further decisions. Thus, Wilen (2000) proposed to recognize three types of decisions the teachers made in their practice: planning decisions (pre-class lesson planning), interactive decisions (in-class dynamic, moment-by-moment option to take) and evaluative decisions (post-class reflection for further improvement). This study follows Wilen's decision-making framework and particularly focuses on the teacher's interactive decision-making.

Studies have recognized the importance of teachers' decision-making in shaping their class behaviors and instructive practice with students. According to the above-mentioned classification of decisions teachers made, planning decisions refer to the pre-class decisions the teacher made. When teachers prepare their lessons, they take actions to select the curriculum topics, allocate time for different activities, and design class tasks. Interactive decisions refer to the teacher's in-class dynamic, moment-by-moment instructive decisions he or she makes while implementing the lesson plans. Evaluative decisions refer to the teacher's post-class reflections on his or her own teaching after the lesson is delivered.

The classroom is an environment full of unanticipated situations. Teachers have to make interactive decisions to deal with such emerging issues, such as unexpected student responses, silence to teachers' questions, pace adjusting to accommodate students' learning needs, and so on. These decision teachers make during the interactive practice can maintain the flow of the class discourse and engage students' learning (Johnson, 1992). What decision the teacher makes

and what course of action the teacher takes in a way reflect his or her beliefs toward teaching, learning, and students. For example, Johnson (1992) studies six ESL pre-service teachers' interactive decisions during their instructive practices. He used videotaped class observations and teachers' corresponding recall comments to study the frequency of their interactive decisions. The findings indicated that teachers' decisions were situated and shaped by the dynamic context of the interactive practice. In other words, students' unexpected responses and their learning needs influenced teachers' decision-making. Therefore, teachers' decisions during the teacher-students interactive practice must be flexible and contextually situated to promote students' learning.

Scholars reported that the teacher does not always follow the lesson plan but has to adjust his or her teaching content and pacing to fit the uncertain conditions in the classroom (Clark & Peterson, 1986). Smith (1996) maintained that unexpected decision-making is usually provoked by both students and teachers' factors. For instance, students' diminish engagement in a certain task or their low or high motivation toward a topic are the cases in which the teacher has to adjust his or her lesson plan; the teacher encounters a technical issue or finds him or herself underprepared for a topic. Under these circumstances, the teacher has to continuously adjust his or her lesson plans to fit the fluidity and complexity of the classroom. Put another way, the lesson plan is not static and the sole determiner of what happens in the classroom. As Jiang (2017) argued, an experienced teacher always makes interactive decisions appropriate to the situated occasions.

Teachers' interactive decisions are guided by their situated beliefs they hold. Jenkins (2018) proposed that an understanding of the relationship between teachers' beliefs and instructional decision-making would support mainstream teachers' performance in developing

students' disciplinary literacy knowledge. Although Jenkins' study is targeted on students' disciplinary literacy development, it has important implications on understanding the way how teachers' beliefs and their decision-making processes are connected and how teachers make interactive decisions to support ELLs' general literacy development. As discussed above, the appropriate interactive decisions teachers make are a prerequisite of mainstream teachers' competence to interact with students in the classroom. Such decision-making skills could allow mainstream teachers to respond to ELLs' learning needs, adjust their pacing and class activities, and reflect the effectiveness of their own performance. Effective teachers are characterized by their thoughtfulness and adaptability in their practice. Those effective teachers are capable of taking in-the-moment actions appropriately to "support, clarify and extend students' understandings" (Griffith, 2017, p. 3). On the other hand, if a teacher lacks the flexibility of interactive decision-making and is totally guided by the lesson plans, he or she is more likely to ignore the fluidity of the classroom and be less responsive to students' learning.

The classroom is an unpredictable setting (Parsons et al., 2018). Teaching is an interactive process of decision-making. Thus, teachers' instructive behaviors and their decision-making process have become a central topic in educational studies (Zheng, 2015). However, we know little about the beliefs teachers hold and how these beliefs inform their decision-making during the interactive practice with ELLs. Even less is known about the contextual factors that might influence a teacher's beliefs and his or her decision-making processes. So far, few studies have examined mainstream teachers' beliefs and decision-making during their interactive practice with ELLs. This study endeavors to steer our research in such a direction and fill this gap knowledge.

Classroom Interactions, Teacher Beliefs and ELLs' Learning

As discussed above, from a sociocultural perspective, learning is a socially mediated activity orchestrated by the teacher and students wherein they are "active participants in the co-construction of language and curriculum knowledge" (Gibbons, 2003, p. 248). In this process, language functions as a mediator for classroom participation, and then mediation is achieved through the interaction among the class participants. From a discourse perspective, the talk-in-interaction between the teacher and students and among students is considered consequential to students' learning (Thoms, 2012), as many school activities are done in the process of these interactions, in which content is explained, questions are posed and answered, and ideas are discussed and presented. In this sense, as an important display of the teaching practice, classroom interaction is "not just the facilitator of learning but more fundamentally is the source of both what students learn and how they learn" (Thoms, 2012, p. 10).

For ELLs, such classroom interaction between the teacher and students is a major form of their learning on both the content and the language. As Hall (1998) maintained, through this interactive practice, "more experienced members, the less experienced participants learn to recognize what is taking place, and to anticipate the likely unfolding and typical consequences of the uses of the practices' resources" (p. 302). As such, the teacher plays "an important role in shaping classroom discourse" (Thoms, 2012, p. 11) in terms of managing the quantity and quality of students' learning opportunities. In this process, beliefs the teacher holds can shape "the degree of individual learning that will occur" (Hall & Verplaetse, 2000, p. 10). Studies on teachers' beliefs revealed that understanding teachers' beliefs could not be achieved by simple recourse to what they say or do at face value. Rather, a deep understanding is needed of the complex interplay between stated beliefs and context-specific actions as depicted through

classroom interaction, which is crucial to establish teachers' understanding about pedagogy, learners, themselves, and the subject matter.

Methodologically, Li and Walsh (2011) held that beliefs are complex in nature and cannot be approached or explained decontextually with interviews or questionnaire data alone. In this sense, the classroom interactions provide an alternative lens to probe the teacher's beliefs contextually by focusing on the beliefs-in-action unpack why the teacher makes such decision for what specific purposes. In reality, most studies thus far on the relationship between belief and practice are approached from a single causal and linear way (Zheng, 2015) deprived of the situated instructive context. In addition, most studies on teachers' beliefs generate data from questionnaires, interviews, classroom observations, field notes, and other supporting documents. Then, it is the researcher's responsibility to interpret and present these data to readers. That is to say, either the match or mismatch between beliefs and practices is mainly the researcher's explanations, whereas the participant teacher's voices are minimized or missing. In this way, by probing the teacher's beliefs-in-action, we turn our attention to the teacher and invite the teacher to share his or her story on that particular teaching episode in a moment-by-moment manner. Such microanalysis of the teacher's decision-making process in that context, the teacher's own voice being heard, can help us get a deep insight on how beliefs are related to the practice. So far, few studies have been conducted from the perspective of beliefs-in-actions, particularly in the field of ELLs and their mainstream teachers. Thus, the lack of attention to the mainstream teachers' beliefs-in-actions toward ELLs may not only result in a failure to understand teachers' current practices in the field, but also does harm to teachers' support for their professional development (Li & Walsh, 2011).

Summary

The traditional triadic sequence of the IRF pattern in presenting the classroom discourse has proved to be overgeneralized, and the classroom reality is far more complicated than being displayed through this pattern. For example, among all the critiques on the effectiveness of using the IRF pattern, one is its rigidity of teacher-dominated discourse while students have few participating opportunities. Thus, some alternatives have been proposed to describe the discourse pattern in the classroom. The IRFRF pattern, or the extended IRF, is one of the patterns being widely used. Compared with the original IRF pattern, the extend pattern added two extra turns: Response and Feedback, that is immediately following the teacher's feedback, students get one more chance to participate, following by the teacher's second feedback. In this dialogical chain of turns, students are invited to fully participate in the discussion and have more meaningful negotiations with their teachers or peers.

The foregoing review of literature indicated that most studies on teachers' beliefs focus on the connection or discrepancy between teachers' stated beliefs and their practices (Borg, 2001; Kagan, 1992; Pajares, 1992). In reality, a teacher's decision-making is contextually impacted by the immediate situation of a certain teaching moment. Thus, the study of teachers' beliefs cannot take place decontextually; we should study a teacher's beliefs-in-actions to present the teacher's decision-making in a micro-level, moment-by-moment manner.

In bringing teachers' beliefs and classroom practice together, the present study intends to address how a mainstream teacher's beliefs can occur, particularly her beliefs-in-action toward ELLs' learning, in a dynamic and reciprocal way within the wider interactive social context. It attempts to explore how the teacher's beliefs can play a role in his or her decision-making in the process of classroom interactions during the situated classroom instruction, particularly on how

her interaction with ELLs can promote or hinder their classroom participation and learning opportunities. From the perspective of classroom interaction between the teacher and students, by examining the teacher's questioning, turn allocation, wait time, and feedback offered to students on different situations, this study addresses the questions of why the teacher decides to ask what she does, when she does, of whom, in what way, and for what purpose. This study adds to the literature on the construction of learning opportunities through the teacher's management of the interactions by probing his or her beliefs-in-action. The issues arising from the strategic management presented during the teacher's instructive practice will be of interest not only to content teachers with ELLs in the same classroom, but also to teachers from other backgrounds bearing similar teaching philosophies and discourse practices.

CHAPTER 3

METHODOLOGY

A qualitative case study method (Duff, 2008; Merriam, 1998; van Lier, 2005) is employed to investigate the participant's experiences within its context (Baxter & Jack, 2008; Yin, 2008). This approach tracks the complex social phenomenon encompassed within a contextual condition in a way that "cannot be adequately researched in any of the other common research methods" (van Lier, 2005, p. 195). According to Merriam (1998), a qualitative case study is "a person-centered enterprise" based on "an intensive, holistic description and analysis of a single instance, phenomenon, or social unit" using a variety of data being collected (p. 21). As Gall, Gall, and Borg (2003) asserted, the findings of a particular case are considered to be part of the system applicable to other contexts or a case with similar characteristics (Glesne, 2011), because the case study recognizes the "dependence of the parts on the whole, and the processes that operate to interrelate the parts" (Keeves, 1998, p. 1143).

In a case study, the case refers to a unit that has boundaries around it. In this study, the case refers to a mainstream teacher and her classroom practice in a secondary school. Despite such a boundary, as a human being, one cannot deprive of the influence of the environment, such as sociopolitical, economic factors as well as the well-being of the school community. The purpose of the study is to investigate this teacher's working experiences with ELLs through systematic, comprehensive, and in-depth data triangulation and analysis; the goal is to probe and present her teaching practice and personal accounts of her experiences in an urban school with a large ELL population (Duff, 2008; Lincoln & Guba, 1985; Miles & Huberman, 1994).

Research Setting

Description of the context is an important part of case study analysis (Creswell, 1998). In this study, the research site is a middle school (lower secondary school) located in the downtown of a Midwestern city in the United States. In 2016, the median household annual income in this county where the current school district locates was nearly $4,000 lower than that of the state. The county's poverty rate was 4 percent higher than that of the entire state[1]. The city and the surrounding area used to be the automobile-manufacturing center of the country. Migrating workers from other parts of the country dominate the labor force in this area. These workers are pre-dominantly Hispanics with Spanish as their home language. With the decline of automobile industry after the economic crisis, the traditional booming industry lost its attraction to outsiders. Many people began to leave for a living. Thus, public school enrollment has been on the decline.

According to the student enrollment report[2], students in this school district decreased by 5% in 2015 due to the loss of a few major automobile manufacturing companies and other related industrial jobs[3]. Overall, this school district's bilingual population was 2,167 (18% of total student population) from 67 different countries, speaking 53 native languages[2]. Demographically, in this school district, in the past 25 years, the student body "has transitioned from 58% white, 42% minority in 1988 to 29% white and 71% minority in 2013" (Student Enrollment Report, 2016, p. 1). Consequently, the student enrollment had witnessed a decrease of student population on one hand and the demographic shift on the other. In 2017, the top composition of student population was African American (4,242, 39.26%), White (2,702, 25.0%), Hispanic (2097, 19.41%), and Asian/Pacific (699, 6.19%). Altogether, the minority population was up to 10,806 (75.0%) of

1. United States Census Bureau, accessed on May 26, 2018
2. https://www2.ed.gov/programs/magnet/2015/ , accessed on May 26, 2018
3. https://www.propublica.org/, accessed on April 12, 2017

total student population. As the enrollment report indicated, the school community in this school district exhibit high poverty, increasing diversity, and illiteracy.

In addition, the wars and conflicts in some Asian and African regions have brought many refugees to this city. The influx of people from other countries and regions has made this city a linguistically and culturally diverse community. Accounts for these population shifts and school demographics will make this case study applicable to areas with similar situations.

The urban school for this study used to be a middle school consisting of three grades: from Grade 6 to Grade 8. In 2014, this school was restructured into a school from Grade 4 to Grade 8 due to the closure of an elementary school in the same district, which was an indication of the population decline and budget cut in the school district. At the time of this research, there are about 800 students of all levels (4-8). Students in this school speak 24 different languages and dialects. More than 90% of the students receive free or reduced breakfast and lunch daily, which indicates that the majority of the students have a low socioeconomic status (SES). Most students are brought to this school district through refugee services and are sponsored by various churches. ELLs consist of nearly one-third of the student population. In this study, I focused on one of the Grade 7 classes. All seventh graders, regardless of academic ability or language barriers, are in general education science classes. Students (ELLs) in my targeted class come from several countries, including Iraq, Nepal, Iran, Somalia, Burma, Cuba, Venezuela, and Congo.

Why did I select this middle school as my research site? So far, studies on ELLs mainly "focus on elementary school-age students and fewer works have considered the ELLs at secondary level" (Genesee, Lindholm-Leary, Saunders, & Christian, 2005, p. 365). Studies indicated that middle school students have more content workload, more demand on their

academic English skills, and less support from school and home compared to those of elementary schools (Faggella-Luby, Graner, Deshler, & Drew, 2012). As for teachers, "the experiences of secondary teachers, in particular, have received little research attention" (Reeves, 2006, p. 131). Furthermore, Garcia (2009) indicated that researchers have barely examined secondary mainstream teachers' working experiences with ELLs. Thus, my study takes a mainstream teacher working with ELLs from a secondary school as my research participant. I aim to join the conversation by exploring secondary mainstream teachers' working experiences and their challenges (if there are any) in working with ELLs.

Research Participant

The participant in this study is a female, secondary science teacher named Jane, a pseudonym for anonymity. She has nearly 20 years of teaching experience and currently teaches science to four 7th grade classes and two 6th grade classes. In one of her 7th-grade class I observed for this study, there are 35 students, among which approximately one-third (N = 13) are ELLs. Jane used to be a special education teacher in this school. Since 2014, due to the restructuring of the school, she turned to teaching science because this school decided to stop employing special education teachers. Jane was lucky in not being laid off because she had a master's degree in science. According to her, the school's budget cut, partly due to the decreased number of students, led to the discharge of arts, ESL, and special education teachers.

To contextualize Jane, she lives on a farm, which is a 40-minute drive from home to school each day. At home, she has two children: one is a five-year-old in kindergarten, and the other is a seven-year-old in the second grade. Most times, she needs to take care of two children's schooling for morning drop-off and afternoon pickup. While I did the data collection, she frequently reminded me of her schedule. For example, "For today, I can only do the interview

with you before four-thirty because I need to pick up my five-year-old daughter for her Arts class." She told me that she had to get all her work done at school and she did not want to bring any work home. She made full use of her daytime at school to plan her lesson, grade students' paper, mark their attendance, and other academically related work.

Upon her agreement to participate in the study, I visited this class a few times in fall 2016. The purpose of the visit was for class observation only, and I got some idea of how her class was structured and how she interacted with her students. In addition to getting to know her class performance, these previous class observations helped established a rapport between the students and me.

In spring 2017, after I had my project approved by the institutional review board, before the classroom data collection, I came to her school and had a 40-minute talk with her: I explained the project in detail, such as the procedure, expectations, and the potential risks of the study; she expressed further interest in my project. At the same time, she briefly shared with me her working context, such as her educational background, teaching experiences, current workload, her ELLs' demographics, and her perspectives on ELLs. She suggested observing one of her four science classes with more ELLs in it. Thus, I decided to sit in one class with most ELLs and the most diverse group of students as my target class. The range of ELL population in other three classes is from 10 to 11.

In this informal talk, she told me most ELLs in the past were Hispanic with Spanish as their primary home language. However, in the past five years, she had witnessed a demographic shift for the ELL population in her classes. Students with Spanish as their home language were in the decline whereas students from other parts of the world were on the rise. This is, as mentioned earlier, partly due to the decline of the manufacturing industry (automobile) in this area and most

migrant workers beginning to make a living in other parts of the country. Meanwhile, due to the regional conflicts and wars in Asia and Africa of a large population mostly refugees, fluxed into this city for their livings. Thus, her classrooms are increasingly becoming culturally and linguistically diverse.

Due to the social reality in her classroom, Jane encountered huge challenges in better supporting students from other cultural backgrounds. Socio-politically, as the implementation of the accountability policy across the nation, teachers are becoming progressively accountable for students' performance. ELLs, despite their limited English proficiency, are required to take the high-stakes test. Subjects such as Arts, Special Education, and ESL classes are becoming marginalized, and these teachers are discharged from the school district. In Jane's school district, due to budget cuts, there are no special education or ESL teachers at the middle-school level. At present, there is one ESL teacher for the elementary level, and Jane had few chances to interact with that ESL teacher due to their busy schedule at their school. In addition, she never had the chance to attend a professional development workshop on ELLs.

She did not have the expertise in working with ELLs; however, the school district asked her to teach science with a large ELL population and she was placed into the current position. As discussed earlier, U.S. public schools are becoming increasingly accountable for all students' academic performances. Schools are evaluated by the states on students' Adequate Yearly Progress. Thus, the school district pays much attention to their students' test scores. Accordingly, teachers are under huge pressure to improve students' test performances. For Jane, her current school has a large ELL population with low SES. Thus, she is under great pressure to support these students (including ELLs) to perform well on their tests.

Data Collection

Conducting a case study entails bringing together multiple data sources to provide a richer description of the focus-of-interest under investigation (Duff, 2008). The data of this study were collected primarily from three sources: 1) stimulated recall interviews with the participant, 2) teaching videos and class observation notes, and 3) documents of the teaching materials. The researcher visited the same group of students (one seventh-grade class as the targeted class for my study) three times a week for eight consecutive weeks during the Spring 2017 semester. This seventh-grade class has one science session every day from Monday to Friday. The length of the science session varies, ranging from 40 minutes to 50 minutes due to the flexibility of the class schedule. I talked with Jane and got to know her weekly schedule and pacing: from Monday to Wednesday she usually covers some new content and thus more class interactions with her students, while on Thursday and Friday, the focus is more on (self or group) projects, reviews, bonus videos, and quizzes. Therefore, I followed her pacing and observed her teaching sessions from Monday to Wednesday with two occasional visits on her Thursday and Friday sessions, as Jane taught for these two sessions because there was one field trip on Monday and a school event on Wednesday that week. All these arrangements were made in advance with Jane based on her weekly pacing. Overall, I observed 26 times with nearly 24 hours' worth of video. The length of these eight weeks is to make sure that the data can reach saturation.

In addition, I had visited this class a few times in Fall 2016, one semester ahead of my data collection. The purpose of the visit was for class observation only, and I got some idea of how her class is structured and how she interacts with her students. In addition to getting to know her class performance, my previous class observations had helped established a rapport between myself and the students. I was no longer a stranger to them, and as a result, when I set up the

camera for tape recording, they felt much more comfortable with me doing that. Before data collection, the participating teacher signed the written consent form; all the students in this class got the consent form, and I tried to collect back as many forms as possible. Students who did not consent were not used in the data.

Stimulated Recall Protocols (SRP)

The purpose of Stimulated Recall Protocols (SRP) is to invite participants to recall their concurrent thinking and decision making during teaching (Dempsey, 2010; Lyle, 2003; Mackey, 2002; Polio, Gass, & Chapin, 2006; Swain & Lapkin, 2002), which serves to aid "a participant's recall of his thought processes at the time of that behavior" (Calderhead, 1981, p. 212). SRP is the technique of getting participants to view video clips of a lesson and then reflect and comment on their interactive behaviors. These interviews are used to gather further data which cannot be obtained from observations (Gay, Mills, & Airasian, 2006) and to gather teachers' beliefs about questioning and responding strategies (Patton, 2002). In this study, SRP interviews are used to get the participant's insider perspectives for her instructive practice. For the current study, most SRPs were conducted in her classroom either at the end of the school day, or two or three days after the observation, depending on the teacher's schedule and availability. I reviewed her teaching video and prepared questions for the interview. I made sure that most SRPs were collected within the same week of the class observations. According to Gass and Mackey (2000), SRP generates "more valid data when the time between the event and the recall is minimized" (p. 105). In this retrospective process, the participant was asked why she did an action and for what purposes. All SRP responses were audiotaped and transcribed in a verbal protocol (Housner & Griffey, 1985) and later proofread by the participant for data accuracy and reliability (Lincoln & Guba, 1985).

Class Videotapes and Observation Notes

Classroom observation provides an opportunity to record information as it occurs in a setting, and it is fruitful and workable to reveal the classroom teaching and learning (Creswell, 2005). In this study, classroom observations were conducted to capture the full picture of the participant's classroom talks and interactions with students, with a particular focus on the teacher's questioning and responding behaviors. In this study, I undertake non-participant observations, which means, as the researcher, I do not interrupt classroom activities. All classroom observations were video-recorded, with the focus on the teacher and her interaction with ELLs.

In this study, I adopted a phenomenology approach (van Manen, 2001), which means I record what I observed through videotaping and observation notes. Thus, I was able to capture the scene in the classroom as well as gain insights into the factors behind the teachers' discursive behaviors, particularly her questioning and responding behaviors.

