

## **ABSTRACT**

KOCHER, BRADY R. English Language Learners in Mainstream Science Classrooms: Understanding how English Language Learners' perceptions of Teachers' Use of Immediacy and Instructional Conversation Behaviors Impacts Students' Language Acquisition and Achievement. (Under the direction of Dr. Heather Davis).

The purpose of this project was to identify English language learners' (ELL) perceptions of their science teachers' instructional conversations and immediacy behaviors and the impact of these perceptions on students' science motivation, language acquisition, and academic achievement. The aim of this study is to document the independent and combined contributions of social contextual factors, instructional conversations, and immediacy behaviors on predicting academic outcomes for ELL students.

Foundational research on student motivation has found that the nature and quality of students' learning processes and the effectiveness of instruction are dependent upon student perceptions of the classroom. These perceptions have repeatedly been proven as reliable and valid predictors of outcome variable in line with this study.

This study was conducted using a survey given to 139 English language learners (ELL) and 131 non-ELL middle school students within their science classroom. In order to understand ELL perceptions of their science teachers' instructional conversations and immediacy behaviors and the impact of these perceptions on their science motivation, language acquisition, and academic achievement, the following data was collected: 1) instructional Conversation (IC) survey, 2) Immediacy survey, 3) Self-Reported Measures of Student Motivation (intrinsic motivation, perceived autonomy, anxiety), 4) language acquisition scores of target ELL students, and 5) third quarter science scores of ELL students.

A hierarchical regression with three steps was conducted to evaluate the independent contribution of social-contextual variables.

Findings indicate that there are significant differences between non-ELL and ELL students' perceptions of their science teachers' instructional conversations (IC) and immediacy behaviors. ELL students frequently rate their perceptions of instructional behaviors lower than that of their non-ELL peers. In addition, ELL perceptions of instructional conversations and immediacy behaviors significantly predicted intrinsic motivation and learner autonomy when controlling for status factors like gender, science grades, and language spoken at home. There are also significant differences between non-ELL and ELL students' self reported motivation outcomes, finding that ELL students frequently rate their perceptions of motivation outcomes lower than that of their non-ELL peers. Finally, this study provides an important link between Krashen's Active Filter Hypothesis of language learning, the broader processes of the socio-cultural theory of cognitive development, and language socialization theory. The combination of understanding how affective variables (intrinsic motivation, learner autonomy, anxiety), dialogue, and social interactions within the classroom setting effect second language learners may provide the best insight into students' second language acquisition. Results of the survey study indicated a significant positive correlation for the way in which ELL students' perceived instructional conversations and immediacy and their motivation in the science classroom. ELL students who perceive their science teacher to have high quality instructional conversational and immediacy behaviors tend to be intrinsically motivated, have higher autonomy, and in some cases, less anxiety. In addition, ELL perceptions of instructional conversation and immediacy behaviors significantly predicted language

acquisition outcomes beyond status factors like gender, science grades, and language spoken at home.

This research increased our understanding about the way in which mainstream teachers can assist ELL students in their process of language acquisition and illuminated those instructional responsive practices that support their academic needs. A deeper understanding and deliberate design within lesson planning may assist teachers in creating a challenging (non-threatening) environment which, in turn, promotes discussion that is responsive to our language learners. An understanding of the issues affecting ELL students in mainstream classes can also aid administration in planning sound educational programs that support the language and academic demands of ELL students.

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English Language Learners in Mainstream Science Classrooms: Understanding how English  
Language Learners' perceptions of Teachers' Use of Immediacy and  
Instructional Conversation Behaviors Impacts Students'  
Language Acquisition and Achievement

by  
Brady Kocher

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APPROVED BY:

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Dr. Heather Davis  
Committee Chair

---

Dr. Margaret R. Blanchard

---

Dr. Jessica Decuir-Gunby

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Dr. Ellen McIntyre

## **DEDICATION**

First, I acknowledge and thank my dissertation committee in its entirety. I have been fortunate to have the same four advisors throughout this journey. Dr. Blanchard, Dr. Davis, Dr. Decuir-Gunby, and Dr. McIntyre indeed challenged and supported my work and I am deeply grateful to them for their oversight and guidance

Dr. Heather Davis graciously accepted the responsibility of advisor at the beginning of the dissertation process. She has provided exceptional guidance through our discussions, in developing a survey, analyzing the data, completing my dissertation, and publishing my work. By the end of this process, we were masters of getting hours worth of work done in minutes. I truly feel that not only can I call her a colleague, but also my friend.

Finally, I want to thank my wife Jamie, and my children Conner and Abbi for sharing me with this process. When we moved to North Carolina, I never thought getting to this point was going to be possible. My family supported and encouraged me every step of the way.

## **BIOGRAPHY**

2002.....B.S. Environmental Biology, University of La Verne CA  
2005.....M.A. Cross-Cultural Education, National University, San Diego CA  
2010.....M.A. Administrative Supervision, University of Phoenix, Phoenix AZ  
2002-08 .....Biology Teacher, Jurupa Valley High School, Riverside CA  
2008-09 .....Biology Teacher, Fuquay-Varina High School, Fuquay-Varina NC  
2009-11 .....Professional Development Coach Wake County Public School System NC  
2010-current.....Online Facilitator Elementary Education, University of Phoenix NC  
2010-current.....Site Supervisor Student Teaching Program, University of Phoenix NC  
2011-current.....Assistant Principal East Wake Middle School, Wake County NC

## TABLE OF CONTENTS

LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
CHAPTER 1 INTRODUCTION .....	1
Subjectivity Statement .....	1
Background of the Study .....	3
Statement of the Problem.....	5
Purpose of the Study .....	7
Contributions to the Field .....	8
Operational Definitions.....	8
CHAPTER 2 REVIEW OF LITERATURE .....	10
Understanding Second Language Acquisition.....	11
Stages of Language Acquisition .....	13
Affective Variables and Language Acquisition.....	14
Intrinsic motivation.....	14
Learner autonomy .....	17
Anxiety.....	18
Acquisition through interaction .....	19
Interactionist theory .....	20
Language socialization theory .....	20
Vygotsky's Socio-cultural theory .....	21
Summary.....	23
Effectiveness of Mainstream Classroom Teachers for ELL Students' Learning	25
Traditional Vs. Dialogue Centered Classrooms.....	30
Capturing the Quality of Instructional Conversations .....	34
Structuring instructional conversations in ELL classrooms .....	36
Summary .....	42
Research on the Impact of Teacher Immediacy Behaviors .....	43
Teachers' Perceptions of Student Dependency.....	47
Summary .....	51
CHAPTER 3 METHODS .....	54
Purpose.....	54
Research Design.....	54
Participants.....	57
Class-based recruitment .....	58
Focused ELL recruitment .....	59
Measures .....	62
Self Reported Measures of Student Perceptions.....	62
Perceptions of instructional conversations.....	62
Perceptions of teacher immediacy behaviors.....	65
Self Reported Measures of Student Motivation.....	67
Intrinsic motivation.....	67

Perceived autonomy.....	67
Anxiety.....	68
Academic Outcomes: Language Acquisition and Science Achievement.....	68
Language acquisition.....	68
Science Achievement.....	69
Additional Status Factors.....	70
ELL and Non-ELL status factors.....	70
Data Analysis.....	70
CHAPTER 4 FINDINGS.....	73
Research Question 1.....	73
Research Question 2.....	74
Research Question 3.....	75
Research Question 4.....	77
Research Question 5.....	79
CHAPTER 5 DISCUSSION.....	86
Implications for Theory.....	86
Limitations.....	90
Implications for Practice.....	93
REFERENCES.....	101
APPENDICES.....	110
Appendix A: IRB, Surveys, Consent Forms.....	111
Appendix B: Regression Equations.....	138
Appendix C: Factor Analysis Data.....	139
Appendix D: CREDE Model.....	146

## LIST OF TABLES

Table 1: Summary of Participants' by Gender and ELL Status.....	59
Table 2: Summary of Participants' by Gender and ELL Status.....	61
Table 3: Reliability Analysis of Measures.....	72
Table 4: Differences in Means between ELL and Non-ELL Students.....	74
Table 5: Correlations by ELL and Non-ELL.....	79
Table 6: Predicting Intrinsic Motivation Using ELL Students' Perceptions of Instructional Conversations and Immediacy.....	81
Table 7: Predicting Autonomy Using ELL Students' Perceptions of Instructional Conversations and Immediacy.....	82
Table 8: Predicting Anxiety Using ELL Students' Perceptions of Instructional Conversations and Immediacy.....	83
Table 9: Predicting ACCESS Using ELL Students' Perceptions of Instructional Conversations and Immediacy.....	84
Table 10: Predicting Quarter 3 Science Grades Using ELL Students' Perceptions of Instructional Conversations and Immediacy.....	85

## LIST OF FIGURES

Figure 1.1: Conceptual model for understanding the effect of student perceptions on motivation, language acquisition and academic achievement of ELL students .....	6
Figure 2.1: Active Filter Hypothesis (Krashen).....	96
Figure 2.2: Stages of Language Acquisition.....	97
Figure 3.1: Methods Model.....	98
Figure 3.2: Instructional Conversations Rating Scale.....	99
Figure 3.3: ACCESS Scores .....	100

## **CHAPTER 1**

### **INTRODUCTION**

Foundational research on student motivation has found that the nature and quality of students' learning processes and the effectiveness of instruction are dependent upon student perceptions of the classroom (Entwistle & Tait, 1990), which have repeatedly found reliable and valid predictors of outcome variable in line with this study (Levy et. al, 1997; Mantero et. al, 2006). For this reason, I am interested in studying how student perceptions of teachers' instructional strategies can build capacity with language and content at the same time. In other words, what are the academic and social needs of English Language Learners (ELL) as it pertains to improving language acquisition and use? What do we know about the preparation of mainstream classroom teachers for supporting the language needs of our ELL population? What do we know about the role of teacher-student relationships on school-related functioning and motivation to succeed for ELL students? What do we know about the role of instructional conversations on student learning outcomes or language acquisition? What do we know about the role of teacher immediacy behaviors on student learning outcomes including language acquisition of ELL students? These questions require an answer, and the lack of studies regarding student perceptions of teacher use of instructional conversations and immediacy in the classroom needs to be addressed.

#### **Subjectivity Statement**

After graduating with a bachelors of science in environmental biology, I had no idea what to do next. I was soon offered a chance to work at a high school teaching science. I hesitated at first because I had no formal teacher education training. However, I had been a

coach, and a chance to work with students and teach a subject I felt strongly about was a great opportunity. I was ultimately given a position at an alternative school designed to assist non-promoted eighth graders and provide credit recovery for tenth and eleventh graders. The alternative setting was located on the comprehensive campus, but followed a different schedule. The school consisted primarily of minority students, many of whom were second language learners. It was during this time that I developed a true passion for helping others. It was also during this time that I began to recognize the many barriers that second language learners faced in their core classes.

Through my studies in cross-cultural education, I was introduced to many research-based instructional models that specifically target the language development of ELL students. Within my school, increasing numbers of English language learners prompted an influx of professional development with the instructional models of Specially Designed Instruction in English (SDAIE) and the Sheltered Instruction Observation Protocol (SIOP). Despite numerous hours of training, there continued to be disagreement amongst my colleagues on how to properly serve the growing ELL population. Teachers were torn between what worked best for the majority and what was needed for the minority.

I spent many hours as a teacher, professional development coach, and administrator building relationships with faculty and staff at schools with high populations of ELL students. In my work as a professional development coach, I have noticed a difference in student engagement between teacher's classrooms and across content areas. I also have noticed that in the time frame that teachers have, and with the limited training and resources, they continue to struggle to make each day a meaningful experience for all students. I have

helped teachers in identifying key vocabulary, scaffolding assignments, writing clear objectives, building background, creating authentic activities, and incorporating technologies so that the content is accessible for all students. Despite all these changes, it seemed the inability to navigate the vocabulary and nuance of the language has positioned our ELL students to feel reliant on the few minutes during each class that teachers can spare for each of them to make the language more accessible. Within the mainstream classroom, ELL students are simultaneously expected to learn English quickly and competently in addition to the content standards. These demands seem to prohibit teachers from connecting with each of their students. What I continued to witness in the middle school setting was a lack of interpersonal immediacy behaviors paired with instructional strategies that, resulted in a lack of student motivation.

### **Background of the Study**

A review of both the instructional conversation and immediacy behavior literature indicates both sets of interpersonal behaviors influence students' motivation (Allen, et. al., 2006; Noels et.al.2003). However, to date there have not been any studies that have explored the two predictors simultaneously. Effective classroom instruction is focused on the activation and use of background knowledge, use of a variety of questioning techniques, and the promotion of critical thinking skills. The Language Socialization Theory (LST) argues the most effective way to encourage ELL students to become active, competent participants in the classroom is to situate the acquisition of new knowledge within social settings in the classroom (Bayley & Langman, 2011). Similarly, Vygotsky's Socio-Cultural Theory contends that social interaction plays a critical role in the learning process (Vygotsky, 1978;

Lantolf, 2011). During peer and teacher interactions, learners not only construct new language but their learning of content is socially-mediated and facilitated by social action, positive emotions, and a sense of connectivity. Dialogue-centered classrooms may have a greater impact on the improvement of language development and academic aptitude. In a dialogue-centered classroom, teachers modify the curriculum to include instructional patterns that focus on making content comprehensible through peer and teacher interactions that increase specific terminology and oral use of language (Goldenberg & Gallimore, 1992). In general, these kinds of informal and structured conversations that happen in the classroom have been termed “instructional conversations”. Instructional conversations are designed to create a challenging, non-threatening environment which promotes discussion that is responsive to students’ needs. Research suggests the discourse patterns characterized by interactive conversations also increases student participation within the discussion (Goldenberg & Gallimore, 1992).

Unfortunately, opportunities to dialogue with peers and teachers may not be enough to promote ELL students’ engagement in the classroom. Findings from the field of ELL education indicate the critical role of students’ perceptions of teacher relationships (Levy et.al, 1997). Structural elements of middle schools may prohibit science teachers from the opportunity to develop lasting relationships with each of their students. In order to communicate caring and the desire to connect with students in class, teachers may need to develop their interpersonal immediacy behaviors. Immediacy behaviors represent a set of verbal and non-verbal communication behaviors (Allen et. al, 2006) that showcase the approachability of teachers to their students. Immediacy behaviors enhance the

psychological closeness students perceive with their teacher through the use of certain cues, questions, and responses (Mehrabian, 1981). Teachers can therefore be trained to display immediacy behaviors that can increase the level of perceived closeness and, in turn, may affect student motivation and learning.

### **Statement of the Problem**

There is a growing need to finding effective ways of improving success of English Language Learners and recognize the challenges practitioners face in developing curriculum and proper lesson planning that address the language needs of ELL. Therefore, the main goal of this project is to investigate the independent and combined contributions of social contextual factors, instructional conversations, and immediacy behaviors, in predicting motivation, second language development, and academic outcomes of English language learners.

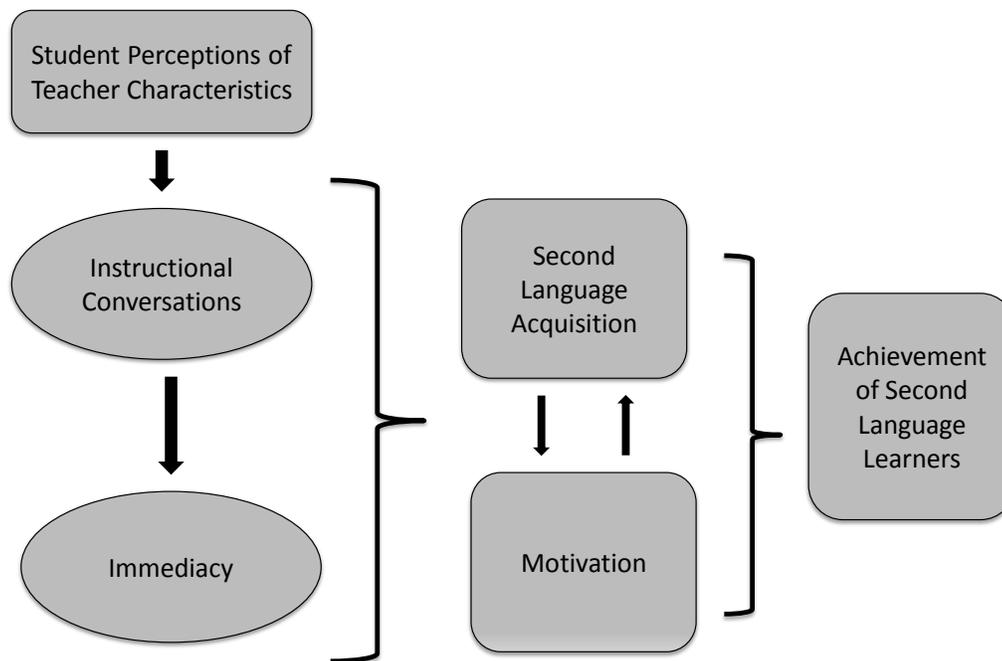


Figure 1.1: Conceptual model for understanding the effect of student perceptions on motivation, language acquisition and academic achievement of ELL students: using Active Filter Hypothesis, Interactionist Perspective Socio-cultural Theory, LST

As proposed in Figure 1.1, ELL perceptions of immediacy and instructional conversations may impact their motivation and reduce the active filter to improve language acquisition and academic achievement. During instructional conversations, what is said and how it is said may impact student participation and learning. Students' perceptions of the opportunities to use language freely in classroom conversations may be influenced by the typical dialogue pattern in which the teacher controls the verbal traffic, a pattern from which most teachers rarely deviate (Lemke,1990). ELL students who perceive an increase in

opportunities to communicate orally may more freely create linguistic form and meaning, discovering the limitations of their current language ability and improving fluency in their second language. There may also be an interaction between student perceptions of immediacy and perceptions of instructional conversations that impacts the relationships between status factors such as gender and language spoken at home and language proficiency, academic achievement, intrinsic motivation, autonomy, and anxiety.