As the nature of this targeted class, both ELLs and non-ELLs sit together for class participation in the same classroom. Most class interactions are involved with ELLs and regular students. Very few interactive cases solely take place between the teacher and ELLs. In this regard, my position is to record all these naturally occurred discourses between the teacher and her students but with a focus on analyzing the interactive practice between the teacher and ELLs. I will return to this point in a later section when discussing the limitations of the present study.

Artifacts of the Course Documents

Curriculum, lesson plan, textbooks and other supplementary materials were used as additional data to triangulate across methods of data collection, which was grounded in the contexts they represented (Lincoln & Guba, 1985). These documents provide further information

on the actual practice of classroom interactions between the teacher and ELLs. I obtained all these documents from the research participant.

Data Analysis

The focus of this study is on the interactive practice between the teacher and ELLs. The researcher and the participant sit together to watch her teaching episodes and then do the SRP. The primary question is how to get these interactive episodes for data analysis. In this study, I adapted the Observational Research and Classroom Learning Evaluation (ORACLE) approach on the selection of this interactive classroom discourse between the teacher and students (Hargreaves, Pell, & Merry, 2003). The ORACLE approach is a tool to identify teachers' and student behaviors during the "questioning and responding" interactive process. This approach originated from studies on elementary teachers' questioning behaviors in the late 1970s in Great Britain, and it was later used to examine interactive events in the classroom. Researchers have adopted this approach in multiple ways to meet their needs. The following guidelines help my selection of teaching episodes to be included in data analysis:

- The teacher is interacting;
- ELL must be involved in the interaction (at least partially involved, both verbal and non-verbal included);
- The interaction includes at least one adjacent pair (teacher questioning and students responding);
- The content of the interaction is related to curriculum (not formulaic greeting or other purposes);
- The teacher provides some feedback on students' responses.

(Adapted from Hargreaves, Pell, & Merry, 2003, p. 104)

Based on the above criteria, I provide one example below to illustrate how I determine the front and end of the episode to be selected for data analysis.

Example 1
{SpongeBob SquarePants recently met SpongeSusie Roundpants at a dance. SpongeBob is heterozygous for his square shape, but SpongeSusie is round. Create a Punnett square to show the possibilities that would result if SpongeBob and SpongeSusie had children.}

T:
597 So, if SpongeBob is heterozygous for his square shape,
598 what *genotype* would he have?
Ss:
599 [No response from the students.] (3)
600 <phone rang and the teacher answered the phone> (27)
T:
601 As you have learned, if it is heterozygous (hh),
602 is the two the same or *different*?
Ss
603 [All students]: DIFFERENT.
T:
604 Yes, two different. And SpongeBob has SquarePants, *and obviously*,
605 he is going to be a big S and a little s.
606 So, we got Ss. Then, Sponge Susie is WHAT?
S1:
607 Little t and little t (.hh).
T:
608 Not big T, little t, we're going to stay *the same* combination letters,
609 not big T and little t.
Nina:
610 Little s and little s (0.2).
T:
611 Little s and little s, you got a chance (.hh).

By following the principles of ORACLE, the above example meets the criteria of targeted episode for data analysis. These can be display in the following aspects: 1) the episode is interactive in that both the teacher and students involved in the turn exchange; 2) an ELL (Nina) is present in this episode; 3) there are more than one adjacent pair (there are questioning and responding exchanges); and 4) the exchange related to curriculum.

For the present study, the ORACLE protocol helped me locate the interactive events between the teacher and students. Altogether, I found 32 interactive episodes that adhere to the above criteria. I then transcribed these selected episodes that contain these interactive events for further data analysis, as the full class video transcription is unnecessary and does not adhere to this study's objective and research questions. However, during the data analysis process, I frequently went back to check the context of the teaching episodes and made sure I understood the situation. Furthermore, my observation notes helped fresh my memory to understand the interactive process. As I mentioned earlier, I presented these episodes to the teacher, and on a few occasions she further corrected me if I misunderstood the teaching context.

I follow the tradition of discourse analysis to transcribe the data (Adapted from Atkinson & Heritage, 1984; Du Bois, 2010).The transcription convention and symbols are listed below (See more details in Appendix E). For example, each line of a unit is based on the short sentence uttered in a natural communicative setting: the symbol of two periods ("..") displays the pause, words with capitalized format indicates an emphasis by the interlocutor, and so on.

One more thing needs to be pointed out here: In a mainstream class, both non-ELLs and ELLs sit together in the same classroom, and in an interactive process between the teacher and students, it is hard to catch episodes solely taking place between the teacher and ELLs unless it is a question specifically assigned to an ELL. Therefore, under such reality, in this interactive scenario, only the ELL's name is recognized (pseudonym, such as Gemary, Jacky, and others). For non-ELLs' contributions in the conversation, symbol name is used (such as S1, refers to student 1; Ss refers to all students spontaneously are talking). This representation of both ELLs and non-ELLs in one conversation can reflect the reality of this mainstream classroom. As for the analysis of the data, in most cases, only ELLs' performances was analyzed.

Example of the transcribing codes

T: short form for the teacher

S1: regular student (non-ELLs), S1or S2 is used to indicate the student's category only

William: student with names (pseudonym) refers to ELLs in the classroom

Each line represents an intonation unit.

(.)	barely noticeable pause, usually less than 0.2 seconds
(.3), (3.5)	timed pause
(.hh)	audible speaker's in-breath
(hh)	audible speaker's out-breath
(word)	uncertain transcribed words
(?)	an unclear fragment
(xxx)	inaudible talk
< >	transcriber's comment
{}	transcriber's added background information
Italicized fragments	speaker's emphasis
CAPITALIZED words	speech noticeably louder
.	stopping of the tone unit
/	repeated utterances by the same speaker
,	a continuing intonation
?	rising intonation (not necessarily a question)
-	the sharp cut-off of the prior word or
[ ]	overlapping talk
:	length

[[ ]]	second overlap in proximity to the first
([ ])	phonetic transcription
=	latching (no pause between speaker turns).
@	laughter of a speaker.
((cough))	a non-verbal activity, such as bodily movements

All these selected videotaped interactive episodes were transcribed verbatim in one Microsoft Word document. I analyzed each episode as the basic discourse analytic unit according to the three-level-analytic tool, which is the communicative situation level, communicative event level, and the communicative act level (Hennessy et al., 2016; Hymes, 1972; Saville-Troike, 2003). According to these scholars, class discourse between the teacher and students should be approached from these three levels to examine how the class discursive practice takes place in the socially and culturally situated classroom context. Communicative situations refer to the tasks that the teacher and students are engaging in and they usually consist of several turn exchanges (such as IRF or IRFRF). Communicative events refer to the teacher-student interactive practice on a specific task or question. Communicative acts refer to the specific function of the move in the turn exchanges between the teacher and students, such as further inquiry, elaboration, and evaluation (Hennessy et al., 2016).

Accordingly, at a macro level, I examined the interactive patterns of the communicative situation: IRF or IRFRF pattern (some episodes are shorter while others are longer). At a macro level, as discussed earlier, the IRF model is the discursive pattern researchers found among the teacher-students interactions. IRF implies that the teacher dominates the discourse pattern where students' participation and subsequently, their learning spaces are limited. Thus, the extended model of IRFRF has more students' participation and their learning opportunities are increased. I

used the IRF and the expended IRFRF model in the project to describe the interactive patterns between the teacher and students, which functions as an analytic tool.

Then, at a meso level, I examined the communicative events (turn exchange between the teacher and students: what feedback she provided (positive or negative), the language she used (accessible academic languages) , further questions she initiated, and other paralinguistic features (such as wait time, turn allocation, voices level, and so on).

Lastly, at a micro level, I examined the communicative acts and their functions regarding ELLs' content and language learning: words or concepts related to science and words bearing cultural connotations. In brief, I analyzed the episodes from three levels. At the macro level for interactive patterns: how the length of the interactive practice might affect ELLs' learning; (2) at the meso level, for both scaffolding strategies and nonlinguistic features: what strategies the teacher used and how they were effective for ELLs' learning; and (3) at a micro level for detailed linguistic mediating features: how these linguistic scaffolding strategies might play roles in ELLs' learning. Below illustrates the analytic unit of the data.

Level 1	Episode (Communicative situations; IRF, IRFRF)
Level 2	Turn exchange (Communicative events; Discourse features)
Level 3	Move (Communicative acts; Linguistic features)

To be more specific, I follow the protocols of the discourse analysis (DA) approach. DA is applied to examine the dynamic interactive practice among interlocutors in a naturally occurring setting by conducting a detailed analysis of naturally occurring data transcribed from audio or video recordings. As an analytic tool, DA maintains that "texts constitute a major source of evidence for grounding claims about social structures, relations, and processes" (Fairclough, 1992, p. 211). Through the interpretation of language in use by an individual or a group of

people, it identifies “the multiple meanings assigned to texts” (Phillips & Hardy, 2002, p. 74), and reflects “ways of thinking, believing, valuing” (Gee, 2005, p. 21) in a wide sociocultural context.

The classroom is a setting where learning takes place through the interactive practice between the teacher and students. An important contribution of the DA method is to unveil the classroom talk-in-interaction in a moment-by-moment manner. This fine-grained analysis can help interpret how meaning is made a social reality in this process. Therefore, in this study, DA is used as an inquiry tool to analyze the teacher’s discourse practice and her belief system behind it in a way to reflect the fluid and dynamic nature of social interactive practices. In this study, by taking a DA approach, the analysis of the classroom interactions helps offer insights into the complexity of the teacher’s beliefs-in-action about ELLs and their content and language learning. Teachers’ questions and responses (feedback) were analyzed on how they create spaces for ELLs’ discursive participation and scaffold their learning of English and using English to learn the content. The goal of the DA is to uncover the meaning of interaction by scrutiny of how each turn is produced and received in real-time classroom interactions.

Specifically, I adopted Gee’s (2005) big D and small d approach. According to Gee, the big D and small d help us understand the nature of the social interaction among people: where does the discourse locate and how it functions to reveal the relationship between human being and the surrounding environment and among human being themselves. Thus, for the big D, such factors include the sociocultural context of the event, the classroom environment, the pressures and challenges on the teachers. For the small d, it mainly focuses on how the meaning is mediated between the teacher and students, and how students’ learning is achieved through these interactive practices.

In other words, the teacher's feedback (turn) is largely dependent on students' immediate responses (turn) to the teacher's initiated (turn) question which is unpredictable and contextual. Therefore, a moment-by-moment analysis of how the teacher provides feedback on students' responses can be a useful methodology to probe the teacher's decision-making and her beliefs on it. For example, in the following episode, when the student gets the answer correct, but with wrong pronunciation, the teacher gave the comment "very close," and then she provided the correct pronunciation of the word "Punnett." In this turn exchange, the teacher offers learning space to her students and students get the correct answer. In this way, the teacher did not only pay attention to the correct answer but also to the students' pronunciation.

Example 2

{Punnett Square}

T:

456 So, what tool do we use to help determine the alleles of an organism? [Questioning]

S1:

457 A "pju'nit" square.

T:

458 Very close. A "pΛnit" square. [Comment][Clarification]

S:

459 Oh. "pΛnit".

T:

460 So, it's Punnett square. [Clarification]

Below is another example of the teacher's feedback on her students' responses.

Below is another example.

Example 3

{Blank filling exercises related to alleles}

T:

345 Alleles might determine you have curly hair or straight hair, tall or short and etc. . [The phone rings and answer the phone call in 5 seconds]

346 So, the first part says allele, raise your hand if you know what fits in that blank? [5 second], Mary! [Wait time][Questioning]

Mary:

347 very end.

T:

348 Not very end. [3 second] It says a __form of a gene. [Comment][Negative Response]
349 Oh, you are right. I'm sorry. It was an end. [Clarification]
350 So, very end. Yea, so, a very end form of a gene. [Clarification]
351 You might see this as you look across your family:
352 some might have brown hair, some might have black hair,
353 eye color, those that they have different that they've got similar
354 genes, but, they just slightly different, and that's the allele that
355 makes the difference. [Elaboration][Build on idea]

In this example, the teacher first thought the student was wrong, then realized that she was wrong, and then elaborated on the concept of alleles in detail. In fact, as the nature of the study focuses on questioning and responding, I paid special attention to how the teacher responds to students' answers: positive or negative, with or without elaboration, and why. Then based on the teacher's feedback and her reaction to her students, I categorized the strategies the teacher employed in supporting ELLs' content and language learning.

In this coding process, I first categorized the data into two categories: positive feedback and negative feedback. For example, if it is negative feedback, did the teacher just say "No" without any elaboration or did the teacher offer further explanations or clarifications toward the student's answers? Then, if the teacher elaborated further on a certain concept or topic based on students' responses, what strategies did the teacher use to mediate their learning? These strategies align with the strategies discussed in the literature review: effective strategies accommodating ELLs' learning.

The following table is the coding schemes used in data analysis. These coding schemes categorize the function of the episodes. For example, if a certain episode focuses on scientific inquiry, I focus on how the teacher scaffolds ELLs' learning through mediation and accommodation strategies. Did the teacher wait for ELLs' answers? Did the teacher elaborate the

key point with additional examples? Did the teacher accommodate ELLs' learning through accessible languages?

Table 1: *The Coding Scheme*

Cluster code	Cluster name	Description & Example
SP	Science practice	Some concepts are explained and then practiced; content area knowledge is emphasized
LP	Linguistic practice	Language and linguistic features are highlighted, such as word meaning, sentence structure, grammatical correction, words with cultural meaning, pronunciation correction
PS	Problem-solving	Solving scientific problems and inviting students' participation
FD	Further development	Eliciting new ideas with proper examples and topics; Further elaboration and further questions
PA	Pacing adjusting pacing	Adjusting teaching based on students' learning needs, such as adding or reducing or examples
TE	Turn extending	Adding new exchanging turns for more student participation
TA	Turn allocation	Allocating turns to different students
WT	Wait time	Waiting for students' responses
SQ	Student questioning	Students initiated questions in the interactive process
TQ	Teacher questioning	Teacher initiated display or referential questions
TS	Topic transition	Features of how the teacher shifting from one topic to the other
PC	Points clarification	The use of repeating, revoicing, or recasting techniques
Rp	Positive response	The teacher's feedback on a positive response
Rn	Negative response	The teacher's feedback on a negative response
TC	Teacher comment	The teacher's comments on students' answers
MT	Metatalk	Use of academic language or language in the discipline
Aa	Accepting answer	Use of "yes", ""good", "great" and other discourse markers
Ra	Rejecting answer	Use of "no", ""sorry", "well" and other discourse markers
LS	Linguistic scaffolding	Paying attention to pronunciation, word formation and explanations and other linguistic features
DL	Discourse scaffolding	Technical language use, structures, patterns, registers
CS	Cultural scaffolding	Cultural word explanations, connect with ELLs' life experiences

By following the above code schemes and the three level analytic framework indicated above, I analyzed the teacher and students' interactive practices.

For the stimulus recall interview data, content analysis (Krippendorf, 2012) was used with the assumption that "words and phrases mentioned most often are those reflecting important concerns in communication" (Parker & Hurry, 2007, p. 303). This inquiry tool identifies the salient features and themes related to the participant's beliefs-in-action toward her teaching practice and ELLs' learning. Content analysis is used inductively to reveal the meanings of the

text (Lincoln & Guba, 1985). Therefore, for this study, through careful reading and coding, different themes were categorized (Glesne, 2011) to organize the qualitative reporting of thematic findings (Creswell, 1998, 2005, 2007). Themes emerged from the coded data and then were categorized into sets of themes. In addition, the present study compares the categories and themes with the existing literature on teachers' beliefs and practices (Merriam, 2009; Wahyuni, 2012). In brief, I make sure that all these categorized themes fit with my proposed research questions: how the teacher scaffolds ELLs' English and content learning and how the teacher's decisions reflect her beliefs-in-action.

CHAPTER 4

RESEARCH FINDINGS

I charted the passage of Jane's interactive practice with ELLs from the very first time of stepping into her class to the end of my observations. I witnessed that her instruction was highly structured and teacher-dominated whereas students' class participation was limited. The interactive pattern between the teacher and students was mainly on the "teacher questioning-student responding-teacher commenting" format, similar to the traditional IRF triadic sequence. In her teaching practice, overall, student-initiated questions and group discussion were rare. ELLs responded passively to the teacher's questions if asked; otherwise, they sit there quietly without much interaction with their teacher and peers. The findings of this project mainly address the two research questions: (1) How the teacher manages her interactive practice with ELLs and provides scaffolded support to ELLs' content and English language learning; and (2) How her decision-making on this interactive practice reflects her beliefs-in-actions. Results indicate that the teacher's decision-making on explanation, elaboration, and feedback during her interactive practice with ELLs largely depends on the situated context of students' participation and contribution in the dynamic interactive environment.

Findings revealed that Jane employed some strategies to scaffold ELLs' content and language learning, such as impromptu adjustment of teaching content with additional examples, and extended turns for further thinking. These strategies are related to the linguistic and discourse strategies discussed earlier in the literature review section. On the other hand, in some cases, the teacher's interactive practices with ELLs turned out to be less efficient due to her rapid pace, limited elaboration, and lack of expertise in SLA. Overall, her challenges and dilemmas that arise from her interactive practice with ELLs were largely due to her lack of expertise in

second language teaching pedagogy and her "sink or swim" perspective toward ELLs. A surprise finding was that despite her lack of expertise in linguistic scaffolding toward ELLs she is very hesitant to take professional development opportunities on SLA and get her ELL certificate thereafter.

For the clarity of presentation, this section approaches the teacher's discursive practice with ELLs from three dimensions: (1) interactive patterns with ELLs: IRF and IRFRF patterns; (2) the teacher's instructive practices toward ELLs: ways to scaffold ELLs' learning; and (3) the teacher's responses to ELLs' language and content learning: Lack of expertise in SLA but no interest in ELL certificate. Specifically, these dimensions include the following subcategories, which constitute the backbone of the research findings:

(1) The Teacher's Interactive Patterns with ELLs

(1a) IRF pattern: Responding without elaboration (The teacher uses the word "Yes" or "No" and terminates the interaction)

(1b) IRFRF Pattern: Responding with elaboration (The teacher probes further on why the answer is correct or wrong)

(2) The teacher's instructive practices: Accommodation (or lack of) toward ELLs' Learning

(2a) Teaching adjustment

(2b) Extended exchanges for further interaction

(2c) Wait time without accommodation

(2d) Limited turn allocation for ELLs

(3) The teacher's feedback on ELL's language and content learning: Lack of expertise in SLA but no interest in ELL certificate

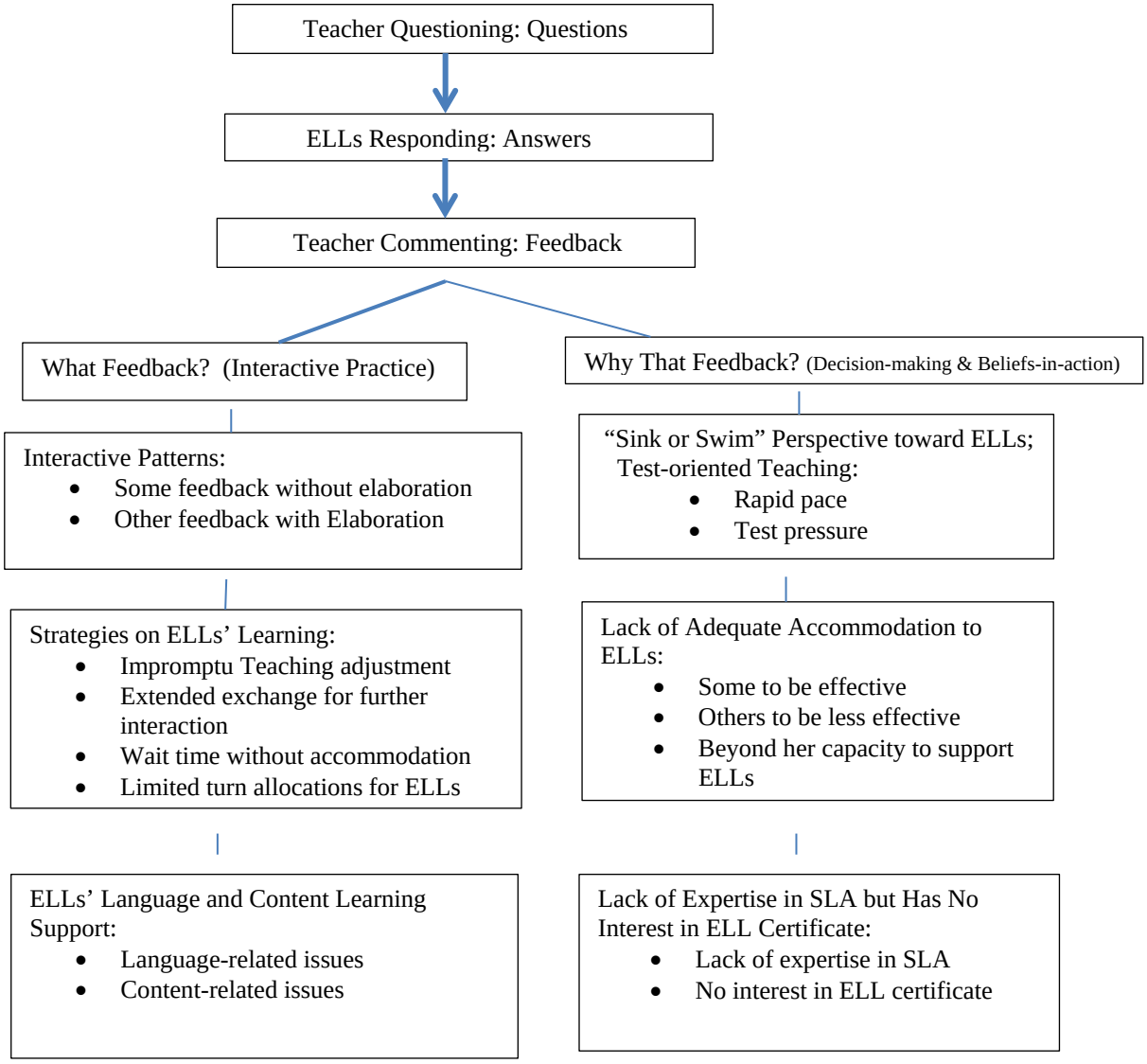
(3a) Responding to language-related issues (Lack of expertise in Second Language Acquisition)

(3b) Responding to content-related issues (Less accessible language in a multicultural context)

(3c) Responding to ELL support: No interest in ELL certificate

Table 2 indicates the overall organization of the research findings.

Table 2: *The Interactive Practice between the Teacher and ELLs*



As the nature of the research design, the teacher and I sat side by side and watched the Selected episodes together. Then the teacher made her stimulus recalls based on my eliciting questions. Thus, in each episode, I cluster both research questions (how the teacher scaffolds

ELLs' learning and how she makes her decisions) and answer them at the same time, together with my comments on the teacher's discursive practice in terms of ELLs' learning. The rationale to present in this manner is that teachers' decision-making is contextually situated and her self-report on why she teaches in that way are interwoven together, which will make the narrative systematic and coherent. Table 3 indicates the structure of each teaching episode: how the interactive practice takes place between the teacher and ELLs, and how Jane reflects on her teaching.

Table 3: *The Structure of Selected Teaching Episode*

Episode 1 {Topic and Background Information} **T**: The teacher's questions **S1**: Regular student's (Non-ELLs), the number indicates different students **George**: The pseudonym of ELL The Researcher's Questions: My elicited questions to Jane The Teacher's Response: Jane's SRP and sharing Remarks: My commentaries based on my observation, the teacher's response, and the relevant literature

The Teacher's Interactive Patterns with ELLs

Based on my observations, during the interactive practice with ELLs, the teacher spent more time on certain topics while she took less time on other topics. The rationale to practice in this way is not based on students' learning needs but on some other external factors, such as high-stakes tests. For example, in some cases, the teacher provides feedback without elaboration, and thus she terminates the dialogue and shifts to other topics. While in other cases, on certain topics, the teacher provides feedback with elaboration and thus the conversation continues. These two different ways of practice play different roles on ELLs' learning opportunities in terms of meaning negotiation, critical thinking, and language development.

IRF Pattern: Without Elaboration

During the interactive practice with her students, Jane initiated a question, and then students offered their answers. Toward students' answers, be it right or wrong, in some cases, her feedback on them is simply a positive or a negative comment (e.g., with "Yes" and "No"). There are no elaborations on why the answer is wrong and right. In short, under that circumstance, Jane paid less attention to students' understanding and she just wanted to move to the next topic. The following displays how she provides feedback on ELLs' responses in terms of (1) negative responding without elaboration; and (2) positive responding without elaboration.

***Negative Responding*.** In some cases, if students came up with an incorrect answer, the teacher simply responded with "No" or even ignored their contribution. For example, the teacher used words such as "No,", "I don't think so," and "Sorry" without any elaboration on why the answer was incorrect. Therefore, the dialogue between the teacher and students terminated. The following episode indicated how the teacher made a negative response to students' answers on the topic of sexual reproduction.

Episode 1
{The topic is on the differences between asexual reproduction and sexual reproduction}

T:
633 We talked about how a sex cell splits for eggs (.2), for example, that the DNA
634 splits, and have the chromosome and one cover the other, so that you only
635 have HALF of them, so that (hh.), when the eggs and sperm meet, then you
636 have 46 chromosomes. We have been talking about genotype and phenotype,
637 and anyone remembers, what is the genotype for *male* (hh)?
S1:
638 A big letter T.
T:
639 No.
Emily:
640 Big letter A and small letter a. (1.0)
T:
641 And we want the two letters, two alleles that go together for a male (.hh)

Jeff:
642 Upper case X and lower case x
T:
643 No. XY.
644 Let's move on in a SECOND.
645 *Raise your hand if you need some time*.

The Researcher's Question:

In this episode, students did not respond correctly to your question. Why do you respond in that way? I noticed some academic vocabularies in your question, such as chromosome, genotype, and phenotype. Is it necessary to explain them for ELLs' learning?

Teacher's Response:

We talked about this point three weeks' ago. I am surprised to know that they did not remember the genotype of a male. As this is the lead-in part of the lesson, I do not want to spend too much time on it. At that moment, I'm thinking of going forward. If I stay on that topic, I'm afraid I cannot cover the required content. If I do not cover the necessary points, my students might be in a disadvantageous position during the test. [The test refers to the mandatory test required by the state, used for the adequate yearly progress (AYP) report]. We have a curriculum, but the course curriculum does not always follow what is on the test. In the class, since students did not seem to remember, I decided to give the answer and reinforce the correct vocabulary and answer. I just want to move on.

However, if I teach this part again, I would draw pictures of a male and a female's symbols. With the picture, I will tell them that the genotype for males is X Y and some of the chromosomes will have the X with them, some of them will have Y. A woman produces eggs. Those eggs, those chromosome divides, and the egg will have either an X or an X. I think this

visual aid might help my ELLs. For these academic words, these scientific concepts are hard for all students. I think I will do a handout and help them catch the meaning of these words.

Remarks:

In this episode, all three students' answers are incorrect. The teacher responded negatively (using the word "No") without any elaboration on why the answer is incorrect. In addition, Emily's answer is neglected without any comment on it. In the end, the teacher provides the answer at the knowledge transmission level. We are not sure of whether her students, particularly those ELLs, fully understand this concept. As the teacher reported, she already covered this topic in a previous unit. Unfortunately, students still did not get it by this class. If the teacher gives an example related to the human being (e.g., the birth of a new baby), that might arouse students' learning interests and their learning might take a different way. As is evidenced from Jane's report and my teaching observations, she still holds the beliefs that science is more of some "fixed body of content" than the modern constructive approach of "inquiry-based learning" (Priestley, Biesta, & Robinson, 2015, p. 40), as is shown in her reflective report, "I decided to give the answer."

In addition, the teacher reported that there is no time for her to do more elaboration on this topic as these concepts are not the key to her teaching. In the class, due to some factors such as the AYP requirement, the teacher has to move forward while neglecting students' specific learning needs. As Jane reported, she was more likely to cover the test curriculum than the course subject curriculum. This test pressure has affected her decision-making on the selection of teaching content. Some scholars asserted that under current sociocultural context, particularly the test pressure, mainstream teachers had to focus on lower-order learning with fewer inquiry-based projects and therefore the quality of teaching for the subject is substantially decreased (McNeil,

2000). In the same vein, Anderson (2012) maintained that greater efforts were being currently made to align curriculum and instruction with state standards and tests; less instructional time was given to science, and less creativity in teaching and learning, and fewer activities that might aid engagement were being used. In this case, I noticed that the external sociopolitical environment did affect Jane's selections of teaching content and way of interactive practice with her students.

Lastly, Jane reported that she would use a visual aid for the explanation of these academic words, such as genotype and chromosome, and so on. Unfortunately, until the end of my class observation, she did not use such a visual aid strategy in other word learning in her class. As reported by Jane, "these scientific concepts are hard for all students. I think I will do a handout and help them catch the meaning of these words." In reality, she did not make these vocabulary handouts for ELLs' learning in other units despite her willingness to do that practice. Interestingly, the teacher realizes her own drawbacks and reflects on her willingness to change her teaching in the future. However, in her practice, she still goes back to her "normal" or "comfortable" way of teaching: the expected "change" does not take place in her performance. Her inconsistency between her reflection and her actual practice is possibly due to her "swim or sink" perspective toward ELLs: ELLs should be immersed into the English learning environment and be responsible for their own language acquisition; she might position herself more of a science teacher instead of a language teacher. I will come back to this point in the forthcoming session.

***Positive Responding*.** The positive response from students is a good sign of their knowledge and understanding. However, we still need to treat positive feedback with caution. Sometimes, students' correct responses might not truly mean that they fully understand the point.

In this study, in some cases, if her students get the answers correct, she expresses her satisfaction and then closes the dialogue. For example, Jane uses a few positive discourse markers such as "Good," "Great," and "Yes" to express her satisfaction and then move to something else. This rapid pace to move forward might reduce ELLs' learning opportunities as previously mentioned. The following episodes are examples of this type.

The use of "Good" and "Yes." As a way of evaluation, the teacher's feedback plays an important role in students' learning. We all learn from our feedback. However, a positive feedback might not always be a good thing. Sometimes, it might indicate the close of a turn and no further elaboration is necessary. In reality, this might deprive some ELLs of their learning opportunities. Below is an example in this case.

Episode 2
{Recessive allele and dominant allele}
T:
383 A recessive allele will only show up when there is no dominant allele
384 in place. So if there are two of them together, what color of eyes will
385 you see, *blue or yellow*? (.hh)
Nina:
386 Blue eyes.
T:
387 Good—
388 Any questions on allele or dominant? (1.0)
389 All right, let's move on.

The Researcher's Question:

The word "good" in your feedback indicates you are satisfied with students' knowledge of alleles. In your teaching, after saying words such as "good" or "great," how do you make sure ELLs can get the point? Do you think it is necessary to offer further elaborations on the concept?
Teacher's Response:

Well, in the situation I would say, you know, I use “good” and “great”, somewhat interchangeably. One is no better than the other is. Oh, I think, at the point, I thought they understand everything that is supposed to, so I think let us move on. Therefore, it is a kind of brief keeping moving on to the next point. I think there is no need for further elaboration, right? Remarks:

Scholars have reported that the use of positive feedback needs to be cautious. On one hand, it can raise their confidence in class participation; on the other hand, it might have the potential of blocking their learning space (Waring, 2008; Wong & Waring, 2009). For some students, such as ELLs, even they get the correct answer. However, if you ask them to explain it, they might still have some issues. For example, as reported in Waring’s (2008) study, after the teacher used the word “good” as a positive feedback and a transitional device to move on, one student came up with some questions and the teacher had to stop for more explanations. This extended explanation turned out to be a great discussion on the same topic. Therefore, in some cases, for example, if an ELL gets a correct answer, it is necessary for the teacher to ask him or her on how he or she gets the answer.

In addition, in this episode, the language produced by the student is very simple, limited to a few words. The “extra questioning” on how he or she gets the answer can be a good way to practice ELLs’ academic language. For example, the teacher can ask ELLs to practice the academic language with more emphasis on the accuracy and complexity of their utterances. Sometimes, the teacher can ask ELLs to give some life examples to assess their understanding of the concept. All these linguistic strategies are beneficial to enhance ELLs’ learning, which, unfortunately, the teacher neglects all these strategies based on her simple positive feedback.

In the above episode, according to Jane, the discourse marker "good" is used as a transitional device to move to the next point; this usage is echoed with some previous studies (Seedhouse, 2004; Waring, 2008). In this regard, Wong and Waring (2009) proposed to use such positive feedback devices (e.g., "very good" and "great") sparingly and suggested using some neutral evaluative words, such as "OK," and "All right." These neutral words, according to Waring (2008) have the potential of further extending the turns and developing the interaction.

In a few cases, the teacher was rushing the class either with the content or with the task directions. For example, she initiated a question and quickly provided her students with the answer without any further elaboration. The following episode indicates such a practice.

Episode 3
{The topic is on genetic disease}
T:
499 Those who are heterozygous <Aa> are carriers, meaning they have
500 the mutated allele and can pass it on but are healthy themselves.
501 Remember, what does *the carrier* mean? <Teacher's self-answering> (0.5)
Olivia:
502 [What is the question?] (0.2)
T:
503 Yes. [They have the alleles for it, but they are not affected by the disease.]

The Researcher's Question:

Why don't you give students a few seconds to think of the answer instead of offering the answer directly to them? In this episode, I noticed that one student [Olivia] in this case is not sure of the question. Why don't you repeat your question and give her a chance?

Teacher's Response:

I did not realize being in a rush to complete the assignment and thought I would just give them the term "carrier" to move on to other questions that they may have. I need to check their understanding of the term before moving forward.

Remarks:

In this episode, Olivia is not sure of the question. Unfortunately, the teacher does not clarify the question but immediately self-answered the question. Surprisingly, for this question, the student did not get the chance to utter a word. The teacher used the positive feedback "Yes" and then provided the answer by herself. We are not sure of whether the whole class gets the meaning of the concept "carrier" or not. Jane's rapid pace is due to the intense curriculum content she has to cover. In fact, in the classroom, a teacher's self-answered question is not recommended, as it can be a sign of a teacher-dominated class where students' participation and learning opportunities are highly reduced (Chin, 2006). Moreover, as discussed earlier in the literature review section, questioning is a tool used to assess students' learning and develop their critical thinking skills. Teachers should have some consciousness of how to ask the questions for their students. For example, she should prepare some questions during her lesson planning stage. During the teaching, she needs to think of the comprehensibility of her question, such as words to use and sentence structure accessible for some slow language learners. Moreover, she should think of what kind of answers she might get from her ELLs, such as short and simple answers, no response at all, inaccurate answers, and so on. Then, the teacher should think of how she will respond to them and provide them with some effective feedback. If the teacher has this sense of "questioning and feedback strategies," her ELLs could benefit from her questioning and feedback. Below is another example of this teacher's rapid pace during her interactive practice with ELLs.

Episode 4

<The topic is of genotype and phenotype>

T:

267 So, the phenotype is the physical appearance. So, they are telling
268 you yellow body is dominant to blue. So that means that the

269 dominant trait is going to be capitalized= So (.hh), the yellow body is a
270 capital Y. And whatever the other one is a lower case y. Usually,
271 I put a *tail* on it because, otherwise, the two Ys are the same. SO,
272 if we have a genotype of capital Y and capital Y, *what color* we
273 will end up with?

Cathy:

274 Yellow.

T:

275 Right. *Yellow*=
276 No blue in it.

Researcher's Question:

At this interaction, you ask the student to give you the answer, why don't you let them explain how they get their answer? In addition, students can guess the answer very easily since there are only two choices. How do you make sure that students fully get the point?

Teacher's Response:

Actually, I didn't realize that I said YY doesn't have any blue, so I was wrong, oops! I was rushing to get to the class activity instead of working on the "why." In this class, I have many activities to work on and they can get more practice later in class. Sometimes questions that have easy responses will catch students that normally would not focus; grabbing their attention with something, they can do or answer.

Remarks:

The teacher uses this question as a classroom management skill to grab their attention. For this simple question with short answers, Jane thinks there is no need for her to do any elaboration on it. In other words, she does not care about the correctness of her students' answers. If the student responds negatively, she might tell them the correct answer and then move to the key points of the class. At this point, the function of the question is not on ELLs' learning but more on something else, such as catching their attention, in this case. As a result, this interactive

practice, as reported by the teacher, is used to bring students' attention for classroom management purposes, and subsequently, their learning opportunities are diminished.

In this episode, ELLs do not get enough chance to practice their language skills, and their use of the academic language is restricted to the word level. For example, Cathy's answer is only one word "yellow" whereas the teacher revoices Cathy's answer with the same word instead of a full sentence. In this sense, ELLs' language intake from their teacher is very limited. Actually, the teacher should raise her awareness of culturally relevant pedagogy and try every means to enhance ELLs' language practice (Ladson-Billings, 2011). For instance, by adding one or two full sentences in a formal register, as described by Gibbons (2006), ELLs will acquire academic language (register) from their teacher for their content learning and language development. Furthermore, based on my class observation, the teacher talk during the class interactive practice is very conservational. As discussed earlier, the teacher's language use is one of the main sources of ELLs' language intake. It should be complete, academic, and formal.

IRFRF Pattern: With Elaboration

In some cases, the teacher responded to students' incorrect answers with some elaborations. Similarly, in other cases, if ELLs get the answer correct, the teacher continues to ask them to explain their answers. This process pushes ELLs to think more of their answers, and they get further chances to practice their academic language skills. Below is an example of how the teacher explains the color of the offspring.

Episode 5
{Topic: Punnett Square}
T:
232 Let's say, for example, we had a parent.
233 <The teacher draws a square on the board>
234 In this *Punnett Square*, we put one parent trait up here
235 <top of the square>. Let's say that this parent has a homozygous
236 for brown eyes. Let's say this parent <left of the square>, for

homozygous for blue eyes. So what we do is, kind of, like a multiplication chart, so, whatever the dominate trait is, that /is the big B, we always write first, so we got big B, little b. … This is going to give us the offspring that is possible for these two parents. Whether it is heterozygous or homozygous…... So, here we only got big B and little b… So, *what colors* of these two parents' offspring? I mean *the color* of their EYES. (3.0)

Olivia:
They have brown eyes.

T:
Yes, we got brown eyes. So, Olivia, *how do you know that*?

Olivia:
(5.5) Because… I have big B and little b.

T:
Then… —

Olivia:
In big B and small b (1.5), the dominant allele is in brown color and the recessive allele is blue color (hh). Therefore, big B and small b should be in brown color((relaxed)).

T:
Great! In Bb, the dominant allele is brown eye and therefore their offspring will have *brown* eyes. Let's continue, …
So, this doesn't mean that all their four children that they will be big B and little b, this is for EVERY pregnancy.

T:
What are the chances, *how many* (.2) out of four (hh) will be big B and little b?

Olivia:
Three! (5.0) There will be three out of four. Oh, Sorry!
Four out of four!

T:
Yes. Four out of four!
<Then the teacher turns to the next topic>

Table 4: *Punnett Square*

	B	B
b	Bb	Bb
b	Bb	Bb

The Researcher's Question:

In this episode, for the first round of your interaction with students, the student gets the answer correct. Why do you continue to ask her further questions on the same topic?

Teacher's Response:

As I mentioned earlier, for the question used in the episode, it is more like an A or B selective question. Even they do not understand the fact they can guess the answer. I was introducing the vocabulary and then realized that they did not know "trait" and "Punnett Square." I thought a graph would help them get the initial idea of what they are and we would use them later as they became more familiar. As you know, this is a key topic in our curriculum. Therefore, I draw a Punnett Square there to assess their understanding [Table 4]. I let the student tell me how she got the answer. In this way, by adding one more question, I can get whether she really understand the point or not. Actually, as you might notice, I asked her two more questions: one is to ask her to explain to me her answer; the other one is to test her understanding of the Punnett Square. After these questions, I confirm that my students, including ELLs, are getting the point, and then I move on.

Remarks:

In this episode, the teacher first initiates a question on the color of the offspring based on her detailed explanation of the concept. One student replied the question with a correct answer, and then the teacher commented on the answer with affirmation. However, the teacher does not stop there and move to another topic. Instead, she asks, "How do you know that?" to further assess students' knowledge of the concept. The rationale to do that elaboration, as reported by the teacher, is due to the importance of the topic "Punnett Square" in the curriculum. In addition, in this episode, the teacher's intentional questioning brings about good output from one ELL. This student gets the chance to practice her academic language: she explains the construct

through longer and complex sentences. Thus, the content and language learning are organically integrated (Gibbons, 2015).

Below is one more example of how the teacher explains the concept of widow's peak and straight hairline. Then, based on the student's positive response, she actively adds one more task for her student to enhance his learning experiences.

Episode 6

T:

Let's say A represents the allele for a widow's peak, Remember that
the widow's peak, you pull your hairline back <The teacher demonstrates
this hairstyle using her own hair> and then projects down a little bit, and
that's a widow's peak, it if goes straight across, that's the straight hairline.

S1:

Is that more often seen in boys?

T:

Well, [S1] said it is more on boys. I think we noticed more on boys because
their hair tends to be shorter. Er (.3) (.hh), girls usually pull their hair back.
<The teacher pulls her hair back>
Actually, I can pull my hair back and you can see
whether I have it or not.
By the way, do you know *anybody* has widow's peak around you?

S2:

I don't think so. Nobody has it.

Jacky:

Mr. F has one @<Mr. F is a teacher in the same school>

T:

Jacky says Mr. F has one. So, when you go to social studies class to meet
Mr. F, and you can check his trait there. And you can ask him, "Does your
son have a widow's peak?" Then let me know when you are done @

Jacky:

Sure, I will.

The Researcher's Question:

Your explanation on window's peak is interesting. Why do you explain this concept in such detail? Do you think a picture of widow's peak will help here? In addition, what is the purpose of asking students to check with Mr. F for his hairline?

Teacher's Response:

You know, when I was a student, there were TV shows that people have dominant widow's peak. I don't know if you know Adam Tracy, so everyone knows what it was. But, now, kids are getting their hair cut, and so they don't know whether they have widow' peak because people' style is changing. In class, when I mentioned this concept, I notice that most of my students are not familiar with it. It will be helpful to give some extra examples. For science, it is interesting to be connected to our life. This example is related to their life experiences and I'm sure the student has something to share. Perhaps you also noticed that I use my hand to illustrate the point and this can help students' application of the knowledge. Additionally, the student's explanation is good, and from that explanation, I can assume they follow me. For Mr. F's example, I feel proud of Jacky as he gets my point. Therefore, I try to think of an adult that had one at our school. Yes, Mr. F does have one. I think so. If the student can check with Mr. F and his son, it would give us a good science report next class. By the way, I know Mr. F has one son. Oh, here, thanks for your suggestion. I should use a picture of widow's peak in my teaching next time. The picture is better than my own demonstration. I can explain the concept with the help of the picture. Thanks!

Remarks:

The teacher tries to simplify the concept of "widow's peak" by using her own example: She pulls her hair and let her students tell what she means by referring to this concept. She uses some academic language in an accessible way to explain the concept. This elaboration does engage her students by asking them to look for someone having the widow's peak hairline. To our delight, an ELL Jacky got the point and mentioned that one of his teachers, Mr. F, had one. Jane did not stop at this point. She continued to ask the class (particularly Jacky) to talk with Mr.