### **Purpose of the Study**

The purpose of this study was to identify English language learners' perceptions of their science teacher's instructional conversations and immediacy behaviors and the impact of these perceptions on their science motivation, language acquisition, and academic achievement. The aim is to document the independent and combined contributions of social contextual factors, instructional conversations, and immediacy behaviors to predicting motivation, language acquisition, and academic outcomes. My primary goal is *theoretical*: to explore student perceptions of a teacher's ability to create closeness through factors identified by the socio-cultural theory that may play a significant role in increasing motivation and reducing the active filter needed to improve language acquisition. A secondary goal is to *bridge theory and practice*: to raise questions and understanding about the way in which mainstream teachers can assist ELL students in their process of language acquisition and to illuminate instructional responsive practices that support the academic needs of all students.

## **Contributions to the Field**

There is a wealth of information on effective teaching for second language learners in mainstream classes. There is also a wealth of information on teachers' perceptions of working with second language learners. However, there is limited information on second language learners' perceptions of their mainstream teacher's instructional behaviors, despite the fact that student perceptions have repeatedly been shown to be reliable and valid predictors of motivation and academic outcomes (Levy et. al, 1997; Mantero et. al, 2006). This research hopes to expand our perceptions of ELL students and the best practices that will foster their academic growth. An understanding of the issues affecting ELL students in mainstream classes can aid administration in planning sound educational programs that support the language and academic demands of ELL students. The information gathered may also lead to improved teacher education programs that better equip our educators with the skills necessary to succeed and promote success in a diverse classroom. This research may play a significant role in the creation of professional development that aids for teachers who work for our growing ELL population in crafting meaningful curriculum.

## **Operational Definitions**

1. Immediacy -the set behaviors exhibited by a teacher that can create perceptions of closeness between the teacher and his or her students (Christophel,1990)
2. Instructional conversations- “discussion-based lessons geared toward creating opportunities for students' conceptual and linguistic development by focus on an idea or a concept that has educational value as well as meaning and relevance for students” (Goldenberg, 1991, p.1).

3. Dialectical framework- classroom conditions that may either involve or nurture the student's inner motivational resources or neglect and thwart these inner resources (Reeve, 2006)
4. Vygotsky's Socio-cultural theory of cognitive development - Asserts that social interaction and dialogue play fundamental roles in the process of cognitive development (Vygotsky, 1978)
5. Active Filter Hypothesis-takes into account all of the affective variables that come into play as a learner is acquiring a second language, such as motivation, self-confidence and anxiety (Krashen, 1982).
6. ELL (English Language Learners) - students whose primary or home language is other than English and who need special language assistance in order to effectively participate in school instructional programs (Echevarria et. al, 2008)
  - 6a. ESL (English as a Second Language) students- recent newcomers to the country and to the international school community, having limited or no prior exposure to the native language (Echevarria et. al, 2008)
7. Autonomy- freedom to determine one's own actions and behaviors. (Ryan & Deci, 2000)
8. Intrinsic motivation- doing something because it is inherently interesting or enjoyable (Ryan & Deci, 2000)
9. Anxiety- a psychological state characterized by emotional, cognitive, and behavioral components of fear and concern (Pappamihel, 2002)

## **CHAPTER 2**

### **REVIEW OF LITERATURE**

In recent years, public education has focused its efforts on improving the achievement of culturally and linguistically diverse students (National Clearinghouse of English Language Acquisition, 2009; U.S. Government Accountability Office, 2009). According to the National Clearinghouse for English Language Acquisition (2009), there were approximately 5,300,000 English Language Learner (ELL) students enrolled in public schools, grades Kindergarten (K) through 12 in 2008. This represents an increase of 53% from the 2006-2007 school years. Given the overwhelming influx of students whose first language is not English, federal and state governments must determine how best to serve these children and their families (Echevarria, Vogt & Short, 2008; Harper & de Jong, 2004; Jazen, 2008). The growing numbers of ELL students in the classroom present a growing challenge for national, state, and local educational agencies. Despite overwhelming empirical evidence indicating how to support ELL students' language acquisition, there is surprisingly little research conducted on the role mainstream (non-ESL) teachers have in promoting language acquisition (Echevarria, Vogt & Short, 2008; Harper & de Jong, 2004; Jazen, 2008), nor the impact on language acquisition resulting from ELL students' perceptions of how their mainstream classroom teachers' instructional practices.

Numerous research reports confirm that ELL students have lower achievement (CLMER, 1996; Ramirez, Yuen, Ramey, & Pasta, 1991) and higher dropout rates (National Center for Educational Statistics, 2010) than native English speaking students. In 2008, approximately 75% of ELL students enrolled in public schools were Hispanic. When dropout

rates are examined, Hispanic students were more likely than White or Black students to drop out of school (National Center for Educational Statistics, 2010). The increased population of language minority students within mainstream classes has impacted both the heterogeneity of classrooms (Rodriguez, et. al, 2010) and the instructional practices used by teachers to teach content concepts (Reeves, 2006). Strategies used within the classroom to improve academic proficiency generally are not aimed at language acquisition (Reeves, 2006). With a lack of language focus within content area classrooms, ELL students will continue to be at high risk for academic failure (August & Shanahan, 2008; Mohan, 2011). Given the lack of success in educating language minority students may undermine a school's ability to meet the high achievement expectations (Menken, 2009) that have been established at both the state and national level.

### **Understanding Second Language Acquisition Processes**

Language acquisition requires structured, meaningful interactions, which integrate language use within social settings. According to Krashen (1982):

Acquisition requires meaningful interaction in the target language - natural communication - in which speakers are concerned not with the form of their utterances but with the messages they are conveying and understanding (p. 1.)

Krashen (1982) developed five main hypotheses of language acquisition to understand the various factors that play a role in this process: the *Acquisition-Learning* hypothesis, the *Monitor* hypothesis, the *Natural Order* hypothesis, the *Input* hypothesis, and the *Affective Filter* hypothesis. The *Acquisition-Learning* hypothesis asserts that there is a distinct

difference between learning a first and second language. As indicated by this theory, the optimal way a language is learned is through natural communication.

The *Monitor* hypothesis suggests that students need sufficient time, a focus on grammatical form, and explicit knowledge of the rules of the language to increase fluency. ELL students monitor the accuracy and fluency of their output through class discussions, which can hinder their engagement in the discussions. The *Natural Order* hypothesis defines the order in which learners acquire a second language. Deviation from this order can be detrimental to the process.

The *Input* hypothesis implies the acquisition of a second language as the direct result of the learners' access to the target language through natural communication situations. Comprehensible input, our use of understandable language, is a key component of this hypothesis. By providing as much comprehensible input as possible, the teacher is able to create more effective opportunities for language acquisition (Echevarria, Vogt & Short, 2008). The fifth hypothesis, *Affective Filter Hypothesis* (AFH) is the most pertinent to this study. AFH identifies affective variables that play a role in second language acquisition. In this study, I focus on the contribution of the Active Filter Hypothesis because of its focus on the role of social-emotional variables in promoting second language acquisition.

Specifically, AFH provides an important link between theories of language learning and broader processes described by Vygotsky's socio-cultural theory of cognitive development.

**Stages of language acquisition:** In addition to the five hypotheses, Krashen and Terrell (1983) defined the stages in which language acquisition progresses. Second language acquisition progression is identified by five distinct phases that characterize the progression

of the language learner (see Figure 2.2). The first phase, the *Silent* phase, can last from a few hours to several months. This phase is characterized by a ‘silent period’ in which the student may not speak. However, the student may respond to a variety of communication strategies such as using simple ‘yes’ or ‘no’ gestures as well as speaking through visuals. The second phase, or *Early Production* phase, may also last several months following emergence from the silent phase. Students within this phase may have developed understanding of up to 1000 words and may even speak in one to two-word phrases. The third phase, or *Speech Emergence* phase, is the phase characterized by increased use of oral language. Students within this phase have developed an understanding of close to 3000 words and can use that understanding to answer questions or respond in simple phrases. These phrases are often riddled with grammatical errors and it is important that these students not be over-corrected by teachers. The fourth stage, *Intermediate Language Proficiency* stage, may last 3-5 years, or until the student is proficient enough to use the second language consistently. This phase is characterized by an increased vocabulary and the ability of the language learner to make complex statements, share thoughts, draw conclusions and make connections verbally. The fifth and final stage, *Advanced Fluency* stage may take students between five and ten years to develop the cognitive academic language necessary to fully participate in mainstream classes. Students within this stage are generally exited from ESL services.

### **Affective variables and language acquisition**

According to the Active Filter Hypothesis, there are a number of affective variables that may facilitate the process of second language acquisition (Krashen, 1982). These variables include: *intrinsic motivation*, *learner autonomy* and *anxiety*. A student’s motivation

to learn a second language (L2) is primarily connected with the desire to become a part of the L2 speaking community. ELL student motivation can also be driven by extrinsic rewards such as good grades or employment. Motivation can be impacted by opportunity to use the second language and opportunity is dependent upon the environment and the lowering of the affective filter required for language acquisition to take place (Krashen & Terrell, 1983)

**Intrinsic motivation.** ELL students' motivation is an important factor in their successful second language acquisition (Cummings, 1991; Krashen, 1982; Krashen, 2003; Pergoy & Boyle, 2005). This motivation is often negatively impacted because acquisition relies heavily on oral language use. Successful language acquisition requires multiple opportunities to speak out within a social setting such as a classroom. For ELL students, this emphasis on speaking out can result in anxiety, embarrassment, and/or anger (Pappamihiel, 2002). Classrooms that provide a nonthreatening environment that positively affirms a child's native language and cultural background can have a direct effect on the student's ability to learn by increasing intrinsic motivation, encouraging risk taking and lowering the active filters that prevent language acquisition (Harklau, 1994; Harper & deJong, 2004; Krashen, 1982; Krashen, 2003).

The provision of this positive, nonthreatening environment requires a basic understanding of the psychological needs required to negotiate the multiple environments that ELL students inhabit. According to Deci and Ryan's (2000) Self-Determination Theory (SDT), humans are faced with ongoing challenges that impact the way we assimilate and adapt to social environments. Social and cultural factors may facilitate or undermine a student's intrinsic motivation and engagement within the classroom setting. Conditions

necessary in supporting the individual's feelings of autonomy, competence, and relatedness (Deci & Ryan, 2000) foster the highest forms of motivation and engagement for educational activities. SDT proposes that the degree to which any of these three psychological needs is unsupported within a social context such as the science classroom will have a detrimental impact on students' wellness in that setting. For example, social context events such as positive instructional feedback through dialogue can lead to feelings of competence, which can enhance intrinsic motivation. On the other hand, negative instructional feedback or lack of feedback can decrease intrinsic motivation (Deci & Ryan 2000) as can students' perception of the teacher's communicative style (Noels, Clement & Pelletier, 1999).

In language acquisition within mainstream classes, teachers play an important role in affecting intrinsic motivation. In the examination of history lessons that occurred in an Australian high school, Sharpe (2008) found that effective classroom environments that promote learning are those in which the, "teacher's role is one of a facilitator of learning and a co-constructor of new information through joint negotiation rather than a transmitter of information" (p. 133). Language learning therefore is more effective when teachers understand that students do not layer newly acquired knowledge upon previous knowledge, rather students transform background knowledge through interactive dialogue. A group of students in a French language immersion class were studied to determine if their perceptions of their teachers' communication style impacted their intrinsic and extrinsic motivation (Noels, Clement & Pelletier, 1999). The results of this study found that perceptions of teachers' communicative style were the leading factor in influencing intrinsic motivation. Researchers found that the more controlling a student perceived their teacher to be, the less

motivated the student became. Increased intrinsic motivation has been connected with increased interest in classroom discourse as well as higher academic achievement (Noels, Clement, & Pelletier, 1999).

Student ownership of dialogue within a context of a classroom discussion can also increase intrinsic motivation (Williams, 2001). A study conducted by Goldenberg and Patthey-Chavez (1995) demonstrated the importance of this ownership through an evaluation of a framework for instructional conversations. The results indicated that through instructional conversations, ELL students talked more frequently and used academic language. Students who are actively involved through socially constructed learning process will become more engaged with the classroom discussions (Williams, 2001). It has been suggested that one of the most powerful arguments for placing ELL students within mainstream classes is that it provides these naturally occurring opportunities to use and develop language (Echevarria, Vogt & Short, 2008). Yet, many classroom observations have indicated that communication in the classroom continues to move further away from the immediacy of personal and shared experiences to enhance academic discourse, instead relying on language itself to convey meaning while offering very few opportunities for linguistically diverse students to engage in extended language use (Lucas et. al., 2008; Truscott & Watts-Taffe, 1998). Very little attention has been given to the increasing demands on teachers of using language that is understood by all learners (comprehensible input) within the secondary setting of English-only classrooms (Padilla, 2006). Classroom exchanges that do occur within these settings are primarily concerned with the curriculum meaning; language development work is not necessarily the focus (Harklau, 1994).

**Learner autonomy.** An ELL students' desire for learner autonomy may also play a role in language acquisition. As mentioned earlier, Deci and Ryan's (2000) Self-Determination Theory maintains that humans are faced with ongoing challenges that impact the way in which we assimilate and adapt to social environments. Autonomy, or behaviors that are enacted by the individual rather than imposed by an external source, also supports the basic psychological needs that must be satisfied to foster well-being. Simply placing ELL students in situations of self-directed learning is an inadequate approach to learner autonomy (Benson, 2007). Although some degree of freedom is necessary, lack of structure before, during, and after the lesson itself may reduce the desire of autonomy. For example, giving ELL students worksheets on the steps of the water cycle and having them work independently to identify those steps does provide learner autonomy, however, this activity lacks a cognitive challenge necessary to enhance student ownership. Stefanou (2004) argues that autonomy-supportive teachers do more than simply provide choices relating to organization and procedure of a lesson. Autonomy-supportive teachers also provide cognitive choices that enhance critical thinking skills and student ownership of learning. Echevarria, Vogt and Short (2008) would argue that ELL students require more procedural structure, embedded with scaffolded cognitive choices. English language learners progress more rapidly in mastering content concepts through independent practice if sufficient background has been built, prior knowledge activated, key vocabulary introduced (August & Shanahan, 2008) and interaction with native speakers is provided (Echevarria et.al, 2008).

Second language acquisition can also be enhanced through lessons that actively assist ELL students with meta-cognitive, cognitive and social affective strategies that promote

learner autonomy through self-directed learning (O'Malley & Chamot,1990). As ELL students progress through content concepts and key vocabulary, instruction shifts from teacher directed to student directed. Once an ELL student is able to exhibit self-control over their language learning, autonomy becomes a critical factor in language acquisition (Benson, 2007). Ushioda (2006) posited that self-regulated learning can only occur through task-focused, dialogue-based interactions, involving both cognitive and motivational scaffolding. Social environments such as the classroom can therefore support ELL student autonomy by developing tasks that appropriately challenge learners (see Vygotsky's,(1978) concept of Zone of Proximate Development below).

Altan and Trombly (2001) offer the concept of learner-centeredness as a framework revisiting the traditional classroom challenge of providing learner autonomy. Learner-centered classrooms place students at the center of classroom organization. Learner-centered teachers are aware of and respect their learning needs, strategies, and preferences. In learner-centered classrooms, students can be observed working individually or in pairs and small groups on distinct tasks and projects. The transition from teaching the entire group to meeting individual learner needs involves extensive planning and task-specific classroom management.

**Anxiety.** Successful language acquisition requires multiple opportunities to speak out within a social setting such as a classroom. For ELL students, this can result in anxiety, embarrassment, and/or anger (Pappamihiel, 2002). Language acquisition research conducted by Krashen (1982) suggests that negative emotions can create a filter that blocks the learner's ability to process new or difficult words (see Figure 2.1). As mentioned previously,

classrooms that provide a nonthreatening environment that positively affirms a child's native language and cultural background can have a direct effect on the student's ability to learn by increasing intrinsic motivation, encouraging risk taking and lowering the active filters that prevent language acquisition (Harper & deJong, 2004; Harklau, 1994; Krashen, 1982, 2003).