F and practice the observation skills. At this moment, Jane assigned a learning task for Jacky and let him check with Mr. F and his son for their hairlines. With this "extra" task in mind, Jacky got the chance to connect the concept with our life experiences. Jacky gets one more time to probe the concept with real persons around us. For example, what are the chances of Mr. F and his son's hairline being similar? Is there any heredity reason behind it? Jacky's report should be a good scientific learning experience.

In this example, the teacher continues to assess student's understanding despite her correct response. By probing the question further, the student gets an additional chance to practice what they have learned. Interestingly, the student used some academic language to organize his answer. The teacher makes her decision based on her beliefs that science learning is more interesting and fun if it is connected with their life examples (Villegas & Lucas, 2002). Due to this added "task" from the teacher, students get a chance to explain how they get that correct answer with some metalanguage. Meanwhile, as discussed earlier, teachers' decision-making in the classroom is situated and unpredictable (Clark & Peterson, 1986; Smith, 1996). Sometimes, an unexpected event occurs. In this case, the teacher intentionally pushes one of her ELLs to go for the task of exploring more knowledge from our daily life. Overall, this extended elaboration is not redundant but very necessary.

The Teacher's Instructive Practices with ELLs

During the interactive practice, the teacher employs some strategies to scaffold ELLs' learning, some of which are effective while others turn out to be less effective. For example, in a few cases, Jane is flexible in adjusting her content and extending turns based on students' simultaneous responses. On the other hand, in other cases, she is less competent in dealing with

ELLs' learning needs and accommodations, such as the use of wait time and turn allocation for ELLs' fair class participation and contribution.

Teaching Adjustment

In this study, in several cases, the teacher flexibly adjusted her teaching content based on ELLs' responses to her questions. The following episode is an example of the topic of gender difference in the unit of reproduction.

Episode 7

{Topic: Reproduction: Gender difference}

{As a warm-up activity, the teacher asked a few students in her class: how many siblings do you have and what are their genders? Then the teacher goes further to ask the following questions}

T:

611 Who *determines* it's going to be a boy or a girl? <Students hands up> *Gemary*/ (1.5)

Gemary/S1:

612 [Mother]. (.hh)

T:

613 No. Remember, … all the eggs are going to have Xs because all women can
614 give is an egg, correct?
615 But (.2), there will be sperm that's going to the eggs, and there will be sperms that
616 will be Ys. So who *determines* whether it will be a boy or a girl?

Gemary:

616 The MALE.

T:

617 The male=. It depends on if it is a sperm if there is an XX that would be a girl.
618 If it is a Y sperm, then it will be a male.
619 <The teacher draws the chromosome graph on the whiteboard>
620 OK?

T:

621 Here is a fun history lesson for you. Raise your hands if you are familiar with
622 Henry VIII.

S1:

623 He was a young boy, his father passed away, and no one took the king
624 position for some years @

S2:

625 He is young and very wealthy and did lots of trading @

T:

626 I think you have some English history mixed there.

T:

627 Henry VIII was the king of England, and he *really, really* wanted a boy

because if you have a boy, then you can pass on …sss.. that will be a prince, and then he died, then his son will be king ((Cough)). If you have a girl at that time, the girl couldn't become queen … Henry VIII ended up marrying a number of people, and because they didn't give him boys, he either has them *beheaded* or back at the time *guillotine*, *cut the head*. Because they didn't give him a boy, he thought it was their faults. But wasn't because you guys now know who determines if it's a boy or a girl, / he had no clue of genetics.

Gemary:

Henry was a *killer*.

<Then the teacher searched online and played a song of Henry VIII from YouTube ("Money, Money, Money" by ABBA)>

The Researcher's Question:

I think you make a good example of helping students understand the point of the gender differences by providing the example of Henry VIII. Why do you put Henry's story, a history legend here in your science lesson? In addition, while telling the story, you give a good explanation of words "behead" and "guillotine," and I can conclude that students understand this words with the word "killer" in the student's response. To me, this is great for guiding students' understanding. Do you have any reflection on this episode?

Teacher's response:

This is a review lesson, and I use the topic of having a baby boy or baby girl to lead the class discussion. I like the sharing of students' own stories with whether their families have more boys or girls. However, when I asked them who determines it is a boy or girl, I was surprised that they totally forgot what we have learned two months ago. As this question is an either/or question, someone might guess the answer correctly. There is no point to asking more students to answer this question again. I then spend more time on explaining the topic one more time. Here I use the academic language to increase students' awareness of the science language. You know, the concept of reproduction is still very abstract for some students, particularly for ELLs. At this

point, when Gemary gave me an incorrect answer, I realized that a story or an example would probably help them get the point. At that moment, Henry's story suddenly occurred to me, and then I asked whether students heard of him [Henry] or not. Although most students know very little about Henry, they are so engaged in this discussion. For the word guillotine, I think it might be a big word to some of my students, so I use the words "beheaded" with the phrase "cut the head." This simplicity of the word, I guess, can help some slow learners get my point. Fortunately, Gemary commented that Henry was a killer. I think he got it.

After this example, I realized that there was a song to best illustrate the point. I searched online and played the video for them. I use the YouTube song with Henry VIII because students enjoy the music but learn along with the information about Henry. Kind of tricking them into learning about genders and how sexual reproduction works to produce a boy or a girl.

Remarks:

From this episode, the teacher scaffolds students' content and language learning systematically. The initial display question used is to assess students' knowledge of reproduction for gender difference. The teacher does not anchor on the superficial "male or female" level but goes further to review the topic one more time with more academic language. On the whiteboard, she drew some pictures of the chromosome and help aid students' understanding of the concept. The visual aid is necessary for ELLs to enhance their learning. After students get the point, she does not stop there. Instead, she cites one example of Henry's anecdote with his wives and babies. This historic example further enhances students' learning, which makes the abstract concepts meaningful to them. As a teacher, she adjusts her teaching content based on students' reactions. The "added" Henry example here is not redundant but necessary. Even for those who already know the reproduction concept, they still learn something new in an interesting way. As

some scholars (Gay, 2002; Villegas & Lucas, 2002) asserted, in class, the use of vivid example, analogies, and other available resources if closely connected to students' life experiences can help ELLs engage in culturally appropriate communication and interactions.

As reported by Jane for the "Henry" example, it was at that such moment in her interaction with students she realized that one more example might work better than her explanation. This "eureka moment" in our teaching can only take place if the teacher has the knowledge repertoire and understands students' learning needs. Once these life-related examples are triggered, the teacher immediately makes a decision to share it with the class. This added example is much more powerful than the word-by-word explanation alone. As Walqui (2006) asserted, the situated, moment-by-moment scaffolding during the interactive process between the teacher and students is supportive to students' learning as the teacher has a better understanding of students' learning difficulties and needs by offering timely assistance or adjustment.

The learning of scientific concepts is hard to all learners. For those whose first language is English, these scientific concepts are not easy to follow. For ELLs, it becomes even more challenging for them to catch the point. Therefore, if the teacher explains the terminology literally, students might not get a deep sense of its real meaning. Life-related examples can help make the abstract concept accessible and meaningful. Such connections can make the science class relevant to students and help grab their attention in the discussion. The following episode is another example of the teacher's flexibility of connecting her teaching content with life experiences, an example on the topic of cystic fibrosis, a kind of genetic disease.

Episode 8
{The topic of cystic fibrosis}
T:
510 We know that our body produces mucus. Does anyone know

511 the purpose of mucus? *Raise your hands if you know the answer*.
512 What do you think, Carly?

Carly:

513 (1.5) When you are sick, you will have it.

T:

514 OK, when we are sick, we feel that we get this extra buildup, doesn't it?
515 But, why do we produce it, this extra spill-out? Olivia.

Olivia:

516 (2.1) Because it has some bacteria and some other harmful things.

T:

517 Hopefully, that what we get, right? See that, the bacteria, the mucus
518 stuck in my nose and pretty soon I'll go and try to get rid of it. It seems
519 that when we are sick we have more produce, right? If you get cold or
520 something, it seems that you get a running nose, and you feel (o, a, …)
521 stuck back in your throat. Well, the people who have cystic fibrosis,
522 they've got mucus buildup in the lungs. And we have a little bit of mucus
523 in the lung that helps track the bacteria up. But, what it does is that we have
524 these air sacks in the lungs. If the air sacks are filled with mucus, then the
525 oxygen cannot go through…It <mucus> would eventually kill the person.

The Researcher's Question:

In this episode, what is the purpose of providing the mucus example to the concept of cystic fibrosis? Why do you ask two ELLs to answer your question at this moment?

Teacher's Response:

Relating it to being sick is something that they are all familiar with especially the extra mucus. While it can be beneficial in small amounts to trap germs, if the body produces too much it can be deadly. This question is related to our daily life. I'm sure my ELLs can have something to share. I didn't prepare for this question before the class, but at that moment, I think of this question for them. I asked them to share their perspectives. You know, I want to know their views, and I'm sure they can make it. I can tell you, sometimes, if I ask one ELL to answer the question, I usually assign my next turn to another ELL as well. This will give ELL the impression that your peers can make it; you can make it, too.

Remarks:

Classroom interactions is “at the heart” of learning (Walsh, 2011, p. 49). The teacher needs to encourage students to participate in this interactive practice. If the teacher invites ELLs to join the conversation by asking them to answer her questions, they feel proud of being asked by the teacher. At least, they can have a fair chance of class participation. For this “mucus” example, the first question is for the purpose of mucus, and the second one is on why people produce it. For these two questions, the teacher intentionally asks two ELLs to share their perspectives. Sometimes, even with a simple question, ELLs will get some direct interaction with the teacher. Otherwise, ELLs might feel discouraged as they never feel taken care of by their teacher. According to Xie (2011), empirical studies have evidenced that teachers’ questioning can affect students’ classroom participation and, consequently, shape students’ affordance on their learning opportunities. Therefore, the purposeful questioning to ELLs might increase their confidence in their learning. Such practice can help enhance their sense of belonging to the learning community.

Extended Exchanges

Due to the language barrier, most ELLs sit quietly in the classroom. In most cases, ELLs’ answers are usually short and simple without much substantiation. The teacher needs to be patient with them. In addition, for ELLs, no questioning does not mean they completely catch everything the teacher says. The teacher needs to push them further to assess their understanding through one or more extended turns. For example, through the sentence structure such as, “Why do you think this concept is incorrect here?” “Can you give me an example of this phenomenon in our daily life?” At this point, the traditional triadic turn of IRF might do not work here, and a few extended turns can help strengthen their learning. The following is an example of the topic of the Punnett Square. These extended turns, according to Jane in this study, are particularly

helpful and supportive to ELLs. They have the chance to join the academic conversation with their peers, which can promote their agency and ownership of learning in this multicultural context.

Episode 9

{The teacher projected the question on the whiteboard}
{What is the probability of producing offspring that have short whiskers from across of two long-whiskered seals, one homozygous dominant and one heterozygous?}

T:
First of all, we need to decide what the genotypes are. So, Jeff, (.7)
here if we have a homozygous dominant, what *letters* in our genotype
we are going to have?

Jeff:
Capital W.

T:
Both of them or just one?

Jeff:
One.

T:
A capital W?
[[Other students' voices: two W]]
The other one is going to be capital?

S1:
[Another volunteer] Two capital W.

T:
Got it. Because, shh… (2.0) homozygous, means two are
going to be *the same*. SO, you are exactly correct, two Ws, so, both
capitalized=. So, one parent means big W, big W-. The other parent is
heterozygous, so, Miller <S2, non-ELL>, Shh (hh),…
so, what genotype is this goingto have?

S2:
One big W and one small w.

T:
Yes. I write it as two Ws.
Next, what is the genotype of the offspring?

S3:
The big W and small w.

T:
The big W dominant, but what genotype we are going to write here?

S3:
Big W.

T:

397 And what? (0.5)
Jeff:
398 Big W and little w.
T:
399 OK/ So big W and little w, that's one genotype.
400 <The teacher continues to write the other possibilities of the genotype of the offspring>

The Researcher's Question:

In this interactive episode, you guide and scaffold students' learning gradually. Why do you do this? What is your teaching philosophy behind it?

Teacher's Response:

In this episode, you might notice that students' answers are incomplete, and partially correct. I realize that by asking a few extra questions can help their understanding. Therefore, I scaffolded students' understanding so that they could feel confident when they know how to complete them step-by-step. Finally, the students made it. You know, students' responses or feedback give me the signal for my pacing: to add or cut something simultaneously based on their feedback and needs.

Remarks:

In this episode, the teacher asked a question and then offered her feedback on it. When she noticed that Jeff did not get a full picture of what she expected, she extended the turn by repeating the question and followed by students' responses. At this moment, the teacher still did not felt satisfactory, and she had to extend the turns again by asking more students to answer the question. Finally, when Jeff presented his answer and the teacher was satisfied with it, the whole turn closed. This systematic scaffolding provides the student with good chances to engage in their learning. Therefore, during this interactive practice, there is no fixed IRF or extended

IRFRF model; it depends on students' reactive participation and quality of their answers. In a mainstream class, if used properly, such extended turns can enhance ELLs'leaning.

To be more specific, in this episode, four extended turns were added. These additional turns for questioning and responding follow the same thread as the first round of IRF, but on the second round the teacher's initiating question becomes a referential question and provides more space to practice students' elaboration skills (such as sentence organization skills). Through this practice, on one hand, ELLs will get one more chance to practice their academic language; on the other hand, ELLs have the opportunities to display their understanding of the content area (Nystrand, 1997).

Wait Time

Sometimes, students might keep silence for a short while due to their limited knowledge and language barrier. In this study, if ELLs keep silence, the teacher responded to that silence in two different ways: one is by extending her wait time on the same student without the necessary accommodations; the other is to allocate the turn to another student. I mainly focus on the first category as in the second category the teacher usually turns to other non-ELLs or volunteers with ready-made answers.

For ELLs, due to their limited English proficiency, it takes longer for them to come with up with an answer (sentence). Previous studies indicated that ELLs' utterances in the class are usually short, broken, and full of grammatical errors (Lucas & Villegas, 2011). They need more time to search for the "right" word and organize the sentence structures. Adequate wait time might arouse ELLs' willingness to participate. From this study, the teacher reported that ELLs need more time to figure out an issue and usually prefer a "wonderful" answer before raising their hands. An additional five seconds can sometimes increase ELLs' motivation for class

participation. On the other hand, we should notice that simply extending wait time without appropriate accommodations might not achieve the expected learning result, and sometimes this extended "silence" period in the class might cause awkwardness to our students. Below is ELL George's class participation on the topic of "heterozygous alleles."

Episode 10
{The topic of heterozygous alleles }
T:
424 Can we make the straight hairline heterozygous?
George:
425 No.
T:
426 Why not? (5 seconds)
427 You are right, George.
428 I just ask you why. (25 seconds)
George:
429 [The teacher's eyes on him]
430 [Feeling very uncomfortable in his seat and sighed] (.hhh)
431 The other eggs for dominant (hh.) (0.8)
T:
432 So, in order for someone to have a straight hairline,
433 remember the widow's peak. That they have a capital A,
434 that is dominant. In order to have a straight hairline, they
435 cannot be heterozygous, can they? There is going to be a
436 lower case a and a lower case a. So, did you see that,
437 George? So, in order to have a straight hairline, you need to
438 have two lower case a. Is that *heterozygous*?
George:
439 (5) No.
T:
440 [No]. Homozygous.
441 Yes, so, this one, this one will be homozygous.

The Researcher's Question:

In this interactive practice, why do you spend such a while encouraging George to explain his answer to you? Why do you ask someone else to answer this question? How do you manage

to make sure ELLs deeply understand the point? During the "wait time," why don't you provide some accommodations to him?

Teacher's Response:

Sometimes, students can get the answer correct, but that does not mean that they understand the principles behind it. In that case, as a teacher, I need to be patient to encourage his or her contribution. I believe that ELLs have the potential to express themselves if they fully get the point. I need some patience to encourage them to speak out loudly and bravely. Five or ten seconds longer is worth the time. I also want to increase their confidence in the class. At that moment, I know George has the ability to express himself. I believe he can give me a good answer. You know, George came to my class as an ESL [ELL] student last year, and his English is not that good. As you might see, some ESL students are shy, and they need the teacher's trust to share their opinions.

One more thing, I think it does not only help students to explain something but sometimes the other kids hear the students saying it. I can say it a ton of times; it is my voice again. It is correct, they kind of tune in, wait a minute, and maybe they learn better that way. You know, some kids will listen to the teacher no matter what. The teacher told the correct information all the time, even if we mixed it up. Regardless of what he was doing, he understood it. I just want to keep it to get more out of him. Because he has had a flow, others were like, oh, so he was teaching, instead of me leading it. In a sense, I was leading because I was keeping on asking questions by giving them time. As you know, this is something like peer power in learning. Yes, they were listening to their peers better.

Remarks:

From this episode, the teacher strategically turns a display question into a referential question. The teacher does not stop at the check-the-answer level but shifts a "What" question into a "Why" question to check their understanding. Consequently, this referential question requires more time to come up with the answer. In this case, as an ELL, George is still in the process of acquiring the language. Despite the teacher's patience with him, for the first 25 seconds, the student still has some difficulty in coming up with a satisfactory answer. At this moment, the teacher failed to provide some appropriate accommodations to him. As we know, "wait time" does not mean to wait there doing nothing. Once she is aware of the student's learning difficulties, she should accommodate their learning needs immediately. For example, by providing some background information on the question, by providing some examples related to the question, by paraphrasing the question, or using simple language to repeat the question, or by asking the student a related, simple question and then leading into the solution of the expected question. Through this systematic scaffolding and accommodation, the student will gain confidence in answering the question with the necessary knowledge and metalanguage. Unfortunately, in this episode, the teacher just waited for 25 seconds without doing anything. When she realized the student's awkwardness, then she provided her explanations and answer to the student. From this episode, I am not sure of whether the student gets the point or not. Compared with the student's initial answer in the first turn, he simply repeats the word "No" in the latter part of the interaction.

As some scholars indicated, an extended wait time does make some differences on students' answer quality and students' participation (Rowe, 1974; Swift & Gooding, 1983). Tobin (1986), based on his review of the studies on wait time and its effect on students' learning, pointed out that the extension of teacher's wait time could have some significant effects on the

teacher-student performance. He claimed that an increase of wait time from one second to over three seconds could decrease the amount of teacher talk, fewer lower-cognitive level questions, and meanwhile, increase the length of students' answers. The temporary silence of the students does not necessarily mean that they know nothing about the answer but shows their active processing for formulating an answer. If the teacher's wait time is too short, then the student might fail to organize a comprehensive answer by just offering brief answers or with an unwillingness to participate (Rowe, 1974). In fact, the increased wait time can maximize interactional space between the teacher and students, and thus can extend students' turn-taking participating opportunities.

As indicated in the above episode, despite its advantages of wait time, for ELLs, some accommodations are suggested during this wait time. Students' silence is a signal of the difficulty of the content and insufficient knowledge. The teacher then makes this interpretation of the student's epistemic status by performing an epistemic status check, which can be accomplished through verbal (e.g. by asking "No idea?") or non-verbal gestures such as body or facial signals (Sert & Walsh, 2013). In addition, teachers can help students to progress from not knowing to understanding by making use of certain verbal and non-verbal resources, such as embodied vocabulary explanations, designedly incomplete utterances, and code-switching. Accommodation strategies included soliciting students' conceptions, restating student utterances in a neutral manner, using reflective questioning, and invoking silence to foster student thinking (van Zee & Minstrell, 1997). In a word, the teacher's patience with adequate wait time and appropriate accommodation are prerequisite to promoting students' higher cognitive skills, as is evidenced by the large body of literature about wait time (Rowe, 1969; White & Lightbown, 1984).

Turn Allocation

Generally, in the classroom, after the teacher initiates a question, there are several ways for students to get involved in this interactive process. For example, the teacher can intentionally allocate the turn to a certain student, students can voluntarily bid for their turns, and all students can answer the question simultaneously, and so on. For ELLs, on one hand, their language barriers might affect their class participation; on the other hand, some ELLs come from a culture where they are used to listening to their teachers with less interactive practice in the classroom. Therefore, most ELLs sit quietly in the classroom, and they seldom actively answer teachers' questions.

In this study, ELLs' class participation is limited unless the teacher allocates the turn to them. In other words, ELLs' self-bidding participations are scare and they and had no intention of active participation. Below is an example of turn allocation on a teacher-initiated question.

Episode 11
{The topic of genotype }
T:
280 …
281 So this one we got big B and little b in this square….
282 Linia, what's going to end up here the genotype?
Linia:
283 (5 seconds) ((shaking her head))
T:
284 Oven, can you try?
Oven:
285 <whispers to his peer>
286 What does she say?
T:
287 What's the genotype of in this square?
288 <The teacher points out the square>
Oven:
289 Little b and little b.
T:
290 Thank you, lower case b, lower case b.
291 So, 5-4-3-2-1-0 <A class management strategy used by the teacher

to lower students' voice level>. Be quiet. …So, with this, we can
figure out what the chances of this parent and this parent having an
offspring with what color eyes. So we can look at these four ratios.
We got big B and little b, and we got four boxes. So, Oven!
How many of these offspring will end up with a *big B and little b*?

Oven:

Two.

T:

This one and this one.

The Researcher's Question:

How do you allocate your turn to ELLs in your class, in this case, from one ELL to the other? I noticed ELLs' class participation is rather limited. How do you encourage them to get involved in your discussion?

Teacher's Response:

For the turn allocation you mentioned, I use several ways to do that. I usually asked them to raise their hands if they know the answer. This is the most efficient way to do that. I have a tense schedule and many things to cover in one class. Then, I selected one or two students from those hands up. If he did not have his hand up, I may have been randomly calling students to get answers. Sometimes, this turn allocation is teacher directed. I pick the next student to answer, and sometimes I allow classmates to choose the next person. Students that are shy usually will not answer in a whole group setting, so I have them work with a partner, and then I go around checking for understanding and asking questions to those I think may be struggling.

I'm sure you notice, from this semester, I'm starting using ClassDojo [a web tool used for class community buildup and management]. I started using it to select students randomly to answer the question. Then, I feel better than waiting for the hands. Sometimes, yes, I'm just waiting for the hands and go. However, I think sometimes that helps that I can ask ANYONE [emphasized by the speaker] and so even the students who are new language learners.

In this episode, because the first student did not know the answer, I then asked Oven. I asked him to participate intentionally. ELLs are quiet and they need encouragement. I asked him to answer my questions. Even the question, sometimes, is simple, but this is a way of engaging them to be part of the group. Another point, you might notice, that I ask a particular student as a way to check their attentiveness. Many factors can easily distract our students. I ask them, maybe, to keep them on track.

Remarks:

From her self-report, the teacher has several ways to engage her students in participation. As she mentioned, the most efficient way is students' self-bidding. For ELLs, such self-bidding turns are rather limited. The teacher has to ask ELLs intentionally to answer her question either as a way of assessing their understanding or as a way of class management strategy. These strategies are beneficial to ELLs as they are usually shy and not active in class. Then this intentional turn allocation can give them a fair chance to participate in the class activities. Thus, it will raise their confidence and help them feel included in the classroom. However, from my class observations, the teacher's turn-allocation to ELLs is limited.

As discussed earlier, the teacher dominates the classroom discourse and thus orchestrates the turn allocation in the classroom (Mehan, 1979). In the process of classroom interaction, in most cases, the teacher manages and regulates the interaction by appointing the speaker (Gutierrez, 1993; Mehan, 1979; Markee, 2000; Waring, 2013). Thus, the turn-allocation pattern can affect students' speaking floor and participating opportunities, and it can be viewed as a tool to understand the social participating structure of the classroom discourse (Xie, 2011). Waring (2013) pointed out that a persistent and yet unresolved question raised by the teacher is how to ensure even participation during the whole-class interaction. How to achieve such a balance,

however, remains a largely unanswered question. As Paoletti and Fele (2004) argued, teachers constantly endeavor to strike a difficult balance between the potentially competing tasks of maintaining control on one hand and soliciting student participation on the other.

Fortunately, this teacher starts using ClassDojo to manage her turn allocation, which displays fairness for all students. The teacher's differential treatment to student contributions through turn allocation leads to different participation expectations and thus different learning spaces. For the application of the ClassDojo, on one hand, this online tool seems to treat ELLs fairly; on the surface level, ELLs have the same chances for class participation. On the other hand, if we probe the issue further, actually, ELLs are even ignored further by their teacher for class participation. For example, once one ELL randomly gets the chance to answer the teacher's question, if he or she does not know the answer, due to the rapid pace and other factors, the teacher immediately turns her attention to another student. In this manner, the teacher did not give further scaffolding on ELLs' learning but instead paid more attention to the flow of the class discourse. In other words, in her mind, now everyone in her class has a fair chance to participate; her focus is more on the answer of the question whereas she pays little attention to who might answer the question. The teacher should pay more attention to her ELLs by using different strategies for their class participation and learning.

The Teacher's Feedback on ELLs' Language and Content Learning

As discussed earlier, the mainstream teacher has to undertake the responsibility of taking care of ELLs' language and content learning. Based on the data, there are very limited occasions that Jane talked about the grammar and sentence structural patterns in her interactive practice with ELLs.

Responding to Language-Related Issues

Some knowledge of second language acquisition and multicultural education can help the teacher understand ELLs' academic challenges. The teacher can be more responsive to their specific learning needs. Below is an episode from word meaning explanation that indicates the teacher's knowledge of second language teaching pedagogy needs to be improved.

Episode 12

{The topic is on sexual reproduction for non-humans. The teacher explained the general idea of a mixed breed for some kind of animal}

T:

See if you want a dog, looks a certain way, and maybe it's a good
guard dog, then you could figure out what traits the dogs are
going to breed, so that you would end up with offspring that
would look like the dog you want, so…
Do you remember what *heterozygous* means?

S1:

It's a type of cell.

T:

It's not a type of cell, Emily.

Emily:

(Not audible)

T:

Louder please, I cannot hear you clearly.

Emily:

Something related to heredity? (hh.)
Not sure the exact meaning of it.

T:

Yes. Amy IS correct. It is related to *heredity*.
Heterozygous means two different alleles for the same trait.

T:

Amy, can you give me an example of heterozygous in our life?

Emily:

(3.5) A car with gas and electric.

T:

Yes.
A *hybrid* car with both a gasoline car and an electric car.

The Researcher's Question:

For the definition of heterozygous, why don't you explain the prefix of the word to your students? For example, hetero means "not the same." Is this a way to help ELLs remember the word meaning? Additionally, I noticed there are several academic words in your talk. Do you have an academic wordlist? <There is no such word list on the classroom wall>

Teacher's Response:

I realized my students didn't get the meaning of this word. Then, I give them the definition of it. I think Amy got my point, and her example was a good one. Thanks for your suggestion [on the "prefix"]. Oh, that might be a good way. I will try it next time when I explain some difficult words. For the academic wordlist, I don't have one on the wall, and there is one in their notebooks. In their notebook, they keep new words there, a kind of list, right? Usually, I make a wordlist for review at the end of the semester.

Remarks:

Heterozygous is a difficult word, an explanation of the prefix "hetero" might help ELLs to catch or even guess the meaning of the word. If time allows, the teacher might add a few more words with the prefix hetero to strengthen their vocabulary knowledge, such as heteratoms, heterobiography, heterojunction, heterogeneous, and so on. In addition, the teacher just paid enough attention to the word of heterozygous while completely taking no notice of the word homozygous (two identical alleles). From a linguistic point of view, here a comparative analysis of the two prefixes of "hetero" and "homo" might help ELLs to remember the word meaning.

In the same vein, if the teacher explains a concept baring some cultural information, some visual aids would work better. In addition, on Amy's example of a car with gas and electric, the teacher gives the academic word "hybrid" in her feedback. However, the teacher did not explain what the word "hybrid" means. At this point, one or two additional sentences are necessary, such

as “another name for heterozygous is *hybrid*.” In that way, ELLs will get a further chance to enhance their learning.

Due to the teacher’s lack of expertise in SLA, she did not provide some linguistic explanation and scaffolding toward vocabulary learning during the interactive practice with ELLs. Thus, some training on SLA theories is necessary (Villegas & Lucas, 2002). Follow the above episode, the teacher continues to provide an extra example to illustrate the meaning of heterozygous.

Episode 13
{The topic is on the meaning of heterozygous}
T:
165 For the word meaning of heterozygous. Let me give you another example.
166 If you talk about dogs, for example, we might say it’s a mixed breed dog,
167 it’s not a just German shepherd, it’s not just a just a pit bull, it could be a
168 mix of both those dogs. It’s a mixed breed dog.
169 Some people might say it’s not a purebred animal.
170 Here is an example of *Labradoodle.*
171 This is a newer breed dog, people are spending huge bucks for this labradoodle,
172 anyone has any idea of what kind of dogs can breed together to get a labradoodle?
William:
173 What is a labradoodle? */No idea/* ((Shaking his head))
T:
174 Let me pull out a picture of labradoodle for you.
175 <The teacher did not prepare for the picture of labradoodle to students
176 in her slides. She turned off the project and searched online right away.
177 twenty-five seconds later the teacher restarted the project and
178 showed the picture to the class>
William:
179 Oh, they are so cute…
T:
180 A labradoodle is a *mixed breed* of a labrador and a poodle.

The Researcher’s Question:

At this point, why do you use the word labradoodle to help understand the word meaning of heterozygous? I noticed that you didn't prepare for the picture of labradoodle, and you just searched for it online. What is the purpose of doing that searching?

Teacher's Response:

The example of labradoodle can help my students understand the word meaning of "heterozygous." Honestly, I didn't prepare for the picture until, at that moment, I realized that some students are not familiar with the word. A picture is better than my explanation. While I prepare for the lesson, I think this word might not be a difficult one and my students should have some idea of it. I know some students even have labradoodles at home. However, at that moment, I realized that this is a very multicultural class and students don't have the same cultural background. I noticed some students feel puzzled by their facial expressions, and then I'm thinking of presenting a picture.

Remarks:

In this episode, the example word labradoodle is a new and difficult word for ELLs. They have no idea of its meaning. The teacher mentioned, "a labradoodle is a *mixed breed* of a labrador and a poodle." ELLs, coming from a different cultural background, might have no idea of what "labrador" and "poodle" mean. The teacher did not make full consideration of her students in her class during the lesson planning stage. She has to do her onsite search for the picture of a labradoodle. If there is no internet connection, students might lose their chances of learning and feel bored by this example. From a linguistic point of view, the teacher needs to provide some explicit scaffolding as a language teacher, making her a "linguistically responsive teacher" (Lucas & Villegas, 2011). For example, the teacher might present the word of labradoodle with two additional pictures of the labrador and the poodle for students to draw

some logical connection among these breeds of dogs. That might make the explanation of the word meaning more accessible to ELLs. Similarly, the phrase “huge bucks” used by the teacher might be another cultural note to be pointed out. The teacher should use formal and academic English and try to avoid such conversational language usage in her talk. In this sense, Gibbons (2015) suggested using “integrated curriculum” for ELLs’ learning, that is language and content should be integrated. She maintained that language learning is more effective and meaning when situated in the authentic context of a subject. Such curriculum can help “the development of subject-specific genres and registers” (Gibbons, 2015, p. 208). Thus, the mainstream teacher should have the expertise in second language pedagogy and intentionally make the language and content organically integrated. The following episode indicated the teacher took no notice of ELLs’ linguistic learning needs.

Episode 14

{The topic is on kinetic energy}

T:

716 Kinetic energy can be transferred from one object to another
717 when the objects collide.
718 Can anyone give me *another example* of kinetic energy?

S1:

719 A running cheetah <given by a regular student>

T:

720 Right, a running cheetah has lots of kinetic energy.

Amy:

721 What (hh.)
722 <The teacher paid no attention to Amy and she continued to the next topic>

The Researcher’s Question:

The word “cheetah” might be a difficult word for ELLs. Why not explain it here? From a teacher’s perspective, how do you support ELLs’ academic language learning?

Teacher’s Response:

I don't think "cheetah" is a difficult word, and I didn't hear Amy's comment. Otherwise, I would stop and respond to her. When you asked me this question, now I realized that I should be careful with my example and word usage. Some of my ELLs are new to the language, and they might have some difficulty understanding it.

Science is not too bad because we use lots of diagrams and illustrations, and we might not use very much language. For example, today we are doing a class observation. One student [ELL, name omitted] is a very poor writer, and I know that. When he said, could we draw a picture? I can see the expression in his eye that "I can do that" [lower voice]. You know, in science, it's easy for me to say, this is the vocabulary words, this is what it means, draw a picture of what you think of it because I think then you can click a little better, you know. I try to teach them English through the science lessons, too. It's not perfect, and most of our students are just falling into an immersion.

Remarks:

This episode is similar to the above-mentioned examples of word choices. That is, a word might be a commonly used word for regular student whereas it might be a difficult one for some ELLs. In a mainstream classroom, when the teacher interacts with her non-ELLs, he or she should make his or her classroom as inclusive as possible. For example, in this case, for the word Jane used, she should slow down her pace and wait for ELLs' reactions on it (both verbal and non-verbal aspects, such as facial expression and eye movement). If the word is a difficult one, Jane needs to give some detailed explanations, visual aids, or ask the non-ELLs to explain the word meaning to ELLs. In this sense, ELLs will feel being cared for and included in the classroom. In addition, in a culturally and linguistically diverse environment, if the teacher shows some interests in ELLs' language and culture, such as their culture, the big events,

holidays, famous folk stories, and other culturally related episodes, once appropriately connected with ELLs' language and cultures, it might make some differences in the real classroom. As Oliveira and Weinburgh (2017) suggested, mainstream teachers should "make their classrooms safer and more inclusive" by providing ELLs with "comprehensible input" and rigorous accessibility (p. 1).

As reported by Jane, she holds the belief that science is a discipline that has little to do with language elements. She can use other visual means to explain the word meaning to her students. In this way, she treats herself more of a science teacher than a language teacher. To her, she still holds the beliefs that as long as ELLs are immersed into a learning environment they can pick up the language by themselves. Jane was not alone in her perspective toward ELLs. Few mainstream teachers view themselves as language teachers (Yoon, 2008), as they believe that they are not trained to teach language. Such beliefs definitely influence their positioning roles as teachers and their teaching approaches. Yoon (2008) asserted, "Teachers' positioning of themselves can be a critical factor in influencing ELLs' interactive patterns" (p. 516). In most cases, those teachers who position themselves as solo content teachers usually take a rigid instruction approaches whereas accommodation and modification for ELLs' learning needs are scarce. Their teaching lacks the specific language learning objectives, modified materials, and effective accommodation strategies targeting ELLs' language development (Coady, Harper, & de Jong, 2016). On the other hand, if mainstream teachers take an inclusive perspective toward ELLs and believe that supporting ELLs' linguistics needs is part of her job, they often take a different instructional paradigm in their classrooms. They are active in supporting ELLs to learning academic content and developing their English proficiency through English as a medium of instruction. For example, teachers usually identify the difficult vocabularies and key

sentence structures, and design tasks to for ELLs to practice their academic language (Lucas, Villegas, & Freedson-Gonzalez, 2008). Thus, ELLs have more chances to interact with their teachers and practice the academic language. Teachers are more open to learn new skills in their professional development, such as ELL-specific knowledge and skills (Coady, Harper, & de Jong, 2016) and "disciplinary linguistic knowledge" (Turkan, de Oliveira, Lee, & Phelps, 2014).

Responding to Content-Related Issues

In similar fashion, in the mainstream classroom, due to the curriculum requirement, teaching context, and teacher's background, it is understandable to use examples specific to a certain context (e.g., the U.S. context). The teacher's job is to make the content accessible to all learners, including ELLs from a different sociocultural background. Otherwise, students from another cultural background might feel bored or excluded from the conversation. Below is an episode in which the teacher talked about the pollution on Earth.

Episode 15

{The topic is on pollution. The teacher pointed out to a picture on the whiteboard and started a conversation with students}

T:
655 Anyone knows where this picture is from?
S1:
656 Dump/
T:
657 What? Dump? It's a dump, but it's from a particular movie.
S2:
658 Wall·E (hh).
T:
659 Wall·E. (0.4) Why do you think I choose this picture for pollution?
S2:
660 Because you like Wall·E.
T:
661 Yes, I do like Wall·E, but that's not the reason I picked up this picture.
S:
662 <No response>
William:

663 ((head down))
664 (I don't know you are talking about)
665 <in lower voice>
T:
666 What's the whole basis of the movie?
S3:
667 It's all about waste, and the entire earth is garbage.
T:
668 Right. We will not talk about wastes from animals
669 and dying, or trees falling in the woods, ….
670 those things will eventually go back to the soil.
671 We talk about stuff we do, that is back to the environment,
672 such as the cars we drive, we have pollution, coming out
673 of that, and pollution has to go somewhere.

The Researcher's Question:

Why do you use the movie Wall·E as a lead-in example to the topic of pollution? For this interaction, I noticed one-third of your students (ELLs) kept silence. Is there a way to ask them to join the conversation?

Teacher's Response:

Today's topic is about pollution. For the movie example, it works as a lead-in to the topic of pollution. I think some of my students should watch this movie before as it is a popular one a few years ago. I want them to know the connotation of pollution and different types of pollution. I know this movie is a good starting point for the topic. I did not realize that my ELLs are not part of the conversation. I should ask them some questions on pollution or share their views on the topic next time. I will try to provide some background information for the movie: People have to go on a spaceship to live, and they hope to keep on sending out robots to see if anything is growing so that they can come back to Earth. However, because they didn't take care of it, they have all these robots left. Wall. E is one the few that still live, and remember they take all the trash and you like to compact them, and put the little square, so, … it's…

Remarks:

In this episode, the teacher used a movie as a lead-in to the topic of pollution. The movie fits the topic and her leading discussion toward the topic of pollution is well connected. However, few students in the class watched the movie and knew the story. Even some non-ELLs did not watch the movie or forgot the story in this case. Students and the teacher did not share much background information and the teacher has to spend much time explaining the story. In addition, no ELLs ever watched the movie and they just sat silent there. Therefore, the teaching material and content should adhere to students' background, cultural, and language proficiency. On the contrary, if the teacher asked ELLs to share their views on pollution and how pollution has affected their life, that might be a very different story.

Previous studies reported that most ELLs feel isolated in mainstream classrooms. This is partly due to the language issue as their English is not proficient enough to express themselves. On the other hand, some ELLs come from a culture where the teacher acts as an authority who dominates the class with the teacher-centered practice whereas students are supposed to sit there listening instead of active participation. In the U.S. classroom, the dominant class pattern is student-centered and the teacher acts as the facilitator. Learning is achieved through the interaction between the teacher and students or among the students themselves. The teacher needs to know their students and encourages them to get involved in the class discussion. In reality, as a classroom with students from diverse cultural backgrounds, the teacher should connect her science content with ELLs' multiplicity of life experiences and cultural capital (Carozo-Gaibisso, Allexsaht-Snider, & Buxton, 2017). The teacher should welcome multiculturalism and regard it as a resource to her teaching. In her practice, she should integrate

ELLs' cultural elements into her lesson planning rather than have ELLs "assimilate American monoculture" (Coady, Harper, & de Jong, 2016, p. 506).

Below is another example of an ELL asking for help on the directions and prompt of a class project.

Episode 16

{The teacher asked her students to do a DNA ladder project with two pieces of paper, scissors, color pencils, and glues provided. The teacher was busy with her computer work at her own desk. An ELL gets a question to ask for help}

Cathy:

123 {She raised her hand for 40 seconds without being noticed by the teacher,
124 and finally, just she had to stand up and ask the teacher}
125 Miss Jane, two questions. Do we need to answer all of these
126 questions <on the paper>?

T:

127 Nobody answers these questions. You just answer these questions
128 in the lower section and then make a puzzle based on the answers.

Cathy:

129 Do I need to make a puzzle out of it? (hh) (0.3)

T:

130 Yes, they all fit together.

The Researcher's Question:

For this student, she raised her hand and waited for your response for quite a while, why do you think she asks you again for the directions of this class activity?

Teacher's Response:

Oh, at that moment, while the students are doing their project. I'm busy myself planning my lesson for the coming unit as we have so many to cover before the test. In addition, I have to put another student's attendance into the system. I didn't notice her hand up. For the directions of class activities, ELLs need more explanations and demonstrations to get the points before they start working on the project. They might be shy to ask any kind of questions related to directions

in the big group, but they are more willing to ask questions in a small group when I walk around the classroom. Sometimes, as I walk around, I can ask them directly, can you tell me more, or notice that they are maybe on track, you know, give little positive, but maybe they are not on track, and I might say, Oh, let's look at it together, let's work through this. As a teacher, toward these culturally and linguistically diverse students, sometimes, you have to push a little bit to ask ELLs if they can follow you, even they don't ask any question from you. Cathy, she is active, and I know she is stuck for the project. I should think of them and support their learning.

Remarks:

In the classroom, the teacher should adjust the curriculum and teaching materials that make the content accessible to all learners, as content and language learning go together. In other words, as Oliveira and Weinburgh (2017) asserted, in a mainstream class, language and content should be taught "in a deeply integrated manner" (p. 1). The mainstream teacher's responsibility is to develop ELLs' "academic language related to their discipline" in a comprehensible and accessible manner (Oliveira & Weinburgh, 2017, p.1). In this case, the teacher holds a positive belief on ELLs' learning that they need more explanations, scaffolding, and support from the teacher. However, in reality, other factors, such as the pacing and attendance issues, might distract the teacher. Fortunately, this ELL insisted on asking and getting her problems settled.

According to Waring and Hruska (2012), during the interactive practice, the vagueness of the directives might hinder students' understanding, motive to participate, and as a result their learning opportunities and achievement. In other cases, if an ELL felt the teacher does not take care of him or her, he or she might give up and lose interest in doing anything. As Jane mentioned earlier, the teacher should walk around to check ELLs' understanding individually and make sure they are on track.

Responding to ELL Support: No Interest in ELL Certificate

On the one hand, based on this teacher's background and teacher education preparation, she is not ready to teach ELLs as she lacks second language teaching pedagogy and multicultural education. She is trained as a special education teacher (with a bachelor degree) and then she has to teach science due to the discharge of special education teachers in her school district and her specialty (with a master degree on science). With the large influx of ELLs in her 7th-grade science class, she has to undertake the responsibility of supporting ELLs' language development. As we know special education and ELL support are two very different fields. With her training and background, the challenges arise from interactive practice with ELLs are mostly due to her lack of expertise in second language acquisition. So far, she has no ELL certificate but the school district puts her in this teaching position. To her, she is the victim of the school system. She just takes the position of her job. Nevertheless, she holds a positive belief toward ELLs and thinks they value education much more than the regular student do. She likes to have ELLs in her classroom but knows little about how to better support them.

On the other hand, when asked if she is willing to do some professional development on second language acquisition, she is hesitant to do so. Her motivation to go for professional development on working with ELLs is not that strong. She even refuses to take the ELL certificate since it is time-consuming and costly. From a financial point, she thinks that it is not worth doing that if the school district does not pay for it. It does not mean much to her if there is no direct pay rise after she gets the certificate. She said she could go to a school with no ELLs if it is required to teach ELLs with a certificate. Below is Jane's sharing on this issue:

I thought I would go with ELLs, but I don't get certification. You know, I need to go

back to school, but you know, I already had a master degree in science education. I have a degree on special education, they don't pay you much more[Ha, Ha, Laughing], I don't know how much this cost due to this kind of things. I probably will not do an ELL certificate, or I can move to a different school district not having any ELLs.