The best methods for assisting students in language acquisition are those in which the teachers provide an environment with comprehensible input in low anxiety situations (Cummings 1981; Krashen, 1982). Effective settings for non-native speakers offer oral language development and elicit the use of teaching strategies that involve students in their own learning (Schellpegrell & O'Hallaron, 2011).

### **Acquisition through interaction**

Within the field of English Language Learning, there are three dominant perspectives describing how children acquire language through interaction: Interactionist theory, Language Socialization theory and Socio-cultural theory. The interactionist theory posits that interaction with adults plays an important part in children's language acquisition (Blumer, 1969). The Language Socialization theory (LST) suggests the structuring of knowledge, emotion, and social action within social settings affects those who are less language proficient from becoming active, competent participants within the classroom (Bayley & Langman, 2011). Vygotsky's socio-cultural theory (1978) contends social interaction plays an important role in the learning process because this is where learners construct new language through socially mediated interaction. Each of these theories is a developmental theory and argues that the importance of interactions varies based on what the child's developmental needs are at a given time. These theories also argue that

environmental interactions influence behavior. The LST and socio-cultural differ from the interactionist perspective in that these theories also take into account the impact of culture on language development, whereas interactionist primarily focuses on the role of the environment.

**Interactionist Theory.** The interactionist perspective, first introduced by Blumer (1969), supports the idea that the driving force behind language development is communication through interaction. Children's language development does not occur within a single interaction but rather over time and through multiple occurrences. Developing second language competence occurs over several stages and those stages only occur when the second language (L2) is being used. Most students are only exposed to the L2 for a few hours a week (Fromkin & Rodman, 1998), despite the fact that oral language use by students is essential in conveying meaning and comprehension within the classroom. Unfortunately, the majority of teachers overlook the role of language in learning, looking through language rather than how language makes meaning (deJong & Harper, 2005). Language and academic learning go hand in hand, making it crucial to language acquisition that non-native speakers are frequently placed in situations where communication with a native speaker can take place. As stated by Peregoy and Boyle (2005), "social interaction with native speakers represents an important cornerstone in explaining second language acquisition" (p. 57).

**Language socialization theory and Vygotsky's socio-cultural theory.** Language Socialization Theory (LST) seeks to explain the ways in which language is acquired through socially and culturally organized interactions. LST examines how the structuring of knowledge, emotion, and social action within social settings restricts those who are less

language proficient from becoming active, competent participants within the classroom. This theory is of particular salience because of its practical implication within the mainstream classroom. According to Bayley and Langman (2011), LST provides teachers with guidelines on how learners' identities may influence perceptions of their teachers, as well as the willingness of the learner to participate within the classroom. Similarly, socio-cultural theory (Vygotsky, 1978; Lantolf, 2011) proposes that language acquisition is tied to a socially regulated process in which learning and development come together through planned social discursive (classroom conversation) activities. Vygotsky's *zone of proximal development* (ZPD), defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p. 86) identifies the critical role of dialogue, specifically accessible dialogue within conversations that happen within the classroom. The combination of understanding how the affective variables and the role of dialogue and social interactions within the classroom setting affect second language learners may provide the best insight into students' second language acquisition.

According to the Language Socialization Theory, teachers' perceptions of student language use in a social setting may affect assumptions of students' language ability and even classroom instruction. The impact of these assumptions is an example of how the language socialization theory can be applied to mainstream classrooms. Basic Interpersonal Communication Skills (BICS) are identified by Cummings (1991) as the language skills needed for conversation. ELL students use BICS during social interaction events that occur

within school, such as a conversation in the hallway or in the lunch room. Cognitively, these conversations are not demanding and the ability of these language skills can develop within six months to 2 years of learning English. Issues can arise when mainstream teachers judge a child's language proficiency based on their demonstration of BICS by expecting that the student will be as proficient using language in the classroom as they are in social conversations.

A more effective indicator of ELL student language acquisition is through the identification of the student's ability to use academic language. Cognitive Academic Language Proficiency (CALP) refers to the skills required to process academic language. Beyond reading, writing, listening and speaking, ELL students must also be able to compare, synthesize, infer and evaluate information. The language demands become cognitively rigorous, requiring more practice and regular use of the target language. Thomas and Collier (1995) have found that a child with no prior schooling or support in their native language can take from seven to ten years to develop the academic language needed to catch up to their native peers. Attention to the distinction between social and academic language proficiency can help school personnel to identify and provide the proper support needed.

Besides knowledge of ELL use of BICS/CALP, mainstream teachers may have other misconceptions surrounding language instruction for ELL students. Surveys and observations of mainstream teachers indicated a belief that second language learning can take place simply through exposure as well as the belief that all ELL students learn English in the same way (Harper & de Jong, 2005). Unfortunately, these misconceptions may have an impact on the process and time in which a second language is acquired. Mere exposure to a

second language is not sufficient to develop the grade-level academic language needed to navigate complex concepts and complex language within a core classroom (Cummings, 1982; Krashen, 1982). In addition, interaction with native English speakers does not occur on a regular basis within mainstream settings (Harper & Platt, 1998), and even when these exchanges do occur, they generally provide limited exposure and opportunities to practice the new language (Harper & de Jong, 2004). The academic achievement of ELL students is “linked to long-term support for academic language development within socio-culturally appropriate environments” (Cook et. al. 2011, p. 69), and “frequent language input and conversational use are required for this form of knowledge [explicit] to be converted into implicit knowledge” (Padilla, 2006, p. 583).

### **Summary**

Krashen has (1983) developed five language acquisition theories. Each theory asserts there is a distinct difference in learning a second language from learning a first language. Each theory also suggests having a deeper understanding of the role time, structured interactions, and affective variables have on this process, which can impact the acquisition process. Interactionist theory (Blumer, 1969) suggests children’s language development does not occur within a single interaction, but rather over time and through multiple occurrences. Developing second language competence occurs over several stages and those stages only occur when the second language (L2) is being used. Language Socialization Theory (LST) seeks to explain the ways in which language is acquired through socially and culturally organized interactions (Lantolf, 2011). LST examines how the structuring of knowledge, emotion, and social action within social settings affects those who are less language

proficient from becoming active, competent participants within the classroom. Similarly, the socio-cultural theory (Vygotsky, 1978) proposes that language acquisition is tied to a socially regulated process in which learning and development come together through planned social discursive (classroom conversation) activities.

Of Krashen's five language acquisition theories (1983), the Active Filter Hypothesis is of particular salience due to the importance of affective variables in second language acquisition. Affective variables that play a role in language acquisition include: motivation, learner autonomy and anxiety. Intrinsic motivation theory suggests classrooms in which students are provided a nonthreatening environment that positively affirms a child's native language and cultural background can have a direct effect on the student's ability to learn by increasing intrinsic motivation, encouraging risk taking and lowering the active filters that prevent language acquisition (Harklau, 1994; Harper & deJong, 2004; Krashen, 1982; Krashen, 2003). Increased learner autonomy suggests second language acquisition is enhanced through lessons that actively assist ELL students with metacognitive, cognitive and social affective strategies that promote learner autonomy through self-directed learning (O'Malley & Chamot, 1990). Finally, anxiety may also have an impact on successful language acquisition due to the multiple opportunities to speak out within a social setting. For ELL students, using oral language within a social setting may result in anxiety, embarrassment, and/or anger (Pappamihiel, 2002). Language acquisition research conducted by Krashen (1982) suggests negative emotions associated with anxiety can create a filter that may block the learner's ability to process new or difficult words (see Figure 2.1). Thus providing a nonthreatening environment that positively affirms a child's native language and

cultural background can have a direct effect on the student's ability to learn by increasing intrinsic motivation, encouraging risk taking and lowering the active filters that prevent language acquisition (Harklau, 1994; Harper & deJong, 2004; Krashen, 1982, 2003).

### **Effectiveness of Mainstream Classroom Teachers for ELL Students' Learning**

In the U.S. both language and content instruction of English Language Learners will be increasingly provided through the core curriculum within mainstream classrooms without support from language specialists (Schleppegrell & O'Hallaron, 2011). Whether the placement of ELL students in mainstream classes is a result of current policy for placement procedures, a lack of proper resources, parent choice, or assumptions regarding second language acquisition (Harklau, 1994), second language learners spend most of their day within mainstream classrooms with content area teachers (Harper deJong, 2004; Chamot & O'Malley, 1994; Harklau, 1994), resulting in a low potential to support the development of English language skills needed by ELL students to adapt within the mainstream setting.

Title VI of the Civil Rights Act (1964) affirms that districts must "help ELL students overcome language barriers" and "ensure that they can participate meaningfully in the districts' educational programs." Title III of the Elementary and Secondary Education Act (2001), also known as No Child Left Behind or NCLB, also requires school districts to provide appropriate programs to help students who are identified as "English Language Learners" develop the English skills necessary for learning. The No Child Left Behind Act (NCLB) of 2001 requires all states to set standards for the development of English language proficiency skills for children learning to speak English. State and federal statutes require the state to test students learning English each year (Menken, 2009).

A trend of academic failure within our ELL population is compounded by causes that are multi-dimensional. Factors such as socio-economic status and classroom practices seem to play a pivotal role in the academic success of ELL students (Echevarria, Short & Powers, 2008). Another critical issue is the lack of preparation teachers receive to work with language minority students (Jazen, 2008). There is substantial debate amongst researchers and educators regarding which teacher variables have influence on student achievement. Many studies have been conducted on variables relating to teacher competence with ELL in the classroom such as: measures of academic ability, years of education, years of teaching experience, measures of subject matter and teaching knowledge, certification status, and teaching behaviors in the classroom (Darling-Hammond, 1999).

A critical issue, also of equal value, is the lack of preparation U.S. teachers receive to work with language minority students (Jazen, 2008). Research indicates mainstream classroom teachers are not sufficiently prepared to offer the instruction necessary to support the language needs of our ELL population (Lucas, Villegas, & Freedson-Gonzalez, 2008). A survey conducted by the National Center for Educational Statistics (2005), reported the level of professional development teachers received on working with ELL students was very low or non-existent. It was also reported in an earlier survey (National Center for Educational Statistics, 1999) mainstream teachers did not feel prepared enough to teach ELL students.

Despite the need to prepare our teachers to be culturally and linguistically responsive in diverse classrooms, most pre-service education programs have a long way to go in developing the skills needed to provide effective language instruction (Lucas et. al., 2008). A study conducted by the U.S. Government Accountability Office (2009) reported that most

traditional teacher preparation programs require some training in working with English language learners for the general classroom teachers, but only 20% had a stand-alone course focused on second language learners.

The lack of preparation for teachers already in the classroom is also of concern. A study conducted by the National Center for Educational Statistics (2010) found that 50 % of mainstream teachers reported teaching ELL students, yet only 12 % had eight or more hours of ESL training. Through their research in Florida, Harper and de Jong (2009) found placement of ELL students in mainstream classrooms with under-prepared teachers can lead to “social isolation, lack of class participation, lack of meaningful peer interactions and teacher feedback, and opportunities for language development and academic achievement...(of these students) simply disappear in these inclusive settings” (p. 139). Echeverria, Short, and Powers (2006) point out Federal guidelines require core teachers to have a deep understanding of the subject material but do not require core teachers to have even a moderate level of second language acquisition understanding. Many ELL receive the bulk of their instruction from content area teachers who generally have little, if any, training or appropriate preparation, yet are being held accountable for the achievement of all their students’ academic performances whether they have been trained or not (Menken, 2009). Because of this and other factors, all schools are required to have highly qualified teachers, trained to work with ELL students to improve not only their English proficiency but also their proficiency in the core content areas (Echevarria, Short & Powers, 2008).

Some would argue that national standards may have done little to help teachers understand the need to adapt instruction for linguistically diverse populations. In a review of

national standards for the core areas within secondary instruction (National Council for the Social Studies 1994; National Council of Teachers of English 1996; National Council of Teachers of Mathematics 2003). Harper and de Jong (2004) found that despite claims of addressing diversity, standards are written with the assumptions that all students within the secondary level have mastered basic levels of oral and written language. In a review of Florida's implementation of an education policy in which pre-service secondary teachers are provided ESL teaching standards during teacher education programs, Harper and de Jong (2009) found the limiting factor in this reform was national content core standards. Content standards merely provided reasons for content modification and did little to provide any consideration on how teachers could support language minority students in meeting the language demands of the classroom. In the case of No Child Left Behind, which fails to recognize ESL/Bilingual education as a core content area for teacher preparation, teachers were not being held accountable for addressing cultural and linguistic differences within the classroom (Harper & deJong, 2009; Menken, 2009). This presents a major concern for ELL when teachers implement lesson activities designed to address content standards, but fail to account for differences in language ability.

Lack of language development within our content standards and teacher preparation opportunities may not be the only reason why mainstream teachers are having a difficult time adjusting to the needs of ELL students. A study conducted by Reeves (2006) evaluated the impact of ELL inclusion programs on teacher attitudes toward modifying instruction, professional development and the language acquisition process. Reeves surveyed 279 high school teachers from several districts that maintained inclusion programs within their

schools. The results of her findings indicated that there was a significant lack of time to properly adjust or modify content concepts for the ELL population. Teachers were also conflicted on thoughts of participating in professional development that provided classroom strategies that supported the needs of ELL students in mainstream classrooms. Content area teachers within mainstream classes may be aware of the specialized language demands that are required to successfully navigate curriculum; however, these teachers often assume that the skills needed to make the successful transition from BICS to CALP within the core areas will be taught in another classroom (Harper & deJong, 2005).

To improve upon the ability of mainstream teachers to prepare lessons that address language, researchers have identified four major areas of teacher preparation needed for ELL student success within the mainstream setting: building empathy toward second language learners' language difficulties and cultural differences, increasing understanding of the process of second language acquisition, adapting the curriculum and instruction to these students' cultural and language needs, and integrating discipline specific language and literacy skills into area of instruction (Lucas et. al., 2008). Authors Callahan, Wilkerson, and Muller (2010) evaluated the impact that ELL placement in mainstream classrooms had on language minority students' long-term academic achievement. A sample of 2,352 ELL students from 523 private and public schools during the 2001-2002 school year were surveyed. Results of the evaluation indicated that ESL programs in which language acquisition remains the primary focus had a negative impact on long term academic achievement. Callahan et.al (2010) found that placement of language minority students in core academic mainstream classrooms with teachers that use modified curriculum with a

focus on making content comprehensible through interactions and increased oral use of language, would have the most impact on both language development and academic aptitude. Having a deeper understanding of second language acquisition can also improve the ability of mainstream teachers to serve the linguistically diverse students in their classrooms (Fillmore & Snow, 2002; Schellpegrell & O'Hallaron, 2011).

### **Traditional vs. Dialogue Centered Classrooms**

Having considered the relationship between language and learning, this next section will discuss two different types of classroom discourse, traditional and non-traditional. Traditional classrooms are generally characterized by teacher-directed instruction that maintains students' compliance. The result of this shift in teaching may cause students to become socially de-magnetized and verbally idle. In addition, the anxiety and fear that is associated with whole-group discussion can cause ELL students to limit their oral use of second language (L2) for fear of being embarrassed about speaking with their L2 (Pappamihiel, 2002). This reaction will not only cause a withdrawal from social interaction, it will also cause additional distraction to the linguistic input being received during teacher direct instruction (Krashen, 1982; Lucas, Villegas, & Freedson-Gonzalez, 2008). A classroom focus on communicative behaviors would enhance motivation for students through the use of authentic opportunities for students to use academic language (Short, Vogt, & Echevarria, 2011).

Traditional classroom discussions are characterized by the using of a three-part sequence: teacher initiation, student response, and teacher evaluation or follow-up (IRE or IRF). This pattern is called Triadic Dialogue (Lemke 1990). The driving force behind the

dialogue that is occurring between teacher and student is teacher control. Using triadic dialogue allows teachers to not only initiate exchanges and set the topic, but also control the direction of the dialogue. Teachers also control who answers, how often they answer, and the dialogue following that answer. Cazden states (2001, p.82), “[The] teacher has the role-given right to speak at any time and to any person; they can fill any silence or interrupt any speaker; they can speak to a student anywhere in the room and in any volume or tone of voice. No one has the right to object”. Teachers control the verbal traffic of students by using common management practices such as raising of hands and waiting to be called on. Cazden (2001) refers to this as speaking rights; the ability to get one’s words in the conversation. Triadic dialogue, therefore, can be considered a form of classroom discourse inequality, especially when the differential treatment is rooted in cultural differences.