Her dilemma situation on her willingness to do professional development and her hesitation to do the ELL certificate indicates that the mainstream teacher has some practical reasons in mind. The political context and their working environment might play an important role in their beliefs and practice toward ELLs' learning. Policymakers need to provide these mainstream teachers with more professional development opportunities at no cost. Their workload toward ELLs needs to be recognized in their pay stubs. These incentives can be used to improve the quality of the teaching force. In addition, at a macro level, we need to take some measures to support mainstream teachers' work. These supports include: (1) shift mainstream teachers' beliefs that ELLs are their students and they are responsible for their language and content learning; (2) treat the high-stakes state test fairly and reduce their pressure on it; and (3) set up a fund for mainstream teachers' learning on SLA and ELL certificate.

Summary

When dealing with ELLs' responses (negative responses, positive responses, silences, and content and language learning), the teacher employed a variety of strategies – some of which are effective in enhancing ELLs' content and language learning. For example, impromptu adjustment of teaching content: At a certain point, she used some examples either in life or from other subjects (for example, history and political science) to help ELL's understanding of the

content. In addition, the teacher extended turns for further elaboration. No questioning from ELLs does not mean they completely catch everything the teacher says. The teacher needs to push them further to assess their understanding through one or more extended turns.

Apart from the above strategies the teacher employed to scaffold ELLs' learning, on the other hand, there are some episodes that the teacher takes some abrupt decisions from an observer's point of view, which might minimize or hinder ELLs' discursive participation in the interactive process. This abrupt decision-making includes: (1) rapid pace due to test pressures while neglecting ELLs' learning needs; (2) wait time without appropriate accommodations, failing to provide ELLs with adequate accommodations; (3) lack of expertise in second language pedagogy, and her word choices and sentence structures are inaccessible to ELLs.

In short, the mainstream teacher has to integrate academic disciplines with students' linguistic and cultural experiences to promote their academic achievement. The participant teacher knew very little about second language teaching principles and pedagogy. To her, she felt some challenges in working with ELLs and, as a result, had some difficulty in providing some adequate support to ELLs, as can be evidenced from the above teaching episodes.

CHAPTER 5

DISCUSSIONS

The classroom is a situated setting where the interactive practices take place between the teacher and students. In this discursive process, through knowledge co-construction and meaning negotiation, the teacher helps students achieve the learning objectives. As a result, teachers' beliefs on teaching and learning play a pivotal role in facilitating students' learning opportunities. In reality, however, teachers' belief systems are much more complex than the former influencing the latter. Other surrounding contextual factors might support or restrain teachers' decision-making on the way to interact with their students. The present study is such a case in point.

This study sought to answer the questions of how the mainstream teacher provides some scaffolded support on ELLs' content and English language learning during the "questioning-responding-feedback" triadic cycle. Furthermore, it sought to understand how the mainstream teacher's decision-making toward her interactive instruction with ELLs reflects her beliefs-in-actions. Findings indicated that the teacher's scaffolded support to ELLs' learning centered on the content part whereas the language support is rather limited and inadequate. For example, the teacher did not provide some explicit language and grammar instruction, and her use of academic language was rather scarce. On the other hand, during her interactions with ELLs, the teacher uses more simple questions with ready-made answers, and ELLs' answers are short and incomplete. Overall, research data reveal that a variety of factors affects her decision-making toward ELLs. These factors include the sociopolitical environment, curriculum mandate, as well as her inadequate preparation and limited expertise with teaching ELLs. To her, she takes a "sink or swim" perspective toward ELLs' English language learning; she considers herself as a science teacher; and she prefers the highly structured class format with less-engaged student participation.

This section discusses topics related to this mainstream teacher's beliefs-in-actions on curriculum, teaching, learning, ELLs, and her role as a teacher and how these macro and micro factors weave together to impact her decision-making. For clarity of presentation, I use the following categories to address the above-mentioned themes.

(1) The Mainstream Teacher's Practice with ELLs: Issues and Problems

(1a) Content support versus linguistic support

(1b) Class interaction versus engaged class participation

(2) Factors affecting the teacher's decision-making about ELLs

(1a) A course curriculum versus a test curriculum

(2a) A science teacher versus a language teacher

(3) The dilemma of teacher's beliefs about ELLs

(3a) Positive beliefs versus inactive actions

(3b) An inclusive education versus a non-inclusive education

(4) The intersection between special education and ELLs

(4a) Special education versus ELL education in general

(4b) The mainstream teacher's practice versus special education teacher's practice

The discussion aims to put the present case study into a larger sociocultural context. This section addresses issues of ELLs and their teachers with the intention to provide some useful implications for mainstream teachers' education and their professional development.

The Mainstream Teacher's Practice with ELLs: Issues and Problems

In this highly structured class, this teacher's interactive practice with ELLs is more on the content learning, whereas the linguistic support is rather limited and inadequate. Meanwhile,

ELLs' engaged participation is rather scarce, which diminishes their learning opportunities in this mainstream classroom.

Content Support versus Linguistic Support

As evidenced by the data, this science teacher provides some support to her ELLs' content learning. Strategies used included adjusting teaching content based on students' needs (i.e., additional anecdotes and materials), eliciting students' class participation with life-connected examples, and extending turns for the "know-how" explanations, and so on. To some extent, these strategies prove to be effective based on ELLs' comprehension and responses. For instance, in the reproduction unit, when the teacher realized that her students did not get the point of sex difference during reproduction, she immediately makes her decision to add an interesting history story (Henry VIII example) to help her students understand the concept. These extra examples enhance students' understanding and then they can apply the concept to a real-life situation. In a way, the "Henry VIII" example helps students cross the ZPD, fully get the point and even begin to criticize Henry's behaviors in the story with the sentence, "Henry was a killer." In this way, the teacher makes the abstract scientific concept interesting and her students are engaged in that discussion. This teacher's practice is supported by some empirical studies. For example, Lee and Buxton (2010) argued that science teaching for ELLs should integrate their multiplicity of cultural, linguistic and experiential strengths as part of the course curriculum in a dynamic and relevant manner. In other words, mainstream teachers should flexibly adjust their curriculum and make ELLs' learning accountable. In a similar vein, Carozo-Gaibisso, Allexsaht-Snider, and Buxton (2017) proposed the concept of "curriculum in motion" toward ELLs' instruction, which means curriculum should go beyond the traditional curriculum characteristic

of fixed content and fixed procedure. Instead, curriculum toward ELLs should emphasize ELLs' learning instead of the covered content.

In addition to the curriculum adjustment on ELLs' situated learning, in other cases, for example, even when the student gets the correct answer, the teacher still asks, "How did you get that answer." The "know-how" (follow-up "why") question further probes ELLs' knowledge and their understanding. These added "know-how" questions can promote more opportunities for practice, and they elicit thought process and guide learners toward deeper exploration and understanding. These extra turns can be viewed as a tool to promote active learning participation (Tharp & Gallimore, 1988), and ultimately "to produce deeper levels of learning" (Albergaria-Almeida, 2010b, p. 754). For ELLs, this type of questions can further their higher-cognitive thinking and as a result influence their learning result.

On the other hand, the teacher does very few explicit explanations on some difficult vocabularies, syntactic structures, and grammatical points. In other words, the teacher's linguistic scaffolding toward ELLs is rare. In this sense, linguistic scaffolding refers to the teacher's intentional explanation of some key vocabularies and grammatical forms, through providing the correct structures or more examples to help students' understanding. It also refers to the use of simple language in a slow pace to guide students' comprehension. When examining this teacher's practice, for the difficult science concepts (vocabularies), her explanation is at the literal word meaning level while there is no further association with other words on their etymological, morphological, semantic, and pragmatic connection. ELLs thus lose a good chance to enlarge their vocabularies. As reported by the teacher, she does not take any responsibility to correct ELLs' linguistic mistakes (such as grammar) with the only exception being the

pronunciation. If ELLs get a certain word mispronounced, she might tell them directly the right pronunciation.

On this linguistic support issue, in addition to the above-mentioned explicit explanation or correction of linguistic forms, people might counter-argue that the use of language as a mediated tool to learn is a form of scaffolding, such as through simple word and sentence structures, with slow pace, and more emphases on a certain language point. Based on the data collected and my class observations, however, this type of linguistic scaffolding is very limited or inadequate. For example, while the teacher explains the word meaning of "heterozygous," the teacher just tells the students its literal meaning— "heterozygous means two different alleles for the same trait" — without mentioning the word formation knowledge of such words, such as its "prefix, stem, and suffix." As we know, word morphological knowledge can help make some associations with words students already learned before. It can also function as a tool to enlarge ELLs' vocabulary or guess the meaning of some unfamiliar words that share the same prefix or stem later in their readings. Other words, such as "hybrid," "labradoodle," and "cheetah" from the data, all need some explanations for ELLs' understanding. Unfortunately, the teacher just ignores ELLs' special needs, and therefore their learning opportunities are blocked in those moments.

According to this study, due to dense curriculum and the teacher's lack of expertise in SLA, there is hardly any additional support on ELLs' language learning. Actually, language barrier is one of the key sociocultural factors that hinder ELLs' learning, and as a result, such linguistic support is most needed by ELLs. Fang (2004) argued mainstream teachers' failure to provide adequate linguistic support to ELLs' learning imposed the biggest challenge for ELLs. As discussed earlier in the literature review section, both CCSS and NGSS emphasize the

content-related literacy skills in developing students' subject knowledge. Language, particularly academic language, is the core to develop such literacy skills. Science is a discipline full of technical vocabularies, and their meanings might be different from their everyday usage. These science words are usually more "abstract, academic, literary, and less common" (Hadi-Tabassum & Reardon, 2017, p. 42). On the other hand, scientific texts are complicated in terms of syntactic structures: some nominalization, subjunctive mood usage, infinitive structure, subordinate and coordinate clauses are frequently used in a scientific discourse (Fang, 2004). This scientific discourse requires some metalinguistic awareness and metacognitive knowledge for comprehension (Symons, 2017). Such linguistic support is much needed in the classroom. While in reality, due to mainstream teachers' beliefs about ELLs' language learning and their lack of expertise in SLA, this kind of linguistic support is inadequate and rather limited.

Therefore, mainstream teachers should provide more linguistic scaffolding on ELLs' academic language development. They should help develop ELLs' linguistic competence to use content-related academic language to describe, explain, analyze, compare, and synthesize the scientific knowledge to reason and to explore the field. Mainstream teachers should recognize that academic language is the tool and vehicle "for content attainment" (Hadi-Tabassum & Reardon, 2017, p. 68). Scholars have claimed, "Science teaching can simultaneously support the multiple language domains of everyday, general academic, and technical or scientific language" (Carozo-Gaibisso, Allexsaht-Snider, & Buxton, 2017, p. 25). Mainstream teachers should improve their disciplinary linguistic knowledge (Turkan, de Oliveira, Lee, & Phelps, 2014) and make their teaching accessible to ELLs. In other words, it is the mainstream teachers' responsibility to provide adequate explanations on the technical concepts (Halliday, 1994) and

the “highly complex lexicogrammatical structures” (Carozo-Gaibisso, Allexsaht-Snider, & Buxton, 2017, p. 13).

Class Interaction versus Engaged Class Participation

Overall, based on the data, despite the teacher’s dominance of the class discourse, there are some classroom interactions between the teacher and her ELLs. The teacher knows the fact that ELLs are usually shy and like to keep silence in the class. She takes some strategies for fair class participation, such as allocating turns to ELLs, long waits for their answers, in addition to the voluntary, self-bidding turns. To show fairness, recently, the teacher adopted the online class management tool, ClassDojo, to select students randomly for their participation. In this way, all students (both regular and ELLs) have the same chance to respond to the teacher’s questions.

Using ClassDojo, the teacher holds the belief that all students have the same chance to participate in the class discussion. In reality, if we probe the fact further, things might play out a different way. Theoretically, ELLs have the fair chance to participate; however, either the type of the teacher-initiated question or the expected answer from the teacher is very different. Questions targeting ELLs are in most cases simple, more “Yes” or “No” question with ready-made answers (i.e., the display question with “what” type), whereas there are limited questions requesting higher cognitive thinking skills (i.e., the referential question with “why” type). Studies have shown that these simple “Yes or No” questions cannot help develop their critical thinking skills and practice their academic language for communication (Waring, 2012). In addition, the turn exchange between the teacher and ELLs is low (mostly one or two rounds of turn exchange, or adjacent pairs). This short turn exchange might be because ELLs just passively answer teacher-posed questions while they seldom initiate questions to ask the teacher. In this aspect, the teacher shared with me that, for the nature of her class structure, she does not encourage students to ask

questions during the whole group discussion, as otherwise, the classroom might cause chaos. The practice of limiting students' participation for the sake of well-behaved class diminishes students' learning opportunities. For the teacher, she does not think of the class management issue from the perspective of her lesson planning and class design and she simply controls the whole class with restricted class participation.

On the other hand, ELLs' answers are usually short and incomplete. Their answers are limited to the word level (two or three words in an utterance) while there is no complex sentence structure. There is still a long way to develop ELLs' academic language and push the accuracy and complexity of their utterances. Nystrand (1997) argued that the teacher's expectations for students' class involvement could determine their learning opportunities. These involvements include the type of question a teacher asks, the kind of responses the teacher expects, and the width and length of feedback the teacher can provide. All these questions, responses and feedback issues are related to the teacher's beliefs and his or her decision-making process during the classroom interactive practice. As this teacher's expectations for her ELLs are comparatively low, as a result, ELLs' chances of practicing academic language for both content and language learning are limited. For the teacher, she takes the perspective of encouraging ELLs' participation. ELLs' utterance, particularly their language output, is not her primary concern, as she reports, "I use more positive feedback on their responses for encouragement." Even their answers have some linguistic mistakes; she thinks it is not her responsibility to correct their errors. In the long run, ELLs can be "hidden from their teachers" (Sharkey & Layzer, 2000, p. 364). According to SLA theories, if students do not get timely and effective feedback on their language mistakes, these mistakes might become their habitual use, and as a result, they can become fossilized (Selinker, 1972).

Factors Affecting the Teacher's Decision-making about ELLs

The teacher's "sink or swim" perspective toward ELLs is affected by a variety of factors. Specifically, these factors mainly include 1) the curriculum to follow: course curriculum versus test curriculum), and 2) the role as a teacher (a science teacher versus a language teacher).

A Course Curriculum versus a Test Curriculum

Every teacher should follow the subject standards and course curriculum to teach. For science, the teacher needs to be aligned with the NNGS and the specific science curriculum in their daily practice. Nowadays, U.S. public schools are becoming increasingly accountable for students' academic performance. Under the current sociopolitical context, all students including ELLs have to take the state-level test for their annual progress report. This test is used as a benchmark to evaluate teachers and schools' teaching performance. As reported by the teacher, the test score is used as a comparison tool to determine teachers' teaching quality, reputation, and payroll. Thus, both the teacher and students are under great pressure to get prepared for the test. This test curriculum does not always follow the course curriculum. The mainstream teacher in this study has to cover the test curriculum and pay more attention to the tested items. If the item is listed on the test curriculum, the teacher might spend more time on it. For example, the teacher mentioned the topic of "density." She said every year this topic was on the test paper, and she had to spend more time on it for students' comprehension. She has to repeat the topic several times until her students get it. In addition, she feels a dilemma because she is not sure which curriculum to follow: "The national government says this, the state government says this, and the district says this" (The teacher's self-report after we watch Episode 1 together).

In her practice, her rapid pace, limited wait time, and eagerness to transition to the next topic are somewhat related to the test pressure. To her, the test curriculum does affect her lesson

planning and class activity. In her class, she has limited support for ELLs' dual task of both content and language learning, such as some personal connection with their specific learning needs. In this regard, as Calkins (2000) claimed, ELLs' chances of developing their academic English language skills in the mainstream classroom have been ignored. The present study findings resonated with Wolf and Leon's (2009) study: mainstream teachers with experiences are pessimistic, resistant and even resentful to these accountability policies. Some scholars (Darling-Hammond, 1997; McNeil, 2000) asserted that these accountability policies narrow teacher discretion, discourage effective instruction and focus on lower-order learning. As McNeil (2000) claimed that teaching could do well in "inflating" test scores, but the quality of teaching is substantially decreased. As Jones (2007) argued, "state standardized testing has not only affected what is taught, but also how it is taught" (p. 70). Similarly, according to Lee et al.'s (2005) study, science teachers reported they did fewer inquiry-based projects with a narrowing pedagogy. This case study highlighted the teacher's narrowing pedagogy point. Moreover, Anderson (2012) maintained that greater efforts were currently being made to align curriculum and instruction with state standards and tests; less instructional time is given to science and less creativity in teaching and learning, and fewer activities that might aid engagement are used.

A Science Teacher versus a Language Teacher

Mainstream teachers regard themselves as the subject matter teachers. The influx of ELLs in their classroom has raised new demands from them. They have to develop ELLs' language proficiency, which used to be the job of some linguistic specialists. According to Gibbons (2006), every teacher is a language teacher. However, in reality, those mainstream teachers are not ready for that work. They still held the belief that it was an ESL teacher's job to develop ELLs' English language proficiency. At present, due to budget cuts and other factors,

many ESL teachers are discharged by the school district. Therefore, mainstream teachers are responsible for ELLs' language development.

The participant teacher held that science has a lot of new vocabulary to all learners, so she tries to front-load the vocabulary by saying it, using it, and defining it in class so that they are comfortable using the language of science. For example, she does not correct ELLs' word use in their assignments as long as they understand that meaning. In this study, the teacher seldom explains grammatical structures to her students with occasional correction of their pronunciations on some scientific terminology. She corrects their pronunciation by restating the word correctly. This teacher adheres to the belief that she is a science teacher and her job is to transmit some scientific knowledge to her students. As for the language part, it is beyond her capacity to do the job. In reality, as a mainstream teacher with ELLs, she is supposed to follow the language standards, that is the *Framework for English Language Proficiency Development Standards* (Council of Chief State School Officers, 2012), "a document that identifies the language demands of the Common Core State Standards and the Next Generation Science Standards" (Oliveira & Weinburgh, 2017, p. 4). Unfortunately, based on her self-report and my class observations, there is no evidence that her instructive practice connected to the national standards on English as a second language.

One explanation of the teacher's positioning as a science teacher instead of a language teacher lies in her perspective toward her own training. I got this message from a talk at a time before she started her class. When she was at school, there were not many ELLs and student diversity was not an issue at that time. When she was in college, she was trained as a special education teacher. There was no any related to linguistic and multicultural education. Teachers usually teach by what they are taught as students. In addition, she did not take any workshop on

professional training related to second language pedagogy. As de Jong (2014) asserted, more than 80 percent of mainstream teachers lack of professional training about ELLs. Without expertise in language teaching and experience in dealing with ELLs, it is not surprising that she does not want to be recognized as a language teacher. In other words, she is not ready to take the language education as part of her responsibility. However, her beliefs about herself as a science without any support to ELLs' language development is not align with the national standards, such as CCSS and NGSS. Both these standards document that mainstream teachers should help develop students' subject-related literacy skills, among which language is an important component of these disciplinary literacy.

The Dilemma of the Teacher's Beliefs about ELLs

As discussed earlier, this teacher takes a "sink or swim" perspective with ELLs and regard their language development as beyond her capability and responsibility. At the same time, she held a very positive belief about ELLs and expressed her happiness to have ELLs in her class. However, such positive belief does not translate into positive actions in her real instructive practice. Furthermore, one interesting point is that she has a dilemma a somewhat controversial belief about her ELLs: sometimes she had an "inclusive" perspective toward ELLs, while at other occasions, she had a "non-inclusive" perspective toward ELLs.

Positive Beliefs versus Inactive Actions

The participant teacher in this study held very positive beliefs about ELLs. She reported that she liked to have ELLs in her classroom. She also had good teaching experiences with previous ELLs. For example, most ELLs in her classes are highly self-motivated students. Despite their language barriers, most ELLs and their families take their learning seriously, as ELLs' parents regard good school achievement as an investment to improve their socioeconomic

statuses. As she mentioned, after two or three years, once ELLs' language proficiency improved, they could surpass some of their American peers. That improvement is probably why she takes the "sink or swim" perspective that ELLs can take care of themselves. In this sense, Pettit (2011) asserted that one of the misconceptions many mainstream teachers held about ELLs is that ELLs should be able to acquire English within two years when they immerse into the English-speaking environment. Thus, Jane in this study is not a unique case to have such beliefs that ELLs should take care of their own learning or get support from their ESL teachers (Pettit, 2011). In addition, in most cases, ELLs have less classroom management issues. She was satisfied with their behaviors, and they are not the troublemakers in her classes. In short, in her eyes, ELLs are good students because they are academically motivated and disciplinarily well behaved.

Despite her positive beliefs about ELLs, however, she did not take any active actions to support their learning. For example, in her instructive practice with ELLs, she did very few accommodations to support ELLs' learning. For example, on several occasions, she even paid no attention to ELLs' specific learning needs such as explaining prompts and revoicing the questions. The episode of the long wait time without any accommodation is another case in point. She did not use simple language to paraphrase the question and offer some additional exemplars for the student to understand her point. In addition, the teacher reported that she supported ELLs' learning when she walked around the classroom. Based on my class observations, while she walked around, ELLs seldom asked her some questions. Even in some cases, ELLs' questions are mostly related to the prompt or concept clarifications. She did not prepare any additional or simplified handouts for individual ELLs. In summary, due to her "sink and swim" beliefs toward ELLs, there is no evidence that she translates her positive beliefs into active actions on supporting ELLs' learning.