Triadic dialogue (Lemke, 1990; Cazden 2001) comprises about 70 percent of all the classroom discourses in many secondary schools (Wells, 1999; Nystrand, 1997) and has been found to be one of the *least* effective interactional patterns within the classroom (Cazden, 2001). Teachers in these classrooms dominate the class talk, resulting in fewer opportunities for students to ask their own questions. Over time, discussion dominance can condition students to wait for someone else to answer, stifles the use of academic language, and requires a less cognitive load.

Dialogue-centered lessons, in contrast, challenge the typical IRE pattern found in instruction. Dialogue-centered lessons rely heavily on the use of shared dialogue (Cazden, 2001). Instructional conversations comprised of instructional and conversation elements serve as the basis for applying this method in dialogue-based classrooms. Instruction is

centered on the activation and use of background knowledge, use of a variety of questioning techniques, and the promotion of increased use of critical thinking skills. The conversational elements focus around creating a challenging, non-threatening environment, which promotes discussion that is responsive to students' needs. In addition, the discourse is characterized by interactive conversations that build in methods to increase participation within the discussion (Rueda, Goldenberg & Gallimore, 1992).

Within the dialectical framework, classroom conditions can either nurture the student's inner motivational resources, or according to Reeve (2006), can support or frustrate a child's inner motivation. Most students will seek learning activities and challenges that allow them to express their motivational resources. Reeve's work supports the idea of a dialectical framework with the Self Determination Theory; connecting a student's inner motivation with a supportive classroom environment. Using Self Determination Theory as a lens, students possess inherent needs and growth inclinations that can establish motivation for academic and social development. Autonomy-supportive teachers identify with and nurture student needs, interests and preferences by establishing clear goals along with freedom of choice (Deci & Ryan, 2000; Reeve, Deci, & Ryan, 2004). During instruction, teachers identify, nurture, and build students' inner motivational resources, by creating increased perceived autonomy, increased (psychological need) satisfaction during learning activities, increased classroom engagement, higher mastery (motivation), increased intrinsic motivation, and enhanced psychological well-being, active and deeper information processing, greater conceptual understanding, higher academic achievement, and greater persistence in school versus dropping out (Reeve, Jang, Carrell, Barch, & Jeon, 2004).

Controlling teachers can undermine student motivation by creating a classroom environment that stifles inner motivation, by constantly defining what students can and cannot do (Reeve, 2006). Providing autonomy within instructional conversations creates an environment for students who are learning a second language, “where feedback enhances their sense of competence in the learning tasks, are likely to be those students who learn because it is pleasurable or because it appeals to their self concept....language programs that emphasize autonomy will likely foster student motivation and potential success” (Noels et. al., 2003, pg. 53).

Social affective strategies can enhance learning through student interaction that occurs in intimate settings. The emphasis is placed on student use of oral language through social interactions between students and teachers. Social affective strategies not only consider individual attitudes and feelings but also connections to the student world outside school. Students are more likely to learn content concepts when they are able to share and connect the material to aspects of their personal life (Habte-Gabr, 2006). Second language learners are the biggest benefactor with this type of learning because it lends itself well to language acquisition. Vygotsky’s theory (1978) in which social interaction plays a fundamental role in the process of cognitive development merges the connection between both language and thought. Social interactions are connections between people and the socio-cultural context in which they act and interact in shared experiences.

Children develop communication tools, such as speech, from the interaction within their culture as a way to communicate and function socially (Vygotsky,1978). The application of this theory within schools challenges the traditional teacher-centered

classroom in which the teacher is the sole provider of information. Vygotsky's theory promotes learning in which the students play an active role and the teacher is more of a facilitator of their learning. This shift in learning requires teachers to collaborate with student in order to support their learning needs through a reciprocal experience.

### **Capturing the Quality of Instructional Conversations**

Teacher communication behaviors may be critical to student learning and motivation. As stated by Marzano, Pickering, and Pollock "teacher directed questioning is at the heart of classroom practice" (2001, p. 113). The concept of instructional conversations attempts to build the relationship between language and learning in connection with an interactive approach. Research suggests that when there is more balance between teacher talk and student talk, there are more opportunities for ELL students to practice the skills necessary to develop the English language (Cazden, 2001; Tharp & Gallimore, 1988). Claude Glodenberg (1991) argues the intent of an instructional conversation is to enhance student learning through expression of students' own ideas, to provide experience, to connect with prior knowledge, and to guide students to increased levels of understanding. During instructional conversations, *what* is said and *how* it is said can impact student participation and learning (Cazden, 2001). Instructional conversations emphasize active student involvement in discussions, coupled with meaningful language-based teaching, and provide multiple opportunities for using the target language to teach and learn content concepts.

Myer and Turner (2006) affirm that during instructional conversation scaffolding (Vygotsky, 1978), the teacher supports student self-regulation, in three ways; helping students build competence through increased understanding, engaging students in learning

while supporting their affective needs, and helping students build and exercise autonomy as learners. Building cultural congruence within the conversation also plays a role because culture affects student engagement and participation within discussions (Lee & Fradd, 1996, Lee, 2003).

Sharpe (2008) found, in her study of high school history teachers, that teacher talk can support the process of inquiry and understanding through a variety of discourse strategies, known as Systemic Functional Linguistics (SFL). SFL strategies include repeating, recasting, use of cued elicitation, elaboration, confirmation, clarification, and questioning to increase prospectiveness. Repeating a student's answer not only demonstrates acceptance of an utterance, but also helps create a connection to text or content. Recasting involves reconstruction of a student's response to either control for language, grammar or both. The exchanges that occur because of recasting contribute to language acquisition through the explicit use of vocabulary. Cued elicitation involves the teacher leaving discourse space for a student to complete the answer. Cue elicitation ensures students are actively involved in discourse exchange, providing opportunities to build word recognition. Elaboration occurs when a teacher expands on a student's response to add additional information. Clarification occurs when a teacher explicitly ask for a student to repeat a response or clarify a concept. Questioning to increase prospectiveness occurs to disrupt the typical IRF (initiation, response, feedback) pattern allowing the teacher to control the flow and leading the students in certain directions.

Unfortunately, research on impact of instructional conversations continues to be hampered by the dominance of the traditional dialogue patterns that plague our classrooms

(Cazden, 2001). According to Richmond (1990), how the teacher perceives his or her ability to influence learning outcomes is not as important as students' perceptions of what the teacher does, both verbally and nonverbally, to connect with each student. Spoken language is the most frequently utilized tool by which teaching takes place and students demonstrate knowledge. Teachers can control the conversations that take place within the classroom, which in turn can enhance positive interactions that build content knowledge

**Structuring instructional conversations in ELL classrooms.** ELL students' participation during instructional conversations can often be hampered by language or cultural differences that students bring to the classroom (Reeves, 2006). Differential treatment is often the response of teachers who use communication in a diverse classroom (Lee & Fradd, 1996). Due to either a lack of cultural or instructional understanding of second language acquisition, mainstream teachers can neglect the needs of marginalized students. An ethnographic study conducted by Olivo (2003) found that many teachers support an ideology of language use that held students as "passive recipients of teachers' knowledge" (p. 54). ELL students were particularly affected by this ideology and "covertly evaded the constraints placed on their ability to speak...attempting to maximize opportunities to practice speaking English in the classroom without overtly challenging legitimacy of the traditional language ideology" (p. 67). When asking questions of ELL students, most teachers rely on asking low-level knowledge or comprehension questions or refrain from asking questions of ELL at all, "anticipating that (ELL students) will be unable to respond" (deJong & Harper, 2005, p.104).

Given the proper conditions and opportunities, instructional conversations can positively impact language development of our ELL population. A recent study conducted by DaSilva, Iddings, Risko and Rampulla (2009), examined interactions between elementary teachers and their students' during conversations about text. Results of this study indicate effective learning does not follow a linear pathway. Effective learning requires teachers to guide and support student-led discussions that are motivated by interests and needs of the students. The ways in which teachers respond to their students not only encourages focus and elaboration, but also enhances students' ability to interact socially and support their inherent needs for intrinsic motivation and autonomy. Instructional conversations support self-regulated learning through task-focused, dialogue based interactions, involving both cognitive and motivational scaffolding. This creates a classroom environment that can support ELL student autonomy by developing tasks that challenge the learners' zone of proximal development.

All students need to be encouraged to interact in extended discourse with their teacher and peers. Social and emotional confidence is defined as the willingness and ability to interact with others and being able to share and contribute emotionally. "Interaction provides much more than the opportunity for input and output: interaction and the accompanying dialogue serve as the foundation for development of thought, and language-learners need direct and frequent opportunities to interact with people who are fluent in that language" (Lucas, Villegas, & Freedson-Gonzalez, 2008. P. 44). Interactions therefore are essential not only in maximizing exposure to the content of the lesson but also in building confident speakers.

The process of attempting to communicate orally will allow second language learners to create linguistic form and meaning and in so doing, will discover the limitations of their current system. Recognizing this gap in their linguistic knowledge can impact a child's willingness to accelerate language acquisition (Bygate et. al, 2001). Discourse inequality in the classroom continues to limit the language support needed by ELL students to recognize their limitations and improve their weakness. A study conducted by the U.S. Department of Education on the learning environments experienced by English Language Learners (ELL) students found that ELL students were limited in their opportunity to produce language.

Direct observations reveal that teachers do most of the talking in classrooms, making twice as many utterances as do students....Of major concern is that in over half of the interactions that teachers have with students, students do not produce any language... Of equal concern is that when students do respond, typically they only provide simple information recall statements. This pattern of teacher-student interaction not only limits student's opportunity to create and manipulate language freely, but also limits the student's ability to engage in more complex learning (Ramirez, Yuen, & Ramey, 1991, p.8)

Students may benefit from the type of instructional discussions that take place within the classroom, however, ELL students often find themselves at a disadvantage when placed in mainstream classrooms in which the instructional activities are centered on individual, silent tasks (Williams, 2001). Classrooms can be characterized by teachers who trade classroom discussions and student interactions for teacher-dominated instruction that

maintains students' compliance. Virginia Richmond (1990), through a series of studies, concluded teachers should be taught communication techniques that build relationships. Young (2011) contends that in order to successfully communicate within this triangular relationship, inter-subjectivity about the situation in which the communication is taking place between the sender and the receiver needs to be established.

Teacher communication behaviors are critical to student learning and motivation. Instructional conversations that occur within the classroom can be intentionally planned to offer opportunities for second-language learners to use the English language, increasing proficiency (Goldenberg & Patthey-Chavez, 1995). The typical structure of an instructional conversation within a classroom centers around keeping every student engaged within a substantive and extended conversation, therefore increasing oral language use. The role of the teacher is to be responsive to what others say, probe student response for deeper meaning, activate background knowledge, and keep everyone engaged. The learner's task is to build upon, challenge or extend previous students' response (Goldenberg, 1992; Goldenberg, 1993; Williams, 2001 ). This model of teaching has been found to be an appropriate method for ELL students with multiple levels of English fluency (Williams, 2001). However, Truscott and Watss-Taffe (1998) found very little opportunities for ELL students to engage in extended language use.

As mentioned earlier, placement of language minority students in core academic mainstream classrooms with teachers who use modified curriculum with a focus on making content comprehensible through interactions and increased oral use of language would have the most impact on both language development and academic aptitude (Callahan et. al.,

2010). Several programs have been developed to address the need to assist mainstream teachers in providing high quality instructional conversations with a focus on language development. The CREDE model is an example of one of these programs that increases dialogue through instruction to provide a learning environment conducive for English language learners (Doherty et. al., 2004). The CREDE model integrates local cultures into educational lessons leading to higher student achievement through relevant instruction. The CREDE model identifies five standards (see appendix D) of teaching and lesson development that make the most impact with ELL populations. These standards are: joint productive activity between teachers and their students, the development of language across the curriculum, the connection of school to students' lives, teaching students complex thinking strategies, and engaging students through dialogue (instructional conversations).

The first standard identifies the importance of interactions between adults and adolescents. Working together also requires increased use of communication with academic language. Consistent one-on-one communication can assist in creating context of the experience, further developing the relationship between the student and teacher. The second standard addresses the need for each core area to be imbedded with literacy goals to develop language. These goals should target social language and academic language through purposeful, deliberate conversations between teacher and students. The third standard identifies the need to connect the curriculum to students' lives outside of school. The CREDE model suggests schools assist at-risk students by providing experiences that show how abstract concepts are drawn from and applied to the everyday world. The fourth standard requires teachers to challenge at-risk students through high academic standards,

meaningful assessments and responsive feedback. The final standard, the use of instructional conversations, identifies the need to form, express and exchange ideas through open dialogue between the teacher and the student.

The SIOP (Sheltered Instruction Observation Protocol) method is an example of another program that increases dialogue through instruction to provide a learning environment conducive for English Language Learners (Echevarria et.al., 2008). Funded by the Center for Research on Education, Diversity and Excellent (CREDE), the SIOP model was developed to create a systematic language development framework while simultaneously developing the literacy skills needed to achieve success in mainstream classes or for passing standardized tests. The SIOP model offers a framework for teachers to teach the content concepts but does so using strategies and techniques that make the information more comprehensible for ESL students (Short, Vogt, & Echevarria, 2011). Both the CREDE and SIOP models provide frameworks for a dialogue-based classroom within the dialectical framework.

The use of SIOP and/or CREDE models as an instructional approach that modifies instruction to meet the needs of all students, while at the same time promoting English language development, are increasing being used within US schools (Echevarria et. al,2011). However, research conducted on the use of these strategies within the class found variability in implementation continues to exist amongst educators (Short et.al, 2011). Of equal concern is that teachers may struggle with immediacy when engaging in the CREDE and/or SIOP model. This is a result of several factors including: variations in teacher training and a

limited understanding of culture and differences in perceptions between the teacher and the students (Darling-Hammond, 1999; Levy et. al. 1997, Fisher et.al., 2005).

### **Summary**

The number of ELL students in our public school system is increasing, and research suggests these students continue to be placed in mainstream classrooms with underprepared teachers creating learning environments that may stifle ELL progress (Harper deJong, 2004; Chamot & O'Malley, 1994; Harklau, 1994). Although past research into this growing problem seems to have indentified that factors such as socio-economic status and classroom practices play a pivotal role in the academic success of ELL students (Echevarria, Short & Powers, 2008), also of critical issue is the lack of preparation teachers receive to work with language minority students (Jazen, 2008). Teachers may not be sufficiently prepared to offer the instruction necessary to support the language needs of our ELL population (Lucas, Villegas, & Freedson-Gonzalez, 2008), and most traditional teacher preparation programs are doing little to support this growing need (U.S. Government Accountability Office, 2009). This is despite research confirming that the understanding of second language acquisition can improve the ability of mainstream teachers to serve linguistically diverse students in their classrooms (Schellpegrell & O'Hallaron, 2011; Fillmore & Snow, 2002). Research also suggests that many teachers within traditional classrooms rely on instructional patterns that involve the use of triadic dialogue (Lemke, 1990; Cazden 200; Wells, 1999). Triadic dialogue has been found to be one of the *least* effective methods in promoting both language development and learner autonomy. Vygotsky's socio-cultural theory of cognitive development promotes classrooms in which the students play an active role and the teacher is

more of a facilitator of their learning (Vygotsky, 1978). Dialogue-centered classrooms in which teachers use modified curriculum with instructional patterns that focus on making content comprehensible through interactions and increased oral use of language, may have a greater impact on the improvement of language development and academic aptitude. Within the context of the Self Determination theory, the use of instructional conversations can also establish motivation for academic and social development by indentifying with and nurturing student needs, interests and preferences by creating clarity of what to do along with freedom of choice (Deci & Ryan, 2000). Several programs have been developed to address the need to assist mainstream teachers in the development of the knowledge and skills necessary to provide high quality instructional conversations with a focus on language development by providing frameworks for a dialogue based classroom within the dialectical framework. The CREDE and SIOP method are examples of programs that can support teachers in planning lessons that increases dialogue, through instruction to provide a learning environment conducive for English Language Learners (Echevarria et.al, 2008). Within North Carolina, SIOP continues to be the prominent model utilized for lesson planning and implementation of lessons that meet the needs of a growing ELL population (English as a Second Language NC DPI, 2012).

### **Research on the Impact of Teacher Immediacy Behaviors**

Lastly, the frequency and quality of instructional conversations within the classroom as well as a clear understanding of the process of language acquisition may not be enough to improve second language acquisition and academic achievement of ELL students. Lack of immediacy behaviors when implementing instructional conversations may cause a failure in

teachers' ability to connect with their ELL students (Allen et. al, 2006; Chrisophel, 1990), rendering SIOP/CRED models ineffective because the ELL students' may not perceive supportive conversations and immediacy behaviors from their teachers (Fisher et. al, 2005, Lantolf, 2011). Students must perceive their teachers as being 'present' in the classroom in order to be intrinsically motivated and have reduced anxiety to engage in classroom discussions. This perception can be accomplished through displays of immediacy behaviors (Mehrabian 1978; Anderson 1979; Richmond 1987; Gorham 1988).

Immediacy behaviors can be verbal or non-verbal responses communicated through the approachability of teachers to their students. The use of certain cues, questions, and responses, can enhance the psychological closeness of the teacher and the student (Mehrabian, 1981). In Andersen's (1979) landmark study, she established a positive relationship between teacher immediacy and affective learning. Although this study was conducted within a college setting, the study was replicated at the secondary level with similar results. Allen, Witt and Wheelless (2006) conducted a meta-analysis of eight studies relating to teacher immediacy and its impact on learning outcomes to develop correlations between teacher immediacy, cognitive learning, and affective learning. Although results from this study did not prove a direct correlation to increased cognitive learning, teacher immediacy impacted affective learning, which in turn, impacts cognitive learning (Allen, Witt & Wheelless, 2006). Results from the eight studies indicate that high levels of teacher immediacy can increase students' motivation to learn.

In a seven-month longitudinal study, Harter, Whitesell, and Kowalski (1992) found that as students transition from elementary to middle school, many of these students tend to

reevaluate their feelings of competence. Establishing meaningful relationships with teachers may positively affect adolescents' perceptions of academic competence during this critical time. Wentzel (1997) conducted a survey of 375 eighth grade students to identify the level of care these students felt towards their teachers and found a significant correlation between early adolescent students' perceptions of their teachers' level of caring and students' drive for academic achievement. Those who feel "cared for" and valued by their teachers in the classroom setting were compelled to become more involved in classroom activities as well as more motivated to learn. Effective teachers are strategic with their particular type of communication or method of instruction to increase student responses during discussions. Teachers have influence over the quality of their interactions and their students' motivation to learn through instructional practices (Davis, 2003). Therefore teachers be observed and trained on immediacy behaviors that can increase the level of cognitive learning. Through positive interactions created by conversations also increase students' social interactions which can contribute to improve cognitive learning (Allen, Witt & Wheelless, 2006).

Improving relationships between marginalized students and their mostly white teachers is a challenge that continues to limit the achievement gap in many public schools (Murray & Murray, 2004). Supportive student-teacher relationships fulfill the basic psychological needs and promote students' sense of self-determination (Ryan & Deci, 2000). Research has provided evidence that students' who have close, supportive relationships with teachers will attain higher levels of achievement when compared with students who have difficulty forming relationships with their teachers (Murray & Murray, 2011; Saft & Pianta, 2001; Davis, 2003). Saft and Pianta (2001) argue students who feel close to a teacher will

experience more communication with the teacher, getting both guidance and praise on a more frequent basis. Forming positive teacher-student relationships will likely result in improved classroom behavior, improved engagement and improved social and cognitive development (Davis, 2003). Through an investigation that explored the impact culture played on teacher immediacy, McCroskey et al. (1996) examined data from Australia, Finland, Puerto Rico and the US and found an increase in teacher immediacy was positively correlated with cognitive learning and negatively correlated with learning loss across all four cultures.

A feeling of conflict may also play a role in improving the relationships between teachers and a marginalized student population. A study conducted by Chris Murray and Kelly Murray (2004) examined the associations between different child characteristics and conflict, closeness, and dependency within student-teacher relationships. Results of this and other studies indicated that students' race and disability played a role in the teacher's perception of student-teacher relationships (Murray and Murray, 2004; Hamre & Pianta, 2001) in that teachers reported the highest levels of conflict and dependency with African American students. Students with learning disabilities were also found to have increased levels of conflict, more dependency and lower closeness in relationships formed with teachers (Murray & Greenburg, 2001). In addition, low-achieving students experience fewer interactions with teachers than their high-achieving peers (Baker, 1999), which is a major concern given that low-achieving students benefit the most from caring and supportive relationships with their teachers (Hamre & Pianta 2001).

## **Teachers' Perceptions of Student Dependency**

Unfortunately, some teachers perceive ELL students to be too dependent upon them (Reeves, 2006). This perception can lead to poorer quality relationships (Murray, 2004) and may affect teachers' ability to connect with ELL students during SIOP/CREDE based instruction. For example, Split, Kooman and Thijis (2011) state that relationships with students that are perceived by the teacher as negative are also associated with stress and negative emotions. Students who experience close relationships with teachers were less likely to avoid school, were more self-directed, and more engaged in learning. Students who experience more conflict with their teachers experience more dependency on the teacher (Split, Kooman & Thijis, 2011) causing further strain on the ability of the teacher to form meaningful relationships.

Teachers' feelings of dependency are also affected by attitude towards language minority students in mainstream classrooms (Cummins, 2001). Fu (1995) conducted a study that explored mainstream teacher's attitudes towards teaching Laotian refugee students. Many of the teachers expressed feelings of frustration and went so far as to say that these particular students did not belong in the mainstream classes, that it was the job of the ESL teacher to provide instruction. Fang (1996) asserted that teachers' who express negative stereotypical attitudes toward language minority students can have detrimental effects on the language minority students' behaviors and academic achievement. Many language minority students are not being supported in mainstream classrooms and are often limited in the classroom activities in which these students can participate (Reeves, 2006). Students' feelings of dependency on the can therefore influence a teacher's willingness to provide the

modifications needed to support language needs (Mantero & McVicker, 2006; Murray & Murray, 2004).

Child and teacher ethnicity can also influence interactions between teacher and student as well as teacher perceptions of closeness and dependency (Birch, Ladd & Buhs, 1999; Hamre & Pianta, 2001). Hamre and Pianta (2011) found that ethnicity and teacher-child ethnic match were consistently related to teachers' perceptions of negative aspects of the teacher-child relationship, specifically teacher-child conflict. Teachers rated relationships with students of the same ethnicity more positively than relationships with students of ethnicities different from their own. When students and teachers have a different ethnic background, they may perceive certain behaviors differently and consequently respond differently. This can easily lead to miscommunication or conflicts, especially if both parties have little knowledge of the viewpoint and experiences of the other. Emotional negativity and relationship conflict is a consistent predictor of poor academic achievement (Baker et al., 2008). Minority students who experience conflict in their relationships with teachers appear to have more of an effect on their achievement and motivation compared to their white counterparts (Saft & Pianta, 2001).

Grossman and Stodolsky (2005) argue, “subject matter intersects in important ways with teachers' individual and collective expectations for students and the manner in which departments enact curricular and other policies” (pg. 228). Belief systems, therefore, may vary by academic content area, and that coupled with teacher variation in beliefs/traditions may lead to variation in instructional practices (Grossman & Stodolsky, 1995). Content areas like math and science or secondary classes may not instruct on immediacy behaviors.

Teachers who have a limited understanding of their students' culture may play a significant role in way in which students perceive their teachers, impacting the ability of teacher to form meaningful relationships with their marginalized students as well as implement instructional models that support language development.

Levy et al. (1997) conducted a survey in which 550 high school students from mainstream classes were administered a questionnaire about their teacher and found that students who primarily speak Spanish at home perceive their teacher as more dominant than any other cultural group. In classrooms in which there were a high number of Latino students, the students felt that the teacher was more dominant and controlling. Levy et.al (1997) identified cultural differences in approach and avoidance actions may decrease intrinsic motivation and formation of meaningful relationships. These approach-avoidance actions exhibited by teachers can either communicate closeness or communicate distance. Smiling, touching, eye contact, open body positions, close distances, and more vocal animations are frequent immediate behaviors found in US classrooms (Levy et.al, 1997). High contact cultures, such as those from South America, the Middle East, and parts of Europe frequently exhibit this type of immediacy behavior within the home, whereas the U.S and parts of Europe demonstrate low contact immediacy behaviors. Latino students in particular, come from homes in which there are relatively high immediacy behaviors between family members. These marginalized populations recognize that, "teachers' who may seem concerned and personally involved to themselves and their Anglo-American students may therefore appear more distant to the Spanish-speaker" (Levy et. al, p. 31).

Similarly to teacher-students interactions, cultural beliefs may play an important role in prohibiting immediacy. Collectivist cultures emphasize community, shared interests, tradition, the public good, and maintaining face. Individuals from Asian and Latino cultures tend to emphasize beliefs that mirror a collectivist view point, whereas individualism is of high importance in the US and European nations (Hofstede, 1984). “Latino students who engage in acceptable group behavior at home- talking, helping, playing-may be thought as negative behaviors by U.S. teachers, as a result, Latino students may perceive their teachers as unnecessarily strict” (Levy et. al. p. 32). Power distance (PD), the degree to which power, prestige and wealth are commonly distributed in a culture, can also contribute to feelings of closeness. Hofstede (1984) found countries with Latino origins had high PD and therefore felt more powerless. Therefore, a teacher who demonstrates a higher level of dominant behavior may be seen by these students as authoritative, placing students in a more reactive rather than proactive role within the classroom. Children within families of the Mexican culture generally take a subordinate role and see themselves far from the “power center” (Levy et. al., 1997). Therefore, cultural composition of the class may have an effect on the way in which teachers communicate with their students as well as student’s perceptions of their teachers. Highly dominant and highly cooperative teacher behaviors are significantly, positively related to student outcomes (Wubbels & Levy, 1993). Research presented throughout this section continues to suggest that structure and immediacy are interdependent of each other in promoting English language development of ELL population.

## Summary

The purpose of this review was to discuss the theoretical foundations guiding this study and the reasons for choosing perceived teacher quality variables (i.e. instructional conversations and immediacy behaviors) as predictors of ELL student motivation, language acquisition, and academic achievement. Although empirical results indicate that a myriad of factors appear to influence academic achievement among English Language Learners, particular attention needs to be paid to the impact of instructional conversation and teacher immediacy behaviors (Echevarria, 2008; Goldenberg, 1991; Padilla, 2006; Schellpregrell et. al., 2011; Williams, 2001). These behaviors, exhibited by a teacher, can influence learning outcomes as well as language acquisition of ELL students. Research tells us that teachers continue to struggle with the use of instructional conversations because this type of dialogue is not found in the traditional classroom (Cazden, 2001; DaSilva et. al, 2009; DeJong et. al., 2005). Although models have been developed to assist teachers with instructional conversations, research on the use of these models indicates a continued lack of proficiency and frequency of use (Short, 2011). In addition, lack of immediacy behaviors when implementing these models can cause a failure in teachers' ability to connect with their ELL students (Allen et. al, 2006; Chrisophel, 1990), rendering the training models ineffective because the ELL students may not perceive supportive conversations and immediate behaviors of their teachers (Fisher et. al, 2005, Lantolf, 2011) that are needed to improve motivation to learn.

As Figure 1.1 suggests, having a deeper understanding of how the active filter hypothesis, instructional conversations and immediacy play a role in science instruction may

lead to increased motivation, improved language use, and increased academic achievement of ELL. This can be accomplished by creating a classroom structure that supports a challenging, non-threatening atmosphere that promotes equity in learning through interactive discourse. During discussions, an understanding of how the affective variables, the role of dialogue, and social interactions within the classroom setting affect second language learners can increase intrinsic motivation, increase learner autonomy, and lower anxiety.

Instructional strategies such as: being responsive to all students during discussion, creating a starting point for discussion, activation of background knowledge, promotion of complex language and expression, promotion of critical thinking during student response are effective methods for active discussions in both a whole and small group setting. However, proper planning and structured discussions may not be enough to lower the active filter necessary for ELL to fully participate in active discussions. Immediacy behaviors conveyed during questioning and feedback that are both verbal and nonverbal are also necessary. Immediacy behaviors can enhance the psychological closeness of the teacher and the student by increasing intrinsic motivation and encouraging risk taking. This can be accomplished by approaching students during discussions, using student's name in response, using positive feedback/encouragement, increased wait-time, sharing of personal examples, and use of humor.

There is a growing need to evaluate student perceptions of teacher behaviors. We know that there is a wealth of information on effective teaching for second language learners in mainstream classes (U.S. Government Accountability Office, 2009). There also is a wealth of information on teacher's perceptions of working with second language learners

(Rodriguez et.al. 2010). However, there is limited information on second language learners perceptions of their mainstream teacher's instructional behaviors within the classroom, despite the fact that student perceptions have repeatedly been shown to be reliable and valid (Levy et. al, 1997; Mantero et. al, 2006). To reiterate, how the teacher perceives his or her ability to influence learning outcomes is not as important as students' perceptions on what the teacher does, both verbally and nonverbally to connect with each student (Richmond, 1990).

## **CHAPTER 3**

### **METHODS**

#### **Purpose**

The purpose of this survey study was to identify English language learners' (ELL) perceptions of their science teacher's instructional conversations and immediacy behaviors and the impact of these perceptions on their science motivation, language acquisition, and academic achievement. The focal sample included English language learners (ELL) at comprehensive middle schools within North Carolina. In addition, student perception and motivation data was collected from a comparison sample of non-ELL participants.

#### **Research Design**

This inquiry was carried out using the hypothesized conceptual model presented in Figure 3.1. Theoretically driven, this model is based on research surrounding language acquisition theories, learning outcomes for ELL students, instructional conversations, and immediacy, as well as social affective and socio-cultural theories.

The aim of this study was to document the independent and combined contributions of social contextual factors, instructional conversations, and immediacy behaviors, on predicting academic outcomes. A hierarchical regression with three steps was conducted to evaluate the independent and combined contribution of social-contextual variables. The first step of the regression was to include ELL status factors. The second step included prior achievement indicators. The final step included students' perception of instructional conversations and immediacy behaviors. The dependent variables included language acquisition of L2 (second language), academic achievement within the science classroom,

intrinsic motivation, perceived autonomy, and anxiety. A simple T-test was used to determine if ELL perceptions of science teacher immediacy and instructional conversations differ from non-ELL students.

Surveys were utilized to capture student perceptions of their science teacher's immediacy and instructional conversation behaviors as well as students' intrinsic motivation and level of anxiety. Surveys were used in this particular study due to their ability to test theory as there are well established psychometric measures for heightening the results of self-reported measures, and surveys are efficient (Turner & Myer, 2000). Language acquisition and achievement data from each participant was collected from participating district.

To understand how this model may explain ELL student language acquisition, academic achievement, intrinsic motivation, perceived autonomy and anxiety, several antecedents described in Figure 3.1, were examined individually. The review of the literature indicates that scholars have only researched the impact of student perceptions of immediacy behaviors on achievement. A review of both instructional conversation and immediacy literature indicates that each exerts influence on student motivation (Allen, et. al., 2006; Noels et.al, 2003); yet, no study has explored the interaction between these two predictors. Foundational research on student motivation has found that the nature and quality of students learning processes and the effectiveness of instruction are dependent upon student perceptions (Entwistle and Tait 1990), which have repeatedly been shown to be reliable and valid predictors of outcome variables, in line with this study (Levy et. al, 1997; Mantero et. al, 2006). This investigates whether student perceptions of instructional conversations and immediacy will interact to impact students' motivation and thus improve ELL learners'

language acquisition and academic achievement. Students' perceptions of a teacher's ability to create closeness through factors within social development theories may play a significant role in increasing motivation and reducing the active filter, both of which are needed to improve language acquisition.

Specific research questions:

*Research Question 1:* Do mainstreamed ELL students and non-ELL students differ in their perceptions of their science teachers' instructional conversations and immediacy behaviors?

*Research Question 2:* Do mainstreamed ELL students and non-ELL students differ in their perceptions of motivation for science?

*Research Question 3:* Are there significant differences in the magnitude of the relationship between ELL students' perceptions of instructional conversations behaviors and their motivation for science (intrinsic motivation, autonomy, and anxiety)?

*Research Question 4:* Is there a relationship between ELL students' perceptions of immediacy behaviors and their motivation for science (intrinsic motivation, autonomy, and anxiety)?

*Research Question 5:* Do ELL students' perceptions of science teachers' instructional conversation and immediacy behaviors predict their science motivation, language acquisition, and achievement in science when controlling for status factors?

The following hypotheses were tested:

H1: An increase in ELL students' perceptions of supportive instructional conversation behaviors in the classroom will result in an increase in language

proficiency, science achievement, intrinsic motivation and perceived autonomy as well as a decrease in anxiety. In this model, status factors and prior achievement will be statistically controlled.

H2: An increase in students' perceptions of teachers' immediacy behaviors in the classroom will result in an increase in language proficiency, science achievement scores, intrinsic motivation and perceived autonomy as well as a decrease in anxiety. In this model, status factors and prior achievement will be statistically controlled.

H3: Students' perceptions of teachers' instructional conversations and immediacy behaviors will mediate the relationship between ELL status factors and the outcomes of language proficiency and science achievement (Kenny & Baron, 1986).

## **Participants**

A two-pronged approach to recruiting participants was used for this study. The first set of research questions, which compared ELL students' perceptions with non-ELL students' perceptions, were explored with entire science classes in two middle schools with high concentrations of ELL students. However, in order to answer the second set of research questions, it required recruiting a minimum number of 90 ELL students. To meet the requirement for a medium effect size, an additional three middle schools were solicited for ELL participants only. Green (1991) suggests the minimum number of subjects to run multiple correlations in a regression analysis is determined by the formula  $n \geq 50 + 8m$ . For this model, there are five predictors, resulting in a minimum sample size of 90 ELL students. Thus, this sample was built both by class-based recruitment and recruitment of additional ELL.