In connection with the literature, previous studies maintain that mainstream teachers' positive beliefs about ELLs are a good indicator of their active actions (Walker, Shafer, & Iiams, 2004; Youngs & Youngs, 2001). For example, mainstream teachers might show more enthusiasm in ELLs' language and culture; teachers are willing to provide some additional support to ELLs' learning and teachers are happy to spend more time with them. However, from this study, despite the teacher's positive beliefs about ELLs, the expected positive actions do not occur in her classroom. In reality, based on this teacher's interactive practice with ELLs, her specific action and support on ELLs' learning are at the superficial level. For example, she did not provide ELLs with efficient differentiation and accommodation. Similarly, Youngs and Youngs' study (2001) on 143 secondary school mainstream teachers in a U.S. community indicated that most teachers reported neutral to slightly positive beliefs toward ELLs. Their study indicated that previous working experience with ELLs could help mainstream teachers take positive beliefs about ELLs. As shown in this study, Jane used to work with ELLs, and she had a very good impression on them. It could be assumed that her positive beliefs about ELLs might come from her previous working experiences with ELLs. Comparatively speaking, ELLs are well-behaved students and there are less classroom management issues; ELLs are not troublemakers in her class. On the other hand, the reasons why she does not take any active action on ELLs' learning might be due to her "sink or swim" belief and her misconceptions about ELLs as discussed earlier (Walker et al., 2004). Another possible reason might be due to her lack of training in second language pedagogy. Even though she is motivated to help ELLs' language and content learning, she might not know how to how to deal with the issue. Therefore, we should be cautious of mainstream teachers' positive beliefs that might not bring about active actions on students' learning.

Another interesting point is her perspective on her professional development and ELL certificate. As evidenced by the data, the teacher holds very positive beliefs about ELLs, but she is underprepared to work with them. When asked whether she wants to do professional development on ELLs and gets her ELL certificate, she surprisingly showed no interest in doing that work. In other words, her positive beliefs about ELLs do not provide her with a strong incentive to improve her teaching skills. Generally, if teachers like their profession, they are committed to improving their teaching performance through professional development workshops and other opportunities. To Jane, she still regards herself more as a science teacher than a language teacher. To her, if there is no direct pay increase, there is no point in her doing this additional certificate. Thus, when the teacher's beliefs encounter reality and other practical factors, a positive belief might not yield some provocative actions.

So far, most studies on mainstream teachers' practices with ELLs have recognized these teachers' challenges and struggles. Due to their lack of expertise in second language acquisition, they are incapable of providing culturally and linguistically responsive pedagogy to ELLs (Lee, 2004; Lee, Luykx, Buxton, & Shaver, 2007; Youngs &Youngs, 2001). Thus, scholars and policymakers have suggested more professional development opportunities on multicultural education and SLA training (Bryan & Atwater, 2002; de Jong, 2014; Gay, 2002; Lucas, 2011; Oliveira & Weinburgh, 2017; Villegas & Lucas, 2002). The issues identified and actions proposed both sound fascinating and appealing. It seems that, as long as the mainstream teachers take the experts' designed course pack and get a certificate, then they will become skillful at dealing with ELLs. As discussed in the literature review sections, a variety of models have been proposed for mainstream teachers to develop their skills. However, why do these expected results not occur in daily practice? One of the most important reasons is that teachers' agency or

motivation have been ignored. The present study is such as case in point. This teacher's hesitation in attending professional development workshops and getting her ELL certificate implies that teachers' belief systems need to be considered. For example, the teacher, in this case, takes the "just-do-the-job" position with her work with ELLs. That is, she can teach any type of class and any group of students regardless of their sociocultural background as long as she has the job. Her motivation to improve her teaching skills is not as strong as we might expect. To her, she even thinks of herself as the victim of the school arrangement: The school district put a professional special education teacher into the position of working with some ELLs. As her current job is not her own choice, she lacks of intrinsic motivation to improve herself. Therefore, while designing professional development workshops, the sponsors should take a survey on the necessity of doing that fact, as some of the participating teachers might not acknowledge its practical value to them. For Jane, to go deeper for her case, the recruitment of mainstream teachers to work with ELLs should consider teachers' belief systems as well.

An Inclusive Education versus a Non-Inclusive Education

Another point of dilemma of the teacher's beliefs about ELLs lies in the contradiction of her reported beliefs and her actual beliefs-in-action. That is, the teacher reported that she holds an inclusive perspective toward ELLs' learning. However, based on my observations, in her real practice, she is more likely to have a non-inclusive perspective with ELLs.

This teacher has an inclusive perspective when talking about her pressure on the mandated high-stakes test and workload increase with ELLs. She expressed her sympathy toward ELLs as they are required to take the test despite their limited language proficiency. She had to adjust her course curriculum and align with the test curriculum. The accountability policy pushed her to pay attention to the test as she was evaluated by the school district on that test. Under that

pressure, she mentioned that she should emphasize some points and make sure that her ELLs can pass the test. In this aspect, ELLs are part of her class, and she treats them the same as the other non-ELLs. She is willing to improve their grade, as ELLs' test scores to some extent determine her overall performance. Thus, she emphasizes some topics but neglects some scarcely tested topics in her teaching.

On the other hand, when it comes to the classroom practice, she has a "non-inclusive" perspective with ELLs and regards them as "the Other." It is beyond her capability and responsibility to develop ELLs' language proficiency. It is the ESL specialists or other community members who must support ELLs' language development. She still held the traditional view that ESL specialists should develop ELLs' language proficiency. In her practice, she is less capable of making her teaching culturally and linguistically inclusive. In this case, she has no expertise in second language teaching pedagogy. Even if she has that linguistic expertise, she might not support them due to her belief about ELLs. For several times, she mentioned the ELL support programs in the past. She prefers the "pull-out" model despite its non-existence at her school.

For the ELL issue, scholars have realized its urgency in society and pointed out the challenges they posed on the current public education system. In some areas, some measures on improving their academic achievement have been implemented. However, in some areas, like the case in the present study, due to budget cuts and miscellaneous reasons, ELLs' support is not getting better and even getting worse compared with the past. For the teacher in this study, her dilemma or even controversial perspective toward her ELLs is a case in point: ELLs' support becomes scarce, and the teacher does not devote herself to the profession.

In reality, at present, the support to ELLs on their language and content learning is very limited. When I asked Jane about how to better support ELLs' learning, she reported that some external support was necessary. It was not her responsibility to develop ELLs' language proficiency. For instance, the teacher reported that, a few years ago, there was a language remedial language class after school with a late-running school bus for their transportation. It only lasted about 10-12 weeks, but it was enough time to jump-start the year. Jane thought the help made a huge difference. Due to budget cuts, however, this program does not exist. In addition, she reported that there was a community service program to ELLs. Some volunteers from the local community, such as some retired teachers and college students, usually came to visit the class for language support. Recently, with the large influx of ELLs and other financial issues, such language service also stopped.

One suggestion made to the teacher and her school district at this point of ELL inclusion in their education is that both the teacher and school administrators should recognize that ELLs are part of their school population. More professional workshop should be provided to support the teacher's development. If necessary, the size of the class with ELLs should be reduced so that ELLs can get more attention from their teachers. The mainstream teacher should have a sense of "school community of learners and considered ELLs their shared responsibility" (Theoharis & O'Toole, 2011, p. 653). As a result, the teacher should take a more flexible curriculum toward ELLs and work out some efficient strategies to better support them. In addition, an inclusive perspective for ELLs also means to value ELLs' culture and the reciprocal benefits they can bring to the classroom with their peers.

In the last section of the discussion, I will extend my discussion to the topic of special education and ELL education.

The Intersection between Special Education and ELL Education

As discussed earlier in the methodology section, the participant in this study used to be a special education teacher. Due to budget cuts and the discharge of special education teachers in her school district, she shifted to teaching science. Thus, how she interacts with ELLs and supports their learning might offer an alternative lens in understanding the intersection between special education and ELL education, as the relationship between these two domains of knowledge is the object of recent scholarship (Artiles & Ortiz, 2002; Honnert & Bozan, 2005; More, Spies, Morgan, & Baker, 2016; Paneque & Barbetta, 2006). Although the present study is not explicitly designed to investigate the relationship between these two areas, the collected data can implicitly provide some perspectives on better understanding these two fields of interest, which can benefit ELLs' education and their teacher preparation. Therefore, in a way, her unique case — a mainstream teacher with special education background teaching ELLs — might provide some implications on such approaches to teacher training and ELL education.

Special Education versus ELL Education in General

Special education and ELL education are two different areas of study. The former is designed to accommodate those with learning disabilities, while the latter is to help develop students' language proficiency. In reality, some mainstream teachers hold some misconceptions about ELLs and their education. One of which is that ELLs should be put into hands of special education teachers. For example, based on a survey of 422 K-12 mainstream teachers in an urban U. S. city, Walker, Shafer, and Iiams' (2004) study indicated that those participants held some "neutral to strongly negative" beliefs about ELLs. About 70% of the mainstream teachers were not actively interested in having ELLs in their classrooms. One of the key factors contributing to their negative beliefs toward ELLs was that most mainstream teachers maintained that ELLs

should be part of special education. According to Artiles and Ortiz (2002), due to ELLs' limited language proficiency, high dropout rates, and low academic achievement, some teachers believe that ELLs should be placed into special education classrooms if they are at risk in the general education classrooms. As a result, decisions on ELLs' referral should be careful. ELLs' language deficiency at a certain stage does not mean they are cognitively and intellectually under-developed. In other words, a distinction should be made between ELLs' limited language proficiency and other learning disabilities. The previous study demonstrated that ELLs did not receive the type of support they expected due to special education teachers' lack of expertise in second language teaching pedagogy; ELLs' verbal performance was even getting poor after sitting in the special education class (Artiles & Ortiz, 2002).

The Mainstream Teacher's Practice versus Special Education Teacher's Practice

In this study, the teacher has a strong special education background and has worked in the field of special education more than ten years. However, when she interacts with ELLs in her classroom, there is still no accommodation and differentiation in the teacher's practice. Her background knowledge in special education did not provide her some useful strategies to deal with ELLs' language issues. As discussed earlier, when dealing with some new vocabularies or cultural concepts, she did not provide adequate linguistic scaffolding and some additional information on the examples related to cultural issues. Therefore, a mainstream teacher with strong special education knowledge still seems to be at a loss on how to better support ELLs' language development. For ELLs (excluding those with learning disabilities other than the English language), their academic difficulties cannot be simply categorized into the field of special education, as it might not provide the effective instructions ELLs mostly need.

Mainstream teachers should shoulder the responsibility to help develop their language skills and employ some effective instructional strategies to support their content and language learning.

Overall, this mainstream teacher's interactive practice toward ELLs was affected by her beliefs she held on them. She views herself more as a science teacher than a language teacher. She believes that linguistic support should be others' responsibilities. She treats ELLs as individuals coming to her class but lack of differentiation and efficient scaffolding on their language development. In this case study, her special education background does not provide her with some useful strategies on better serving ELLs' learning.

CHAPTER 6

IMPLICATIONS

This study focused on a single case with a secondary science teacher's interactive practice with her ELLs during the "questioning-responding-feedback" triadic sequence. This study examined how the teacher's decision-making reflects her beliefs-in-action in that situated context. To discuss one single case with its implications can be a tricky task (Carozo-Gaibisso, Allexsaht-Snider, & Buxton, 2017), as a single case is hardly generalizable in other contexts. However, the uniqueness of a case in a given time and place within a specific context can still yield findings to inform stakeholders in other contexts. These findings can provide a lens to probe or understand similar issues in a comprehensive manner. Therefore, the research findings could have some implications for better understanding the theoretical constructs, research design and perspectives to better prepare teachers.

Studies on teachers' beliefs should not go without the complexity of the situated context as "teachers make decisions at a rapid pace" (van Zee & Minstrell, 1997, p. 227). From the situated context, we can go deeper to explore why the teacher makes such decisions at that moment and for what purposes; only through this ingrained, moment-by-moment analysis can we understand the nuance behind those choices. Learning, from a sociocultural perspective, takes place during the interaction among learners and their teacher and among learners themselves. In this study, research findings indicated that the participating teacher's decision-making to provide some scaffolded support to ELLs' content and language learning is somewhat related to her beliefs on teaching, learning, ELLs and her role as a teacher. From her practice with ELLs, she identifies herself more as a science teacher than a language teacher. Thus, she uses more content scaffolding than linguistic scaffolding. Moreover, she is not responsive to ELLs' language

learning as she is not adequately trained to do such work; furthermore, she lacks some resources such as professional development opportunities for better serving ELLs, but at the same time, she is hesitant to do an ELL certificate. Overall, this study carries some theoretical, methodological, and pedagogical implications of examining teacher beliefs and practice, designing research, and preparing mainstream teachers working in a linguistically and culturally diverse environment.

Theoretical Implications

Concerning the theoretical framework chosen for the present study, sociocultural theory advocates that learning take place through the interactive practice between experts and novices. In the classroom setting, the teacher, as the knowledgeable expert, plays an essential role in supporting students' learning. The triadic sequence of "teacher questioning-student responding-teaching commenting" is a good lens to examine how such interaction between the teacher and student can promote or hinder students' learning. During this interactive practice, how the teacher makes decisions to provide scaffolded support to students' learning can best display their beliefs about teaching, learning, and students. This case study is consistent with the selected theoretical framework. For example, in this secondary science classroom with ELLs and non-ELLs, when the teacher has longer interactions with her ELLs (i.e., through the impromptu added examples, extended turns, and other scaffolded strategies such as mediation), ELLs' learning is better. On the other hand, when the teacher has short or limited interaction with her ELLs (i.e., rapid pacing and limited or no further elaboration provided), ELLs' learning is distracted. Specifically, this case study has some theoretical implications for further understanding the relationship between teacher beliefs and practice.

Learning is achieved through interactive practice and engagement on different class activities (Vygotsky, 1978). As an important form of class interaction, the interaction between

the teacher and students offers a good lens to examine how the teacher makes decisions to facilitate and scaffold students' learning. However, the construct of teachers' beliefs, an indicator of teachers' decision-making, cannot go without the context of the event where the teacher makes some active decisions. In other words, the study of teacher beliefs becomes meaningful only if it is connected with the context where it occurs. This ingrained, moment-by-moment analysis of the whole class interactive practice is a good indicator of teachers' ongoing mental activities. Such analysis can help us better understand her mental mechanisms.

As discussed earlier, studies on teacher beliefs usually divide into teachers' stated beliefs (teachers' self-reported beliefs) and teachers' enacted beliefs (beliefs-in-action, or situated beliefs in practice). Put another way, the study of teacher beliefs should go from the epistemological beliefs (what teacher stated he or she believes) to the operational beliefs (what the teacher actually does in his or her practice or beliefs-in-action). The present study displayed that the teacher's stated beliefs do not correspond to her practice. For example, in this case, the teacher reported that she held positive beliefs about ELLs; however, these positive beliefs do not translate into active articulations in her practice. Thus, studies on teacher beliefs could focus more on the teacher's beliefs-in-action. From the situated beliefs in a certain context, we can get a better sense of how the teacher makes his or her decisions in that particular moment. This study suggests that research on teacher beliefs should go to the situated context and let teachers share with us their decision-making process. Thus, future studies on teachers' beliefs should pay more attention to teachers' beliefs-in-action and try to reveal the factors affecting their decision-making process. By doing so, it will provide us with further lens for understanding the essence of teacher beliefs and better preparing teachers.

Methodological Implications

Methodologically, this study focused more on the teacher's beliefs-in-action in a situated context by asking the teacher to share her deep thoughts on her decisions through the stimulus recall method. In this way, the participant foregrounds reflecting her own teaching through this moment-by-moment, turn-by-turn analysis of her interaction with ELLs. Thus, her beliefs on teaching, ELLs, and the English language are all located in the real context of the classroom. It overcomes the drawbacks of the traditional way of examining teachers' beliefs by interviewing teachers' stated beliefs alone where the teacher shares her personal views of her teaching philosophy, students, and teaching content. Despite the teacher being in the physical classroom, it is not a "classroom" unless the students are there and instruction is going on.

As I discussed in the previous implication, through her synchronous interaction with ELLs, I asked the teacher to view her teaching episodes to share her thoughts with me, a strategy that can also be regarded as another form of reflection. For example, in this study, in one episode, the teacher uses the IRF triadic cycle without further elaboration, whereas in another case, the teacher does add two more turns to enhance students' learning. In this regard, the use of the IRF sequence largely depends on the specific situation of the classroom. As the teacher mentioned earlier, her purposeful use of IRF is an indicator of students' misbehaviors and was used for disciplinary purposes. The second use of this structure is extended into IRFRF, with two additional turns added, and the use of this interactive sequence accounts for the teacher's situated needs at that particular moment.

The present study overcomes the rigidity of traditional approaches to studies on teacher beliefs. The relationship between beliefs and practice is not simply the former affecting the latter by comparing what the teacher says with what the teacher does in her practice. Teachers' beliefs

are much more complicated and are influenced by many contextual factors. Only through the situated context, by examining the beliefs-in-action, as this study does, can we get a full picture of why the teacher makes such decisions at a certain moment. Therefore, this study recommends that further work that examines teachers' beliefs should center on its situated context. The interactive practice between the teacher and ELLs provides a good lens to probe the issue. As a result, future studies can use the design in this project as a methodological model.

Pedagogical Implications

As discussed above, teachers' beliefs play a pivotal role in teacher's practices. The results of this study may contribute to innovative practices of mainstream teachers working with ELLs in culturally and linguistically diverse settings. One important pedagogical implication lies in the teacher's selection of the teaching content. With the development of cognitive psychology, the focus has shifted from teaching to learning. In other words, the classroom paradigm has changed from teacher-dominated teaching to student-centered learning, which requires the teacher to shift from "what content to cover" to "how to let students be able to do something with what they learn." Under this circumstance, teachers' input (content, knowledge transmission, and course materials, and delivery) might give way to output (students' competence to do things through the channel of writing, speaking, and creation). In this study, the teacher still dominated the class and tried to cover as much content as she could. She always reviewed either the course curriculum or the test curriculum, and as a result, ELLs' class participation and learning opportunities are rather limited. Therefore, while delivering the course, the teacher should have a clear learning objective, and his or her responsibility is to make sure that ELLs can use what they learn to actively involved in solving problems. In this case, in a science class, she might carry out

inquiry-based teaching and empower her students, particularly ELLs, to acquire knowledge through the interactive practices.

On the other hand, as discussed earlier, this study is consistent with the previous studies that the teacher should integrate ELLs' culture into his or her curriculum. ELLs' culture should be valued as a resource instead of being treated as something deficient. The kind of curriculum connection can increase ELLs' agency in learning and make them have a sense of inclusion.

The results of this study may offer some insightful ideas for teacher educators and teacher education program to prepare mainstream teachers. An implication for teacher educators and administrators is that by understanding teachers' beliefs-in-action, we get some new perspectives on what factors could affect teachers' real classroom instruction. These factors, in turn, could provide some good insights for teachers' education and their professional development. The goal of a teacher education program is to raise teachers' awareness of their existing beliefs about the teaching profession and "how these beliefs interact with the objectives and content of the teacher education program and shape their professional learning" (Song, 2014, p. 272). As we know, the change of a teacher's beliefs is a long-term agenda. Currently, there are some challenges for teachers to change their existing beliefs through the teacher education program as reported by some scholars (Richardson, 1996). Some interventions on belief shift turn out slow and inefficient (Bryan & Atwater, 2002). As suggested by some scholars (Gay, 2010; Song & Samimy, 2015), cultural diversity might become the core element of a teacher preparation curriculum. The program might lead prospective teachers to confront ethical issues in a dynamic manner instead of avoiding them. Another way to help shift mainstream teachers' beliefs might help them to do action research on ELLs and then share their reflections (Song & Samimy, 2015). Through this research experience, teachers will get a chance to document their practices

and then do their own reflections on it. These reflective practices might help to shift their previous assumptions about ELLs. For example, adding some multicultural courses or courses related to second language acquisition and educational linguistics might not be as effective as expected (Song, 2014). Therefore, stakeholders might make some joint efforts to look for some alternative ways to transform teachers' learning and impact their beliefs in the teacher education program.

So far, great attention has been paid to the second language pedagogy for the mainstream teacher educator working with ELLs (de Jong, 2014; de Jong & Harper, 2005; Dong, 2002; Lucas, 2011). A large amount of literature has been devoted to this field of knowledge as discussed earlier in the literature section of the present study. However, to date, not much literature focuses on teachers' belief systems, particularly their beliefs-in-action (Brownlee, Purdie, & Boulton-Lewis, 2001; Gill & Fives, 2015). The present study examined teachers' beliefs through real teaching episodes within a situated context. Through these interactive practices, the teacher has the opportunity to reflect on her own beliefs. These practices might provide educators with some valuable feedback on how the teacher makes decisions in real teaching practices, and teacher educators might take some effective steps to support shifts in teacher beliefs for better teaching performance and improved pedagogy.

In relation to improving practice, this study may encourage us to better understand why some teachers' teaching skills do not improve even if they take part in the professional development workshops. As reported by the teacher, she is hesitant to improve her teaching skills in SLA despite her incompetence in that field. In this study, the teacher knew she lacks expertise in supporting ELLs' linguistic development. However, she is not willing to learn new skills. Teachers' beliefs might be a good lens to look into this matter. In reality, if the teachers'

belief system does not change toward their practice, it is hard for the teacher to make any substantial reforms in his or her work. The present study is a good example to highlight the teacher's resistance to change (Akmal & Miller, 2003; Knight, 2009; McKenzie & Scheurich, 2008). Therefore, when doing professional development, a survey of teachers' belief systems is necessary. Understanding teachers' belief system is the first step to be aware of their needs. For example, mainstream teachers should realize supporting ELLs is part of their mission regardless if it is stated, and they should establish solidarity with minority students and have a passion to listen to ELLs' stories. During the training, more teaching video clips on ELLs' learning needs might be shared and analyzed. Through these critical video critique practices, teachers will get a chance to reflect on their beliefs and look for effective strategies to solve issues related to ELLs' learning.

In addition to the coursework, other types of practice (such as community visits and additional resources) are also suggested to affect prospective teachers' beliefs toward ELLs. This field experience might not only transform their practices and bring them out of their comfort zone, but also help facilitate their belief changes. In short, the teacher professional development program might provide more resources and tools to support mainstream teachers' development by recognizing the complexity of the classroom and to get them ready to work with ELLs in a diverse setting.

In summary, the present study implies that theoretical approaches to the study of teachers' beliefs should focus on the teacher's beliefs-in-action, as a person's belief system is context sensitive. Methodologically, teachers' own reflective voices should be triangulated as the data source, as this reflective tool can provide us with their authentic decision-making process.