**Class-based recruitment.** Comparative data from both ELL and non-ELL students was collected in eighth grade classrooms from two middle schools. A total of 189 eighth grade participants, from 5 different science teachers, responded to the survey questions for this study. Table 1 identifies the demographic composition of these participants. Of the students who participated, 55% ( $n=104$ ) were female and 45% were male ( $n=84$ ). Participants were then divided into either ELL or non-ELL with 31% ( $n=58$ ) of the participants identified as ELL and 48% ( $n=131$ ) as non-ELL. The data pertaining to non-ELL was collected and used comparatively to determine if ELL perceptions significantly differed from non-ELL. Only eighth grade students made up the non-ELL participants.

ACCESS scores were used to identify those ELL students who fall within a language proficiency of three (developing) to six (bridging). Although ELL students who fall within a language proficiency below this range were asked to participate within the survey, these students were not included in the data analysis. The reasons for this is that students within these lower stages are in the beginning phase of language acquisition, have little to no language output during this time and may not be able to fully participate within mainstream classroom activities. Students that are identified in the range of three and above require less direct support, have increased communication skills with the target language and generally are placed in all comprehensive core classes. Students that are in the language proficiency range of one to two will generally be placed with ESL (English as a Second Language) instructors. ESL instruction provides explicit language instruction in English either as a pull-out session or a scheduled class time. Due to the explicit English Language instruction that ESL students receive, these students were excluded from the study to eliminate the potential

of other variables that may affect language acquisition and academic achievement. The target group for this study makes up the largest population of ELL students within the school and possibly the least understood.

Table 1  
*Summary of Participants' by Gender and ELL Status*

	Gender		ELL	
	Male	Female	ELL	Non-ELL
6 <sup>th</sup> Grade	56% (n=25)	44% (n=20)	100% (n=45)	0% (n=0)
7 <sup>th</sup> Grade	38% (n= 14)	62% (n=23)	100% (n=36)	0% (n=0)
8 <sup>th</sup> Grade	45% (n=84)	55% (n=104)	31% (n=58)	69%(n=131)
Total	45% (n=122)	55% (n=147)	52%(n=139)	48%(n=131)

Note: All student participants were offered the choice to complete the survey in Spanish or English.

Targeting of science classrooms was a key component of this study due to both the language demands and increased social processes occurring within a science classroom. Learning science is a social process involving observation, reason, analysis and both verbal and non-verbal communicating. Performing these tasks within the science classroom may hold unique challenges for language minority students. Science is a highly communicative discipline, relying heavily on language that is unique to the subject and difficult for ELL students to learn. (Laplante, 1997; Lee & Fradd, 1996). There are also many polysemous words that are used in the academic language of science which may provide additional difficulties for ELL. Key vocabulary words within the academic language of science such as ‘table’ or ‘wave’ require ELL students to learn multiple meanings further hindering academic language development (Short, Vogt, & Echevarria, 2011).

Questioning, hypothesizing, describing, explaining, clarifying, debating and sharing are frequently being communicated by all members of a science classroom to convey meaning and understanding. The discourse that occurs within a science classroom presents challenges for students who are learning English as a new language due to the difficulty of interpreting the meaning of words or phrases commonly used in science discourse (Laplante, 1997; Lee & Fradd, 1996).

In addition to vocabulary, Lemke (1990) identified that dialogue contains thematic patterns when teaching science-specific content. These patterns are significant in that teachers use these patterns to teach semantic relationships which may not be easily detected by ELL students. However, Laplante (1997) found while the language demands are significant in a science classroom, the potential is also strong that aspects of scientific inquiry can create an environment favorable to second-language development. Therefore, science instruction potentially presents an optimal opportunity for ELL students to experience instructional conversations and immediacy with their teacher.

**Focused ELL recruitment.** Additional ELL students were recruited in the three remaining middle schools. Focal students for the regression analyses were mainstreamed ELL students who do not receive language services from ESL teachers but may receive consultative services and are in sixth-eighth grade. Currently, the participating district's Data and Accountability Department follows a cohort of 280-sixth grade and 244-seventh grade ELL students. The participating district has built a dataset of 2008-09 ELL students that includes their WIDA-ACCESS Placement Test (WAPT) scores, Assessing Comprehension and Communication in English State-to-State (ACCESS) scores, End of Grade (EOG)

scores, entry and exit dates, and home language. A shared interest in the focal population led to a partnership. In addition to this database, a matrix provided by the participating district’s Data and Accountability identified middle schools that maintain a level of 8% or greater ELL (exited) populations. Schools on this list were narrowed down to those with large populations of ELL students. These schools were contacted to recruit science teachers.

An additional 81 ELL students, incorporating 19 different science teachers, completed surveys within their school. Table 2 summarizes the self-reported ethnicity and language of these participants. Participants were recruited through a contact person established at each school to assist with the distribution and collections of consent forms, as well as assisted with data collection. This contact did not have any direct ‘power’ or control over the ELL students’ science grades. Each contact person was given the names of the students who fit the category of exited ELL as well as parent permission forms to send home through teachers.

Table 2  
*Summary of Participants*

	Ethnicity	Language Spoken at Home	
		English	Non-English
Hispanic/Latin American	52.9% (n=144)	63.9% (n=92)	36.1% (n=52)
European American	16.2% (n= 44)	100% (n=44)	0% (n=0)
African American	20.6% (n=56)	96.4% (n=54)	3.6% (n=2)
Asian American	2.9% (n=8)	100% (n=8)	0% (n=0)
Native American	3.7% (n=10)	90% (n=9)	10% (n=1)
Middle Eastern American	1.8% (n=5)	100% (n=5)	0% (n=0)

To collect data for ELL students from the participating district’s data and accountability department, I used a 'double blind' identification strategy that has been

approved by IRB. Students were assigned two identification numbers for this project: a Collection ID and a Project ID which are stored on a master file. The project ID was used for merging the data and is kept confidential. I created an excel file with the collection ID to share with the district. The district then provided the achievement and demographic data. Before the file was returned, the district deleted the column with the students' names. I then merged the data into a larger file, match the Collection IDs, and then delete the Collection ID Column so that all that remains in the master data is the students' Project ID.

## **Measures**

### **Self-Reported Measures of Student Perceptions**

Several sources of data were used for this investigation, which were collected over a one month period in the third quarter of the school year. Those sources are: 1) an Instructional Conversation (IC) survey, 2) an immediacy survey, 3) Self-Report Measures of Student Motivation (intrinsic motivation, perceived autonomy, and anxiety), 4) language acquisition scores of target ELL students, and 5) end of grade science scores of ELL students<sup>1</sup>.

**Perceptions of Instructional Conversations.** At the time of this study, there was no measure previously designed to capture instructional conversations from students' perspective. Thus, an ancillary goal of this study was to develop a scale that could capture students' perceptions of instructional conversations. Items were developed using the Instructional Conversation (IC) scale (Gallimore, Glodenberg & Rueda, 1992) (see Figure 3.2). Creation of the students' perceptions of instructional conversations followed three stages as outlined by Hinkin (1995): item development, scale development, and scale

evaluation. Based on a thorough review of the literature and the incorporation of the elements within the original IC scale, 14 survey items were generated and tested with a small sample of middle school students to determine reliability and validity. A five point Likert-type scale was used to keep items short and minimize bias (Hinkin, 1995). Subjects were asked to indicate whether or not their science teacher used certain instructional conversation behaviors and their frequency of use on a scale from “one” (never) to “five” (very often). This information was included as an independent variable and added to proposed regression equations.

Items on the IC scale were separated into two subscales. The first set of items attempts to capture students’ perceptions of conversational elements. Conversational elements within the IC scale focus on creating a challenging, non threatening atmosphere, being responsive to students, promotion of discussion, interactive discourse and equal participation. An example of a conversational element item is: *During discussions, I have an equal chance of participating as everyone else.* The second set of items attempted to capture students’ perceptions of the instructional elements. Instructional elements include creating a starting point for discussion, activating background knowledge, promotion of complex language and expression, promotion of critical thinking during student response (Tharpe & Gallimore, 1991). An example of a perception of the instructional element item is: *During classroom discussions, I am encouraged by the teacher to explain my point of view.*

The structure of the IC scales was examined for evidence of validity and reliability using exploratory factor analysis (EFA). An EFA utilizes a correlation matrix to identify the

underlying relationship between variables with a goal of finding the smallest number of interpretable factors that can adequately explain the correlations among a set of variables. Principal axis factoring (PAF) was then used to account for as much common variance as possible. First, a two-factor EFA was conducted using all items for all subjects. Results of this preliminary EFA suggested the measure adequately explained the data with items generally sorting as hypothesized along the two dimensions of conversational and instructional elements (50.11%). Next, when data were split into ELL and non-ELL samples, and a two-factor solution was forced, results suggested the two-factor solution again adequately explained the data. Percent variance for non-ELL was (54.28%), and for ELL (46.68%). Very similar solutions with varimax rotation were found. Minor differences in variance and items solutions were detected, still sorting as hypothesized. The solution was then rotated using Direct Oblimin ( $\Delta=.75$ ). This cleared up the distinction for ELL students, but correlated the two-factor solution at .77. ELL students were interpreting the scales differently than non-ELL students. This was evident from the data that indicated IC-conversational and IC-instruction were highly correlated, meaning ELL students did not perceive the two factors as being separate and distinct. For non-ELL the two-factor solution had a correlation of .48 (see Appendix C for pattern matrices), indicating that non-ELL did see IC-conversational and IC-instructional as separate and distinct. Reliability analysis for instructional conversations non-ELL ( $r=.92$ ), and for ELL ( $r=.90$ ). For IC-conversational non-ELL ( $r=.92$ ), and ELL ( $r=.89$ ). For IC-instructional non-ELL( $r=.80$ ), and for ELL ( $r=.78$ ).

**Perceptions of teacher immediacy behaviors.** A 23 item, modified version of both the verbal and non-verbal immediacy scales was used to capture students' perceptions of their science teacher's immediacy behaviors. Anderson (1979) operationalized the definition of immediacy as teachers; approaching students in interactions, signaling availability, and inducing stimulation in receiver (student) while conveying interpersonal closeness. Developed by Anderson, the immediacy scale has been shown to be a moderate predictor of student attitudes towards course content, communication quality, positive affect towards course, behavioral commitment to learning, and perceived relational solidarity with instructor (Anderson, 1979; Christophel, 1990). To provide a cross-cultural examination of ELL students' perceptions of teacher verbal and non-verbal immediacy, students were asked to complete a modified version of the Verbal Immediacy Scale (Gorham, 1988) and the Nonverbal Immediacy Scale (Richmond et.al, 1987). Subjects were asked to indicate whether or not their science teacher used these immediacy behaviors and their frequency of use on a scale from "one" (never) to "five" (very often). Christophel (1990) conducted a study using student perceptions of teacher immediacy behaviors, reporting reliability for both the verbal and nonverbal components of the immediacy scale that ranged from  $r=.80$  to  $r=.89$ . Although this research took place at the college level, it provided preliminary evidence of construct validity for using the immediacy scale with adolescents.

Despite the fact that immediacy studies originated in U.S. classrooms, the concept has been used throughout many other cultures using similar scales (Zhang et.al, 2007), having adequate validity across cultures. This instrument was used to collect quantitative information from both ELL and non-ELL students in mainstream science classes. This

information was included as an independent variable when added to proposed regression equations.

An initial EFA was run to identify the number of factors. Findings suggested there may be as many as 4-5 factors within the items. The initial goal was to identify a best set of items to represent verbal and non-verbal measures. A principal axis EFA was conducted using all items for all subjects forcing them to one factor, and then repeated forcing a two-factor solution (i.e. to examine separate dimensions for verbal immediacy and non-verbal immediacy). Next, data were then separated by ELL and non-ELL and EFA analyses were repeated. Results of these initial EFA analyses suggested when the items were forced to a single factor they adequately explained the data for all subjects, as well as separately for ELL and non-ELL samples. However, when the items were forced into two dimensions, items did not sort into hypothesized dimensions, which was the case for both groups.

In order to explain the underlying structure of the immediacy factor, items that did not appear to load on either factor were dropped one at a time. Scales were cleaned to identify the best set of items to use in analyses. The first step taken was to drop Items 6 and 7. These items did not load on either factor and limited the variability in the item analysis. In the second step items 17, 19 and 22 were dropped because they would not load on either factor. In addition, it was reported that students frequently needed clarification for these items during survey. In the third step, a third factor was allowed because responses seemed to indicate a separate factor that reflected questioning and feedback practices (items 9-16). Refer to Appendix C for variance accounted for and factor loadings. Questioning/feedback immediacy was treated as a separate measure for all data analyses. Finally, items 11 and 14

were dropped because they did not load on either factor. There was a structure that worked for “all” students as well as for non-ELL and ELL. Percent variance for all students was (23.74%), for non-ELL (29.62%) and for ELL (17.17%).

Correlation among the factors indicated ELL verbal immediacy does not correlate with questioning/feedback practices. For both ELL and non-ELL, the factors for verbal and non-verbal immediacy were negatively correlated. Reliability analysis revealed a single factor dimension provided consistent responses ( $r=.87$ ), for non-ELL( $r=.88$ ) and for ELL ( $r=.84$ ). Reliability for verbal, non-verbal and questioning/feedback immediacy is reported in Table 3.

### **Self-Report Measures of Student Motivation**

**Intrinsic Motivation.** A 13-item, modified version of the Intrinsic Motivation Inventory (IMI) scale (See Appendix E) was used to assess participants' interest and enjoyment, perceived competence, effort, value and usefulness, felt pressure and tension, and perceived choice while learning science concepts. This scale has been utilized in numerous studies related to intrinsic motivation and self-regulation (Deci, Eghrari, Patrick, & Leone, 1994). It is suggested that increased connection with an immediate teacher and class material, improves students' opportunity for learning (Christophel, 1990). Studies that have utilized motivation as a variable have found a positive relationship between student motivation and teacher immediacy (Allen et al., 2006). Reliability for all participants was, ( $r=.86$ ), for non-ELL ( $r=.86$ ), and for ELL ( $r=.86$ ).

**Perceived autonomy.** A 6-item, modified version of Perry's (Perry et al., 2001) Perceived Academic Control Scale (PACS) was used to measure achievement-related

subjective control. The items of the Perceived Academic Control Scale relate to perceived influence of academic performance (e.g., “I have a great deal of control over my grades in science class”). Through a longitudinal field study of academic control in the achievement of college students, Perry et al. (2001) expressed perceived academic control as a relatively stable psychological disposition affecting students' academic performance on tests, assignments, and overall grades. Results of the study suggest academic control is consistently related to a range of cognitive, emotional, motivational, and performance outcomes. These authors report that students with high-academic-control exerted more effort, reported less boredom and anxiety, expressed greater motivation, used self-monitoring strategies more often, and felt more control over their academic performance within class. Reliability for all participants was ( $r=.70$ ), for non-ELL ( $r=.75$ ) and for ELL ( $r=.62$ ).

**Anxiety.** A 4-item, modified version of Pekrun et. al. (2011) Achievement Emotions Questionnaire (AEQ) was used to assess achievement anxiety experienced by students in academic settings. Pekrun et. al. suggests anxiety can undermine intrinsic motivation, resulting in an over-reliance on extrinsic motivation as means of avoiding failure. The control-value theory adds to this argument, suggesting achievement emotions such as anxiety can affect students' learning and performance while learning (Pekrun, et. al., 2011). Reliability for all participants was ( $r=.73$ ), for non-ELL ( $r=.76$ ), and for ELL ( $r=.71$ ).

### **Academic Outcomes: Language Acquisition & Science Achievement**

**Language acquisition.** The federal government requires screening for all students enrolling for the first time in a school district to ascertain if they are English language learners. Each district is responsible for establishing its own criteria to determine eligibility

for ELL programs and services. Districts must also implement procedures to identify and assess ELL and to gather accurate language proficiency and academic information so that learners receive appropriate educational services.

In North Carolina Public Schools, all newly enrolled students whose parents identify that English is not their primary language are given the W-APT assessment. It is an English language proficiency "screener" test given to incoming students who may be designated as ELL. This test assists administrators and teachers with placement decisions of ELL students. Every year during the third quarter of instruction, each identified ELL student is then given the ACCESS test as a comparison, to identify English proficiency growth. The ACCESS test is designed to measure English language learners' social and academic language proficiency across the four language domains (listening, reading, writing, and speaking). Over-all ACCESS score consists of 35% reading, 35% writing, 15% listening and 15% speaking (see Figure 3.3 for ACCESS scores). Reported reliability for ACCESS test is ( $r=.92$ ). ACCESS scores were collected for all ELL students who were actively solicited through this study.

**Science Achievement.** A study conducted by Garcia-Vazquez, Vazquez, and Lopez (1997) examined the correlation between English language proficiency and achievement as measured by standardized achievement scores and GPA. Using 100 randomly selected Hispanic ELL students in grades 6-12, results showed a significant connection between proficiency in English, grade point averages, and standardized achievement test scores. The original intent of this research study was to solicit only 8th grade students who take the End of Grade Science (EOG) test to determine proficiency with content concepts. Although this

standardized test would provide reliable results, it also limited the target group. The *N* for study did not exceed a level acceptable for generalizations, therefore sixth and seventh grade students were solicited and included within the study. Due to a new common core curriculum being adopted by the NC State Department of Instruction, end of grade exam scores were not available at the time data was collected. However, quarter three letter grades from participating schools for all LEP participants was collected..

### **Additional Status Factors**

**ELL status factors.** Status factors such as gender, ethnicity, and home language of student was provided by participating district. ACCESS scores (see Figure 3.3) were used to identify those ELL students who fall within a language proficiency range of three (developing) to six (bridging). Due to a large number of participants ( $n=144$ ) indicating their primary ethnicity as Hispanic, this became the target ELL population. Although there were participants representing other minorities, sample size was too small for analysis. For non-ELL participants status factors, grade level, gender and self-reported ethnicity were collected.

### **Data Analysis**

Data analyzed included completed ELL and non-ELL student surveys. Using a Statistical Package for Social Science (SPSS) software, data were screened for missing values, means, standard deviations, skewness and kurtosis. The assumption underlying these analyses indicated that the data were normally distributed, there was a linear relationship between each dependent variable and the independent variables, and the variables were measured reliably. Items on each scale were screened to verify if they accurately represented the concept being measured. If an item was deemed not to best represent the targeted

measure, it was removed from the instrument. Items were also evaluated and flagged for excessive skewness and/or kurtosis. A composite score of the overall mean for instructional conversation, conversational IC, instructional IC, immediacy, non-verbal immediacy, verbal immediacy and questioning/feedback scales was created. Next, the structure of each scale was examined for reliability using an exploratory factor analysis (EFA). Cronbach's alpha was calculated for each scale to judge reliability and reported in Table 3. Items low on reliability were flagged and/or excluded at this point. A reliability analysis was then run separately for ELL and non-ELL participants.

With confidence in the measurement of immediacy, instructional conversations and motivation, analysis proceeded with comparing ELL and non-ELL students' perceptions of science teacher behavior (see Table 4 for means of ELL and non-ELL participants). For the first phase, *T*-tests were used to detect observed mean differences on ELL and non-ELL responses for instructional conversations, immediacy and science motivation. The second phase computed Pearson correlation coefficients separately for non-ELL and ELL student ratings of the instructional conversations, instructional and conversational elements of IC, immediacy, and intrinsic motivation. Within this phase, a Fisher *z*-transformation was used to examine whether the 'strength' of a relationship between two variables is stronger for one population (ELL) than another (non-ELL). The final phase explored a mediation analysis (see Figure 4.1) to understand the mechanism through which the mediator (student perceptions of IB and IC) affects the outcome (language proficiency, science achievement, intrinsic motivation, autonomy, and anxiety) when controlling for status factors. When steps within the mediation analyses were not met, a hierarchical regression was used to evaluate

the independent and combined contributions of the social-contextual variables. With anticipated issues of multicollinearity, all predictors were centered on the mean for ELL responses.

Table 3  
*Reliability Analysis of Measures*

Measure Model	# of items	Cronbach's Alpha (All)	Cronbach's Alpha (ELL)	Cronbach's Alpha (Non-ELL)
IC (all)	14	.91	.90	.92
IC Conversational	7	.85	.89	.92
IC Instructional	7	.85	.78	.80
Immediacy (all)	16	.87	.84	.88
Verbal Immediacy	7	.74	.73	.74
Non-verbal Immediacy	3	.59	.49	.66
Questioning/Feedback Immediacy	6	.76	.73	.81
Intrinsic Motivation	13	.86	.86	.86
Academic Control	5	.70	.62	.75
Achievement Emotions	4	.73	.71	.76

## CHAPTER 4

### FINDINGS

#### **Research Question 1: Do mainstreamed ELL students and non-ELL students differ in their perceptions of their science teachers' instructional conversations and immediacy behaviors?**

To examine the difference between ELL and non-ELL student perceptions, *T*-tests were used to detect observed mean differences on instructional conversations, IC-instructional, IC-conversational, immediacy, non-verbal and verbal immediacy, and questioning/feedback immediacy. Results are presented in Table 4. With regards to instructional conversations, there was no significant difference detected for the conversational element or the instructional element of discussions, indicating no difference in the way non-ELL and ELL students rate their science teacher at using conversational techniques to improve discussion. An independent sample *T*-test did reveal that non-ELL students tend to rate their science teacher as being more immediate with verbal, non-verbal and question/feedback then ELL students.

Table 4  
*Differences in Means between ELL and Non-ELL Students*

	ELL		Non-ELL		T-test
	M	SD	M	SD	
IC Instructional	3.39	.90	3.54	.90	1.39
IC Conversational	3.94	.69	4.07	.83	1.31
Immediacy (All)	2.84	.68	3.15	.60	3.73**
Verbal Immediacy	2.84	.80	3.08	.78	2.57**
Nonverbal Immediacy	3.18	.86	3.52	.94	3.17**
Questioning/Feedback Immediacy	2.62	.77	2.98	.86	3.54**
Intrinsic Motivation	3.31	.77	3.48	.76	1.47
Autonomy	3.50	.66	3.85	.83	3.79**
Anxiety	3.35	.98	3.61	.99	2.03*

Note. M=Mean. SD=Standard Deviation. \*\* p<.01, \*p<.05, data was screened to detect significant differences between grade levels. Only a significant difference between 8<sup>th</sup> grade and 7<sup>th</sup> grade perceptions of autonomy detected

**Research Question 2: Do mainstreamed ELL students and non-ELL students differ in their perceptions of motivation for science?**

T-tests were used to examine the observed mean differences of ELL and non-ELL students on their perceptions of science motivation to detect the difference in means between the dependent variables. Results are presented in Table 4. Findings revealed ELL students tend to rate their intrinsic motivation and autonomy lower than non-ELL students however, only perceptions of autonomy had a significant difference detected. ELL students significantly rated their perceptions of anxiety lower than non-ELL students despite rating perceptions of instructional conversations, immediacy, intrinsic motivation, and autonomy lower than non-ELL.

**Research Question 3: Are there significant differences in the magnitude of the relationship between ELL students' perceptions of instructional conversations behaviors and their motivation for science (intrinsic motivation, autonomy, and anxiety)?**

Pearson correlation coefficients were computed to detect a difference in the magnitude of the relationship between ELL and non-ELL perceptions of instructional conversations, IC-instructional, IC-conversational and their science motivation. Coefficients were computed separately for non-ELL and ELL students' ratings of the instructional and conversational elements of IC and intrinsic motivation. A Fisher z-transformation analysis was used to examine whether the 'strength' of a relationship between two variables is stronger for one population (ELL) than another (non-ELL). The findings are reported in Table 5.

The Pearson correlation coefficient revealed a significant positive correlation for the way in which both non-ELL and ELL students' perceive the conversational element. This is an indication that students' who perceive their science teacher to have high conversational behaviors may also be intrinsically motivated. Results of the relationship strength were  $z=1.44$ , n.s indicating the strength of the relationship was not stronger for either group. A significant positive correlation for the way in which both non-ELL and ELL students' perceive the instructional element was also detected. This was an indication that students' who perceived their science teacher to have increased instructional behaviors during discussions were more likely to have increase intrinsic motivation. Results of relationship strength were  $z=1.9$ ,  $p<0.05$ , indicating the perception of the instructional element and the effect of this perception on intrinsic motivation was stronger for ELL.

Pearson correlation coefficients were computed to assess the relationship between non-ELL and ELL ratings of instructional and conversational elements of IC and their perceived autonomy. Findings revealed a significant positive correlation for the way in which both non-ELL and ELL students perceived the conversational element. Data are reported in Table 5. This was an indication that all students who perceived their science teachers as having increased conversational behaviors during discussions may also have increased perceptions of autonomy. Results of relationship strength were  $z=1.99$ ,  $p<0.05$ , indicating the perception of the conversational element and the effect of this perception on autonomy was stronger for the ELL students. Findings also revealed a significant positive correlation for the way in which non-ELL students perceived the instructional element. This was an indication that non-ELL students' who perceive their science teacher to have increased instructional behaviors during conversations may also have increased perceptions of autonomy.

Pearson correlation coefficients were computed to assess the relationship between ELL and non-ELL ratings of instructional and conversational elements of IC and their anxiety in a science classroom. Findings revealed a significant positive correlation between the conversational elements and anxiety for non-ELL students only. This was an indication that non-ELL students who perceived their science teacher to have high conversational behaviors may also have less anxiety. Findings also revealed a significant positive correlation between the instructional element and student perceptions for non-ELL. This was an indication that non-ELL students who perceived their science teacher to have increased instructional behaviors may also have less anxiety.

**Research Question 4: Are there significant differences in the magnitude of the relationship between ELL students' perceptions of immediacy behaviors and their motivation for science (intrinsic motivation, autonomy, and anxiety)?**

Pearson correlation coefficients were computed to assess the relationship between non-ELL and ELL ratings of immediacy (verbal, nonverbal and questioning/feedback) and intrinsic motivation. Findings revealed a significant positive correlation for the way in which both non-ELL and ELL students' perceived immediacy as reported in Table 5. This is an indication that students' who perceive their science teacher as having increased immediacy behaviors may also have increased intrinsic motivation. A Fisher z-transformation analysis was then used to examine whether the 'strength' of a relationship between two variables is stronger for one population (ELL) than another (non-ELL). Results of this test recoded a  $z=2.08$ ,  $p<.05$  indicating the perception of the immediacy and the effect of this perception on intrinsic motivation was stronger for ELL students.

A Pearson correlation coefficient was computed to assess the relationship between non-ELL and ELL ratings of immediacy and perceptions of autonomy. The analysis revealed a significant positive correlation for the way in which both non-ELL and ELL students' perceived immediacy and autonomy as reported in Table 5. This was an indication that students who perceive their science teacher to have increased immediacy behaviors may also have increased perceptions of autonomy. A Fisher z-transformation analysis was then used to examine whether the 'strength' of a relationship between two variables is stronger for one population (ELL) than another (non-ELL). Results of this test recoded a  $z=1.06$ , n.s.

A Pearson correlation coefficient was computed to assess the relationship between non-ELL and ELL ratings of immediacy and perceptions of anxiety. The analysis revealed no significant correlation for the way in which both non-ELL and ELL students' perceived immediacy and anxiety as reported in Table 5. This was an indication that students who perceive their science teacher as having increased immediacy behaviors may have little effect on their anxiety in the science classroom. However, there was a significant positive correlation detected between non-ELL and ELL ratings of non-verbal immediacy and perceptions of anxiety. This was an indication that students who perceive their science teacher to have increased non-verbal immediacy behaviors may have an effect on their perceptions of anxiety. A Fisher z-transformation analysis was then used to examine whether the 'strength' of a relationship between two variables is stronger for one population (ELL) than another (non-ELL). Results of this test recoded a  $z=.25$ , n.s

**Table 5**  
*Correlations by ELL and Non-ELL*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender	1.00	-.06	-.04	-.07	.02	-.01	-.06	.00	-.15	-.04	-.23**	-	-
2. Instructional Conversations	-.05	1.00	.97**	.90**	.75**	.28**	.77**	.75**	.58**	.52**	.25**	-	-
3. IC Conversational	-.05	.95**	1.00	.76**	.69**	.22**	.76**	.72**	.58**	.52**	.28**	-	-
4. IC Instructional	-.03	.87**	.67**	1.00	.68**	.34**	.66**	.67**	.48**	.44**	.17*	-	-
5. Immediacy	-.00	.64**	.56**	.63**	1.00	.72**	.85**	.87**	.48**	.35**	.13	-	-
6. Verbal Immediacy	-.19*	.46**	.38**	.48**	.87**	1.00	.40**	.37**	.25**	.18*	.04	-	-
7. Non-verbal Immediacy	-.02	.59**	.54**	.55**	.77**	.52**	1.00	.75**	.48**	.36**	.21**	-	-
8. Questioning Feedback Immediacy	-.12	.58**	.52**	.55**	.87**	.61**	.53**	1.00	.47**	.34**	.08	-	-
9. Intrinsic Motivation	-.15	.44**	.45**	.35**	.26**	.19*	.25**	.21*	1.00	.61**	.55**	-	-
10. Autonomy	-.13	.28**	.32**	.14	.23*	.10	.26**	.23**	.43**	1.00	.48**	-	-
11. Anxiety	-.17*	.16	.13	.17	.16	.07	.19*	.15	.45**	.30**	1.00	-	-
12. ACCESS	.07	.18	.10	.29**	.15	.17	.18*	.02	.01	.16	.24*	1.00	-
13. Science Grades Q3	.03	-.05	-.03	-.06	-.08	-.08	-.02	-.10	.13	.24**	-.01	.23*	1.00
14. Home Language	.16	-.09	-.11	-.04	-.02	.02	-.02	-.06	.01	-.01	-.06	.06	.18*

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Note. ELL data on top, non-ELL on bottom

**Research Question 5: Do ELL students’ perceptions of science teachers’ instructor conversation and immediacy behaviors predict their science motivation, language acquisition, and achievement in science when controlling for status factors?**

Initially, the intent of this study was to explore if students’ perceptions of teachers’ instructional conversations and immediacy behaviors mediate the relationship between ELL status factors and the outcomes of language proficiency and science achievement. However, for most of the outcome variables there wasn’t a significant correlation between status factors and the outcome as well as status factors and the predictor, resulting in little evidence of mediation.

A hierarchical regression analysis was run to determine the extent to which conversational IC, instructional IC, verbal, non-verbal and feedback/questioning immediacy predicted intrinsic motivation. Despite a high degree of multicollinearity (VIF .96-.99) between the conversational and instructional elements of IC, the dimensions were kept separate for the regression. For all dependent variables, status factors (gender, language spoken at home, self reported science grades) were entered for step 1. IC-instructional, IC-conversational, verbal, non-verbal, and questioning/feedback immediacy were added in step 2. The result of the analysis is reported in Table 6.

Findings revealed conversational IC, instructional IC, verbal immediacy, nonverbal immediacy and questioning/feedback immediacy accounted for 21% of the variance in intrinsic motivation. Status factors were not found to predict any of the remaining variance and were removed from the regression equation. More specifically, instructional IC was found to be positive predictors of ELL intrinsic motivation in science.

Table 6  
*Predicting Intrinsic Motivation Using ELL Students' Perceptions of Instructional Conversations and Immediacy*

Variable	Self Reported Intrinsic Motivation		
	Model 1	Model 2	Model 3
	$\beta$	$\beta$	$\beta$
English Spoken at Home	.05	.07	
Gender	-.15	-.15	
Science Grade	.02	.01	
IC Conversational		.40**	.40**
IC Instructional		.11	.10
Verbal Immediacy		-.01	.03
Non-verbal Immediacy		.01	-.02
Questioning/Feedback		-.07	-.06
$R^2$	.03	.23**	.21**
$F$	1.17	4.68**	6.71**
$\Delta R^2$		.20**	.21**
$\Delta F$		6.64**	6.71**

\*\*  $p < .01$ , \*  $p < .05$ . Note. In step 1: Science Grade, Gender, and English spoken at home were n.s. and dropped one at a time from the model

A hierarchical regression analysis was run in order to determine the extent to which conversational IC, instructional IC, verbal, non-verbal and feedback/questioning immediacy predicted learner autonomy. In the regression model reported in Table 7, previous status factors were entered into the analysis first, followed by the interaction terms. Findings revealed conversational IC, instructional IC, verbal immediacy, nonverbal immediacy and questioning/feedback immediacy accounted for 18% of the variance in learner autonomy. English spoken at home and gender were factors were not found to predict any of the variance and were removed from the regression equation one at a time. However, self reported science grades accounted for additional 3% of variance. Thus, a total of 21% of the variance in learner autonomy was explained by the various predictors. More specifically,

the conversational element of (IC) and questioning/feedback immediacy were found to be positive predictors of ELL student perceptions of autonomy in science.