Pedagogically, belief systems should be part of the course curriculum in teacher education programs, as practice in multicultural education can help facilitate teachers' belief shifts.

CHAPTER 7

CONCLUSIONS

ELLs represent the fastest-growing student population in U.S. public schools. Meeting the educational needs of these students has become an increasingly important concern for educators and policymakers. The education of ELLs is not only an educational issue but a political one (Ovando, 2003). These issues and the large influx of ELLs have dramatically shifted the class environment, and as a result, it has brought challenges both to ELLs and their teachers. ELLs need to overcome their English language barriers to develop both content knowledge and language skills. At present, ELLs' academic achievements are discouragingly far behind their American peers (Cummins, 2001; Reeves, 2006) and even at risk (Janzen, 2008). On the other hand, mainstream teachers shoulder more responsibilities to instruct ELLs in meeting both the content and language learning objectives (Lee, Quinn & Valdes, 2013). They need to "bring together subject matter instruction and second language instruction" (Lee, Quinn, & Valdes, 2013, p. 228). However, in reality, mainstream teachers are underprepared to deal with ELLs' specific needs in a culturally and linguistically diverse setting. Therefore, those mainstream teachers who possess less expertise in second language education are under great pressure to deal with ELLs for their content learning and language development (Bunch, 2013; Lucas & Villegas, 2011). This study took one science teacher from a secondary school as a case to examine how she helped scaffold ELLs' content and language learning during the teacher-student interactive process.

Summary of the Research

Through analyzing a mainstream teacher's beliefs-in-action and her interactive practice with ELLs, this study enhances our understanding of the complex relationship between teachers'

beliefs and their real practices in a situated context. Research findings indicated that this teacher's decision-making toward scaffolding ELLs' content and language learning reflects her beliefs on teaching, learning, ELLs, her position as a science teacher, and her professional development.

Specifically, for her perspective on teaching, as indicated in the research data, she advocates for the high-structured, teacher-dominated class format for fear of chaos. Thus, the interaction between teacher and students during her instruction is limited. Subsequently, ELLs' learning opportunities are reduced as they have little chance to interact with their teacher and peers. In addition, this teacher believes that "ELLs can become competent learners within two or three years" and language support is not part of her responsibility. Moreover, in reality, ELLs' language support is almost non-existent out of her science class due to the school budget cuts and the cease of other community services. As we know, most ELLs come from homes with lower SES and their family, in most cases, cannot afford the additional language remedial classes in the society. Furthermore, during the interactive practice with ELLs, some of her scaffolded strategies are not as effective as she expected. Some strategies, such as impromptu adjustment of teaching materials and extended turns for further elaboration, supported ELLs' learning; other strategies proved to be less effective, and the extended wait time without any accommodation is a case in point. Lastly, she is skillful as a science teacher in supporting ELLs' content learning, but she feels challenged to help develop their language proficiency. To our surprise, despite her lack of expertise in second language teaching, she is not enthusiastic about obtaining her ELL certificate.

Through a fine-grained analysis of the teacher-student interactive practice, this study reveals that the relationship between teacher beliefs and practice is much more than the teacher-student interaction where one construct affects the other. In fact, the teacher's decision-making is

affected by many other factors, be they external (e.g., the state test), internal (e.g., expertise in both disciplinary and linguistic knowledge) or the situated context (e.g., positive and negative responses to students' answer). Meanwhile, the research data revealed that the teacher was taking the "sink or swim" perspective toward ELLs' language learning. She is hesitant to do her ELL certificate as a way to improve her instructive practice with ELLs. These research findings have implications for mainstream teachers' education and their professional development in a way to better support ELLs' learning.

Contributions of the Research

This study contributed to the scholarship in the following dimensions. Theoretically, studies on teachers' beliefs should take the perspective of beliefs-in-action within the teacher-student interactive process; methodologically, the fine-grained moment-by-moment analysis should be used to examine the teacher's decision-making process; ELLs' agency should be highlighted in the discursive practice; mainstream teacher education integrate SLA courses into their training.

As a complex construct that guides teachers' practices, teacher beliefs are hard to catch and measure. This study focuses on the teachers' practice dimension to probe how the teacher makes her decisions during the interactive process with ELLs. Theoretically, studies on teacher beliefs should focus on the situated context where it might shape and reframe teachers' decision-making. In other words, studies on teachers' "beliefs-in-action" are more meaningful than the decontextualized, reported beliefs. On the other hand, studies on the interaction should go beyond the traditional triadic sequence of "teacher questioning-student response-teacher evaluating" structure. In a mainstream classroom with ELLs, the interaction between the teacher and ELLs is not restricted to the content and linguistic dimensions. Such an interaction takes

place between the teacher and the culture ELLs represent. To achieve a productive practice with ELLs, the teacher should know ELLs and their cultures. Of course, the teacher does not have to know all the languages ELLs can speak. However, he or she should respect ELLs' culture and intentionally integrate some of their cultural elements into teachings in terms of the word, topic, and story selection. These elements can be the prerequisite of a connection between the teacher and their ELLs. Once such a connection is established, ELLs are confident in joining the conversation for more interactive practice. In the same vein, the interactive pattern between the teacher and ELLs might take a different format. For example, more extended turns for elaboration are expected, and the teacher should be patient to scaffold ELLs' learning through these additional turns. Moreover, the teacher can pay attention to some ineffective strategies. For example, some accommodations should be made during the wait time; more interactions are expected between the teacher and ELLs, and therefore, the teacher should give more talk floors to ELLs.

Methodologically, this study helps probe the relationship between beliefs and practices through a moment-by-moment, turn-by-turn examination of classroom interactions in a dynamic manner. The findings of this project could, in particular, increase our understanding about the ways mainstream teachers can efficiently assist ELLs' content learning and language acquisition.

This study also highlights the need for more ELL agency. The teacher needs to encourage ELLs to ask questions, as student-initiated questions are scarce in this study. Thus, ELLs should have the agency to ask more questions. It is generally held that the core of all learning is the ability to ask questions (Albergaria-Almeida, 2010a). The reality is that learning does not occur until students can raise their own questions. Carlsen (1991) pointed out that research on classroom questioning has generally focused on teachers' questioning while it neglected the fact

that students' questioning is also an inseparable part of classroom behaviors. Scholars maintain that student questioning plays a critical role in the process of meaning-making; it not only helps shape students' thoughts for conceptual understanding, but also helps create a culture of inquiry in the instructive practice (Albergaria-Almeida, 2010a). Students questioning is closely linked with learner agency (Waring, 2011), which is highly regarded as a way to promote learning opportunities in classroom interactions (van Lier, 2008). Scholars and practitioners have increasingly come to acknowledge the centrality of learner agency in generating learning opportunities (Waring, 2011). In short, during the interactive practice, the teacher should make her class culturally and linguistically inclusive, accessible and relevant.

The findings also shed light on the practice of teacher education programs with respect to preparing teachers to work in linguistically and culturally diverse settings. In particular, it spotlights how to effectively translate teacher knowledge, skills and beliefs into practice in the real school context. Many K-12 teachers face the task of helping students develop content knowledge while acquiring language skills (Bunch, 2013). Science teachers working in multicultural settings must have the necessary training on the skills of second language acquisition. Such language pedagogy training can not only help mainstream teachers get the necessary linguistic skills but also can help increase their empathies toward ELLs and as a result, contribute to shaping their beliefs.

Limitations of the Study

The present study bares several limitations due to availability of the teacher and her tight schedule at school, pressure on her work, and her involvement in this project. Specifically, these limitations are: (1) the recruitment of the research participant; (2) the teacher's unbalanced

sharing on different topics; (3) lack of ELLs and other stakeholders' voices; and (4) the teacher's intentional change once she is aware of the research purpose.

As mentioned above, due to the availability of participants in this study, only one mainstream teacher from one middle school participated in the study, which affects the reliability of the research findings. In addition, due to our participant's busy schedule at school, I only had limited time for stimulus recall interviews and classroom observations. In my future research, more teachers from diverse school contexts should be involved for data generation. A longer period of classroom observations and more in-depth interviews are needed for more reliable and productive data collection.

In addition, as indicated by the data, some of the teacher's self-reports in a certain teaching episode are longer while others are shorter. This unbalanced sharing, on the one hand, is due to the teacher's busy schedule, as she needed to answer my question very briefly; on the other hand, it depended on the topic. For example, occasionally, some "side conservation" would come to her mind, and she shared more with me. These side conversations are related to her workload increase, tense curriculum, high-stakes test pressures, no ESL support, unwillingness to get an ELL certificate and so on. As a researcher, I tried to get as much as information I can on the topic. Moreover, the data from stimulus recalls cannot be free of biases as a result of her desirability to share and her sensitivity to the relevant issues (Song & Samimy, 2015).

This study was based on one class with ELLs and non-ELLs in the same classroom. ELLs represented one-third of the whole group. In the mainstream classroom, both ELLs and non-ELLs sit together, and their interactions with the teacher are woven together. Solely recording ELLs' interaction with the teacher is affluent. It is natural to have both ELLs and non-ELLs participate in the same discursive practice. In other words, in a mainstream classroom with ELLs

alone, the interactive patterns might take a different structure. Additionally, ELLs' perspectives toward the teacher's pedagogy and their learning experiences are not included in the present study. Students, particularly ELLs, might provide some insightful ideas on their challenges, and a result, what kind of support is highly needed.

Lastly, with the ongoing nature of my project, the teacher has a better understanding of my research purpose. She might pay more attention to her "questioning and responding" behaviors toward her ELLs. The teacher's changing behaviors at the later time might affect the authenticity of the research findings. For example, at the end of this study, I asked if the teacher had undergone any change through this research project in the past two months. She shared the following with me:

> I think I thought more about it. Maybe not every time I ask kids the question, but I might give a little more wait time, or ask more, and not just. OK, move on to the next kid. That kind of thing, but is not all the time. I guess it depends on, you know, where we were in the last lesson, or it is just a quick review, or it was, I really want to make sure that you got this, working on this. But, I try, really try to have a little bit more wait time. It was really hard [The teacher whispers this sentence to the researcher]. You know, sometimes, when I stop talking, they start talking, so I want to give them a little bit of time to them to process, but you know [ha ha, the teacher laughs] they process with their mouth, some chaos, you know, try to control that. But, I feel like I'm finding it. I'm still working on it. Because you [the researcher] are here, I think, OK, er, I began to think about, do they really understand it or just spill out information, back to me. So I have been trying to, you know, hold more of the

information, give them a chance to, give them a chance to show what they know, what they did.

In short, all these limitations might affect the reliability of the data and need to be addressed in my future research.

Directions for Future Research

The present study provides a good lens to probe the teacher's decision-making process by focusing on her beliefs-in-actions. Through the teacher's interactive practice with ELLs in such a situated context, we can better understand how her belief system affects her discursive practice with ELLs. In the future research, above all, the limitations of the present study need to be addressed and then some other relevant topics can be explored.

First, as discussed previously, to address the limitation of the participant recruitment issue, in the future, more teachers from different school districts need to be recruited for a reliable data source. For example, two or three teachers from different school districts of various contexts might make the case study more interesting and productive. Under such circumstances, we can get a better understanding of what might impact teachers' performance with ELLs. As the participant teacher in this study is a science teacher, in the future, teachers of other subject matters can be recruited for the data collection. For example, how a math teacher or a social study teacher deals with ELLs' learning might take a different route than the present science teacher. These teachers of various subject matters might reveal some interesting findings in better understanding the teachers' belief system and the interactive process.

Second, to address the issue of the teacher's unbalanced sharing, more data sources need to be triangulated. In addition to the stimulus recall, class videos, observation notes, and other artifacts, other data sources should include a comprehensive understanding of the teacher's

practice. For example, the teacher's self-reflection journals, personal memos, professional development notes, and other related data should take into account. Moreover, sometimes, the researcher's eliciting questions might play an important role in obtaining some data. For example, is the question from the researcher clearly enough to be interpreted properly by the participant teacher? Does the eliciting question make sense to her practice? Sometimes, is it all right to send the eliciting questions to the teacher before the stimulus recall interview? All these issues need to be considered in my research design in my future research.

Third, to address the issue of lacking other stakeholders' viewpoints, in future research, students' perspectives (both ELLs and non-ELLs) on their teachers' practices with them should be included. In this way, we can get a much more clear idea of the effectiveness of the teacher-student interaction. Another issue that needs examination is the evolution of her ELLs' learning progress. By taking a year-long, longitudinal study of students' learning of both content and language achievement, we can further evaluate the efficiency of her interactive practice. For example, is her student's content learning improved? To what extent did her ELLs' academic language improved? In addition, school administrators' evaluations of the teacher might be another dimension of the teacher's performance. This dimension can further help understand the teacher's behaviors and mental activities, and we can have a better understanding of the teacher's working environment and factors affecting her social well-being and performance. For example, to be more specific, a comparative analysis of her school curriculum and test curriculum is necessary for us to understand the pressure she undertakes.

Lastly, there is the issue of the teacher's intentional adjustment of her teaching while she is aware of the research purpose. In the future, I will explain the research objective to her much clearly. Before the real data collection, I will do a pilot study with her and make sure she gets

familiar with the research procedures. In that way, she will be much more comfortable with my presence. Thus, doing research of this kind, the rapport between the participant and the researcher is very important. With mutual trust between the researcher and the teacher, the data generated could be as natural as they are.

In addition to the issues identified above, in my future research, by applying the present research model of examining teachers' beliefs-in-action in this interactive process, other relevant topic can be further explored. For example, an examination of the teacher's talk might be a good lens to analyzing how her talk can help facilitate ELLs' class participation and learning. Another interesting topic is to investigate ELLs' contribution in this interactive practice with their teacher. As we know, learners' contribution is a vital signal of their learning achievement. More learner contribution is encouraged in a student-centered class. To sum up, in the future research, mainstream teachers from other content areas can be recruited for more data generation; both the teacher's talk and students' contribution are good lenses to probe the relationship between teachers' beliefs and practice further.

Closing Remarks

The teacher, students and the classroom are the three fundamental elements of the teaching profession. The process of teaching and learning takes place in the venue of the classroom. In this process, the teacher plays a significant role in determining students' learning achievement. In this instructive practice, the teachers' performances are not only guided by the knowledge they acquired from their training but also affected by the beliefs they holds toward teaching, learning and their students. Sometimes, these hidden assumptions are not easy to shift, as indicated in this study. Although the teacher in this study held a very positive belief toward her ELLs and expressed her willingness to support their learning, she was hesitant to get her ELL

certificate. She even wanted to work in a school without ELLs if she had to teach ELLs. In other words, a teacher's positive beliefs do not necessarily transform them into his or her favorable action toward students' learning. The teacher might have some practical considerations on his or her investment on professional development. These practical factors, as evidenced in this study, include heavy workload, no pay rise, learning on ELLs' culture and language, testing pressures and so on.

If we probe the issue of why this teacher takes such a perspective toward ELLs and her profession, we should view this point from both the sociocultural context and the teacher's individual dimensions. At a micro level, the policymakers and school administrators should recognize their workload increase and provide incentives for their professional development, such as a pay rise, less teaching hours, more professional development on culturally and linguistically relevant pedagogy, and a language specialist's support. At a micro level, the teacher should do more reflections on their teaching. For example, the teacher should keep a teaching journal, a debriefing with the language teacher, story sharing with their ELLs, and so on. Through such reflexive practice, mainstream teachers can have a sense of honoring their profession and devoting more efforts to their teaching. In the teacher-training program, teacher candidates should have a realistic sense of their working environment. More real classroom teaching video clips should be shared and analyzed in the classroom. By all these means and the joint efforts of multiple stakeholders, mainstream teachers will get academically, psychologically and emotionally prepared. Then mainstream teachers will not only possess the knowledge and skills in supporting ELLs' learning, but also hold a positive belief toward their profession.

As a white, monolingual science teacher, the research participant teacher in this study did not get prepared for the demographic shift of her student population. She still treats ELLs as "the

Others" and as a group different from her non-ELLs. In fact, the teacher should feel privileged that students of diverse background come to her classroom. As such, teachers should value ELLs' culture and language and should learn from them. For example, every student has a story and the teacher should come closer to ELLs, and listen to and acknowledge their happiness and sadness. Only through such endeavors, can teachers become sensitive to ELLs and make his or her class inclusive and accessible. Therefore, multicultural education in teacher training and professional development should not stay solely in scholars' talk, but should be integrated into their daily work.

APPENDICES

APPENDIX A

Content Form for Teachers

You are invited to join a research to look at the relationship between teacher beliefs and practice, particularly to see how the teacher interacts with English Language Learners (ELLs) in the classroom.

Your participation is voluntary. You have the right to join, and later change your mind and withdraw from participation at any time. You lose no benefits for quitting the study and there will be no any penalty.

There is no data to be identified as an individual and to be shared with anyone at your school. It is expected that there will be no risks to you as a result of your participation. If there is a question that makes you feel uncomfortable, you can refuse to answer. You will not get direct benefits from participating in this study.

If you have any questions or concerns about this study, you should contact Yanjiang Teng at tengy@msu.edu or 517-355-1222. You can also contact Dr. Dongbo Zhang for further information at (517) 353-4541 or zhangdo6@msu.edu. In addition, the MSU Institutional Review Board is an agency to make sure all the rights and welfare of human participants are protected. If you have any questions about your rights as a participant or complaints about the study, you may contact the MSU IRB at 517-355-2180 or irb@msu.edu. Or, write to the IRB office, Olds Hall, 408 West Circle Drive, Room 207, East Lansing, MI 48824.

We thank you for your willingness to participate in this research.
If you decide to participate you will be asked to do answer a few questions based on the teaching episodes prepared by the researcher once a week. Approximately, this will take you 40 minutes each week for consecutive eight weeks. Also, as part of this research, your teaching will be videotaped and the stimulus recall interview will be audiotaped.

I voluntarily agree to participate in the study.

Name _____ Date _____

Signature _____

APPENDIX B

Content Form for Students

Project Title: Teacher's Management of Classroom Interactions with English Language Learners: A Case Study of a Mainstream Teacher's Practices and Beliefs
Investigator: Yanjiang Teng

We are doing a research study about the relationship between teacher's beliefs and practice. The purpose of the study is to look at how the teacher interacts with English Language Learners (ELLs) in the classroom.

For the study, we intend to videotape how the teacher interacts with ELLs in the natural classroom. There will be no foreseeable risks to you to be involved in this project. There will be no direct contact between the researcher and you. No data that would allow you to be identified as an individual and to be shared with anyone at your school. The participation is voluntary and you will receive no direct benefit from participating in this study.

You have the right to join, and later change your mind and withdraw from participation at any time.

If you decide you want to be in this study, please sign your name.

Student Name _____Date _____

Signature (Parent / Guardian)
_____

APPENDIX C

Letter to Parent/Guardian

Dear Parent/Guardian,

We are a research team from College of Education, Michigan State University and we are doing a research project about the relationship between teacher's beliefs and practice. The purpose of the study is to look at how the teacher interacts with English Language Learners (ELLs) in the classroom.

For the study, we intend to videotape how the teacher interacts with ELLs in the natural classroom. The focus of the study is on teachers' teaching practice. There will be no foreseeable risks to your child to be involved in this project. There will be no direct contact between the researcher and your child. No background data will be collected from your child.

All the data (video clips) will be kept confidential and anonymzed of students after research is complete. No data that would allow your child to be identified as an individual and to be shared with anyone at his or her school.

If you have any questions or concerns about this study, you should contact Yanjiang Teng at tengy@msu.edu or 517-355-1222. You can also contact Dr. Dongbo Zhang for further information at (517) 353-4541 or zhangdo6@msu.edu. Or you can contact MSU Institutional Review Board (IRB) at 517-355-2180 or irb@msu.edu. Or, write to the IRB office, Olds Hall, 408 West Circle Drive, Room 207, East Lansing, MI 48824.

Thanks again for your consideration of this project.
All the best,
Yanjiang Teng
Dongbo Zhang

APPENDIX D

Stimulated Recall Protocols

As a type of retrospective report, stimulated recall (SR) allows the subject a relatively unstructured response, and the participant is invited to comment on memories rather than on a present interpretation or doing self-reflection. The SR protocols provide elicit questions for investigating cognition direct from memory. For example, questions such as:

(Adopted from Gass & Mackey, 2000; Polio, Gass, & Chapin, 2006; Swain & Lapkin, 2002).

1) What did you think this student think when she answers your question in that way?

2) When she said that, why did you pause for that short while?

3) When the student said "No" to your question, why did you take no notice of her and then turn your attention to that non-ELL student?

4) Why do you use recast at this particular moment?

5) When she said "…", who did you think she meant?

6) What was your mental picture of what was happening here?

7) What was your understanding of his answers at this point?

8) For this point, you seem to comment and elaborate a lot for her answer, what's your rationale behind it? Does this elaboration go against your original lesson plan? Why and why not?

9) At this point, why do/don't you emphasize the word connotation for students' English language learning?

10) Do you remember thinking anything when she repeated that?

11) Can you remember what you were thinking when she said that/those words?

12) I see you're laughing/looking confused/saying something there, what were you thinking then?

APPENDIX E

Transcription Conventions

Each line represents an intonation unit.

(.)	barely noticeable pause, usually less than 0.2 seconds
(.3), (3.5)	timed pause
(.hh)	audible speaker's in-breath
(hh)	audible speaker's out-breath
(word)	uncertain transcribed words
(?)	an unclear fragment
(xxx)	inaudible talk
< >	transcriber's comment
{}	transcriber's added background information
Italicized fragments	speaker's emphasis
CAPITALIZED words	speech noticeably louder
.	stopping of the tone unit
/	repeated utterances by the same speaker
,	a continuing intonation
?	rising intonation (not necessarily a question)
-	sharp cut-off of the prior word or
[ ]	overlapping talk
:	length
[[ ]]	second overlap in proximity to the first
([ ])	phonetic transcription
=	latching (no pause between speaker turns).
@	laughter of a speaker.
((cough))	a non-verbal activity, such as bodily movements

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