Table 7  
*Predicting Autonomy Using ELL Students' Perceptions of Instructional Conversations and Immediacy*

Variable	Self Reported Autonomy		
	Model 1 $\beta$	Model 2 $\beta$	Model 3 $\beta$
English Spoken at Home	-.01	.04	
Gender	-.15	-.10	
Science Grade	-.21	-.19*	-.19*
IC Conversational		.32**	.33**
IC Instructional		-.19	-.20
Verbal Immediacy		-.13	-.11
Non-verbal Immediacy		.18	.18
Questioning/Feedback		.15	.13*
$R^2$	.06*	.20**	.18**
$F$	2.76*	4.00**	4.42**
$\Delta R^2$		.14**	.14**
$\Delta F$		4.51**	4.42**

\*\*  $p < .01$ , \*  $p < .05$ . Note. In step 1: Gender and English spoken at home were n.s. and dropped one at a time from the model

A hierarchical regression analysis was run in order to determine the extent to which conversational IC, instructional IC, verbal, non-verbal and feedback/questioning immediacy predicted learner anxiety. Findings reported in Table 8 revealed conversational IC, instructional IC, verbal immediacy, nonverbal immediacy and questioning/feedback immediacy accounted for 9% of the variance in anxiety. English spoken at home and science grades were not found to predict any of the variance and were removed from the regression equation one at a time. More specifically, the conversational element of (IC) and gender were found to be positive predictor of ELL student perceptions of anxiety in science.

Table 8  
*Predicting Anxiety Using ELL Students' Perceptions of Instructional Conversations and Immediacy*

Variable	Self Reported Anxiety		
	Model 1	Model 2	Model 3
	$\beta$	$\beta$	$\beta$
English Spoken at Home	-.04	-.03	
Gender	-.017	-.19*	-.19*
Science Grade	.05	-.04	
IC Conversational		-.05	-.05
IC Instructional		.11	.11
Verbal Immediacy		-.15	-.15
Non-verbal Immediacy		.19	.20
Questioning/Feedback		.08	.08
$R^2$	.03	.09*	.09*
$F$	1.54	1.52	2.00*
$\Delta R^2$		.05	.06
$\Delta F$		1.48	1.57

\*\*  $p < .01$ , \*  $p < .05$  Note: In step 1: Science Grade and English spoken at home were n.s. and dropped one at a time from the model

A hierarchical regression analysis was run in order to determine the extent to which conversational IC, instructional IC, verbal, non-verbal and feedback/questioning immediacy predicted participant over-all ACCESS scores for the 2012-13 school year. Findings reported in Table 9 revealed conversational IC, instructional IC, verbal immediacy, nonverbal immediacy and questioning/feedback immediacy accounted for 14% of the variance for language acquisition. Status factors were not found to predict any of the remaining variance and were removed one at a time from the regression equation in model 3. More specifically, instructional conversations (IC) were found to be positive predictor of ELL ACCESS scores.

Table 9  
*Predicting ACCESS Using ELL Students' Perceptions of Instructional Conversations and Immediacy*

Variable	ACCESS Scores		
	Model 1	Model 2	Model 3
	$\beta$	$\beta$	$\beta$
English Spoken at Home	-.05	-.01	
Gender	.06	.08	
Science Grade	-.02	-.02	
IC Conversational		-.15	-.21
IC Instructional		.41**	.40**
Verbal Immediacy		.15	.12
Non-verbal Immediacy		.03	.07
Questioning/Feedback		-.19	-.21
$R^2$	.01	.14*	.14*
$F$	.20	1.50	2.35*
$\Delta R^2$		.13*	.14*
$\Delta F$		2.26*	2.35*

\*\*  $p < .01$ , \* $p < .05$ . Note: In step 1: Gender, Science Grade and English spoken at home were n.s. and dropped one at a time from the model

A hierarchical regression analysis was run in order to determine the extent to which conversational IC, instructional IC, verbal, non-verbal and feedback/questioning immediacy predicted participant quarter 3 science grades. The results of the regression as reported in Table 10 indicated the predictors did not significantly predict ELL student participant quarter 3 science grades.

Table 10  
*Predicting Quarter 3 Science Grades Using ELL Students' Perceptions of Instructional Conversations and Immediacy*

Variable	Quarter 3 Science Grades	
	Model 1	Model 2
	$\beta$	$\beta$
English Spoken at Home	.15	.17
Gender	.00	-.03
IC Conversational		.05
IC Instructional		-.04
Verbal Immediacy		-.08
Non-verbal Immediacy		.06
Questioning/Feedback		-.09
$R^2$	.03	.02
$F$	1.82	.86
$\Delta R^2$		.02
$\Delta F$		.44

## **CHAPTER 5**

### **DISCUSSION**

The purpose of this project was to identify English language learners' (ELL) perceptions of their science teachers' instructional conversation and immediacy behaviors and the impact of these perceptions on their science motivation, language acquisition, and academic achievement. This study was guided by several research questions: To what extent do mainstreamed ELL students and non-ELL students differ in their perceptions of their science teachers' instructional conversations and immediacy behaviors? To what extent do mainstreamed ELL students and non-ELL students differ in their perceptions of motivation for science? Are there significant differences in the magnitude of the relationship between ELL students' perceptions of instructional conversation behaviors and their motivation for science (intrinsic motivation, autonomy, and anxiety)? Are there significant differences in the magnitude of the relationship between ELL students' perceptions of immediacy behaviors and their motivation for science (intrinsic motivation, autonomy, and anxiety)? Do ELL students' perceptions of science teachers' instructor conversation and immediacy behaviors predict their science motivation, language acquisition, and achievement in science when controlling for status factors? This chapter includes the following sections to discuss how well the present study answers the above questions: implications for theory, implications for practice, limitations of the study, and future direction of research.

#### **Implications for Theory**

This study makes several contributions to the understanding of ELL and non-ELL perceptions of instructional conversations and immediacy behaviors in the science classroom

and the impact of these perceptions on science motivation. First of all, results of this study indicate students' perceptions of instructional conversations and immediacy are important for both ELL and non-ELL. Results of the correlation analysis indicated a significant positive correlation for both non-ELL and ELL perceptions of instructional conversations and immediacy as they relate to motivation in the science classroom. This indicates that students who perceive their science teacher as having increased instructional conversations and immediacy behaviors also report increased motivation in the science classroom regardless of language status. Results of this study align with previous research on the perception of instructional strategies used in the classroom. Teachers that identify, nurture, and build students' inner motivational resources during class instruction will promote increased perceived autonomy, psychological need satisfaction during learning activities, and classroom engagement. Increased engagement in turn, may lead to adopting mastery motivation, increased intrinsic motivation, enhanced psychological well-being, active and deeper information processing, greater conceptual understanding, higher academic achievement, and greater persistence in school versus dropping out (Reeve, Jang, Carrell, Barch, & Jeon, 2004).

Specific components of instructional conversations and immediacy made significantly greater contributions to predicting ELL science motivation. Results of the Fisher-Z analysis indicated the strength of the relationship between the instructional element of IC, immediacy, and intrinsic motivation was stronger for ELL than non-ELL. This is an indication that ELL students were more likely to be intrinsically motivated in the science classroom when they perceive their teachers to promote complex language and critical thinking during student

responses, all while conveying interpersonal closeness. Results of the Fisher-Z analysis also indicated only the strength of the relationship between the conversational element of IC and autonomy was stronger for ELL than non-ELL. This is an indication that ELL were more likely to have increased feelings of autonomy in the science classroom when they perceive their teachers to promote complex language and critical thinking during student responses, all while conveying interpersonal closeness. Findings suggest, teachers that create a starting point for discussions, activate background knowledge, promote complex language and critical thinking during student responses, all while conveying interpersonal closeness will improve ELL motivation to engage with science discussions. Increased use of instructional conversations and immediacy in the classroom benefits everyone, however, these instructional strategies matter more for ELL.

Despite the similarities, there were significant differences between non-ELL and ELL perceptions. Survey data consistently indicated ELL students perceive classroom instruction differently from that of their non-ELL peers. T-tests indicated ELL significantly rated their perceptions of immediacy lower than that of their non-ELL peers. T-tests also revealed ELL significantly rated their perception of intrinsic motivation and autonomy lower than non-ELL. This is an indication that ELL perceived the instructional practices of their science teachers differently than their non-ELL peers. This confirms previous research on the perceptions of marginalized populations within the mainstream classroom and the impact these perceptions may have on motivation (Levy et. al., 1997; Mantero et. al., 2006). Another significant difference between non-ELL and ELL was the way in which ELL students reported feelings of anxiety. Results of the correlation analysis indicated only

non-ELL students who perceived their science teacher to have high quality conversational and instructional behaviors were more likely to have less anxiety. T-tests indicated ELL students significantly reported less anxiety than non-ELL students despite consistent findings that ELL students frequently reported their perceptions of instructional conversations, immediacy behaviors, and their motivation variables lower than non-ELL. This may be an indication that despite lower ratings of instructional conversations, immediacy, and motivation, teachers may be providing other accommodations that reduce ELL anxiety. It is important to note, the majority of the ELL participants were Hispanic. According to Martinez (2009) Hispanic students, “are highly sensitive to instruction quality and become highly engaged when instruction is challenging, relevant, academically demanding, and employs students’ skills” (pg. 299). The ELL students in this study may have felt challenged and supported by their science teachers in other ways and therefore may have reported less anxiety.

Finally, this study provides an important link between the Active Filter Hypothesis (Krashen, 1982) of language learning and broader processes of the socio-cultural theory of cognitive development (Vygotsky, 1978; Lantolf, 2011), and language socialization theory (Bayley & Langman, 2011). Perceptions of instructional conversations and immediacy behaviors significantly predicted language acquisition outcomes beyond status factors like gender, science grades, and language spoken at home. Results of the survey seem to provide a direct link between the importance of affective variables and the process of second language acquisition. According to the Active Filter Hypothesis, there are a number of affective variables that may facilitate the process of second language acquisition. These

variables include: *intrinsic motivation*, *learner autonomy*, and *anxiety*. The combination of understanding how the affective variables, the role of dialogue, and social interactions within the classroom setting affect second language learners may provide the best insight into students' second language acquisition. Results of the survey indicated ELL perceptions of instructional conversation and immediacy behaviors significantly predicted science motivation outcomes beyond status factors like gender, science grades and language spoken at home. This is an indication that high quality instructional conversational in combination with immediacy behaviors make a unique contribution to ELL students' reporting increased intrinsic motivation, higher autonomy, and less anxiety.

### **Limitations**

There are several limitations recognized regarding the current study. First of all, there were limitations to generalizing this study to all ELL and non-ELL students in public schools because participants were recruited in only one state and one school district. Secondly, despite recruitment efforts, this study had a small sample size. For most analyses, the sample size for this study met the minimum requirement for a medium effect size. A larger sample size may result in a smaller effect size of the status factors. Future studies should recruit participants from multiple districts across multiple grade levels.

Another limitation was the creation and use of the Instructional Conversation (IC) survey. Despite the fact that theory distinguishes instructional conversations into conversational and instructional elements (Goldenberg & Gallimore, 1992), a high degree of multicollinearity between the conversational element and instructional element indicated ELL did not see these elements as separate and distinct. However, the perceptions ELL have

of their teachers' use of IC in the classroom significantly predicted motivation and academic outcomes. The conversational and instructional elements were used separately in the regression model. Future studies may want to further examine the dimensions of the IC scale with larger populations of non-ELL and ELL.

Another limitation for this study was the limited availability of ACCESS scores and the unavailability EOG scores, W-APT data, and entry/exit dates. Only 86 out of the 139 ELL student ACCESS scores were collected (male,  $n=41$  and female  $n=44$ ). There are several reasons for this; parents can opt out of taking ACCESS test, ELL students surveyed who scored high enough in the previous year were no longer tested, and/or information was not available at the time of collection. To account for possible significant differences between grade levels, an ANOVA was run by grade level using ACCESS scores as a covariate. The findings were non-significant indicating no single grade level had more predicting power over the other. Due to a new common core curriculum being adopted by the NC State Department of Instruction, end of grade exam scores were not available at the time data was collected. However, quarter three letter grades for all LEP participants were collected and utilized in the model. Originally, I began this project with policy implications in mind and focused solely on results that a school administrator would find significant, such as improved academic achievement. However, I came to the realization that the findings related to motivation may eventually provide the most significant contributions to understanding of our diverse classrooms. Future studies should use the EOG scores when they become available to further examine if ELL perceptions of science teachers' instructor

conversation and immediacy behaviors predict achievement in science when controlling for status factors.

The final limitation of this study was the inability to detect mediation effects. I originally set out to explore if student perceptions of immediacy and instructional conversations mediate the relationship between ELL status factors, the outcome of language proficiency, and science achievement as well as the identified affective variables. Findings from the study indicated status factors (language spoken at home, gender, self reported science grade) were in most cases non-significant factors even though literature says these variables *should* have been. Why might status factors have little relation to the outcomes? For language spoken at home, only 20.2% of the total participants indicated the language spoken at home was not English. Only 37.2% of the ELL participants that were included in the regression analysis indicated a language other than English was spoken at home. In addition, less than 4% of ELL participants included in the regression used the Spanish version of the survey. This was an indication that many of the ELL participants may have English language support at home as well as in school. Gender was also non-significant in most of the analyses. However, gender was significantly negatively correlated with perceptions of autonomy. This is an indication that male participants tend to report less anxiety than female students. This is consistent with previous research on science anxiety and gender (Udo, Ramsey & Mallow, 2004). Future studies may want to explore the possibility of mediation with a larger sample size of ELL students from a larger distribution area using better measurement techniques.

## **Implications for Practice**

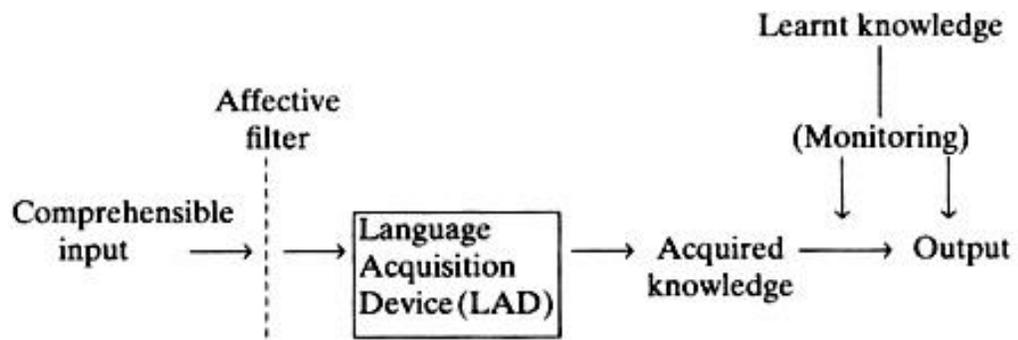
This research raised questions and understanding about the way in which mainstream science teachers can assist all students in their process of understanding and acquiring academic science language and illuminate those instructional responsive practices that support every student's academic needs. As mentioned previously, targeting of science classrooms was a key component of this study due to both the language demands and increased social processes occurring within a science classroom. Science instruction presents an optimal opportunity for non-ELL and ELL to experience instructional conversations and immediacy with their teacher. Learning science is a social process involving observation, reason, analysis and both verbal and non-verbal communicating. Findings from this study indicated the perceptions of instructional conversations and immediacy in the science classroom was important for both ELL and non-ELL. More importantly, these perceptions predicted motivation in the science classroom. Research suggests discourse that occurs within a science classroom presents challenges for students who are learning English as a new language. Specifically, ELL struggle with the difficulty of interpreting the meaning of words or phrases commonly used in science discourse (Laplante, 1997; Lee & Fradd, 1996). Vygotsky's (1978) socio-cultural theory of cognitive development and the Language Socialization Theory also suggest emotion and social action within social settings can promote an active role, but often affects those who are less language proficient from becoming active, competent participants within the classroom. However, findings from this study indicate ELL perceptions of instructional conversations and immediacy significantly predicted language acquisition outcomes despite science being a highly communicative

discipline that may be more difficult for ELL to learn. This is consistent with previous findings that found an increased potential for aspects of scientific inquiry to create an environment favorable for second-language development (Leplante, 1997). Based on the results of this study, we could improve science teacher education programs and professional development to better equip educators create a starting point for discussions, activate background knowledge, promote complex language and critical thinking during student responses, all while conveying interpersonal closeness.

All teachers can be trained on how to distinguish between instructional and conversational elements within discussion. A deeper understanding and deliberate design within lesson planning may assist teachers in creating a challenging (non-threatening) environment which, in turn, promotes discussion that is responsive to our language learners. The findings of this research align with past findings, in that the discourse patterns characterized by interactive conversations also increase student motivation within the discussion (Goldenberg & Gallimore, 1992). Teachers can also be observed and trained how to display immediacy behaviors that can increase the level of perceived closeness. This may, in turn, also improve motivation and learning outcomes for both ELL and non-ELL. Structural elements of middle schools may prohibit science teachers from the opportunity to develop lasting relationships with each of their students. Thus, in order to communicate caring and the desire to connect with students in class, science teachers may need to develop their interpersonal immediacy behaviors. This can be done by training teachers on the use of certain cues, questions, and responses to increase positive interactions created by

conversations. This in turn will create more communication with the teacher as well as ELL receiving guidance and praise on a more frequent basis.

An understanding of the issues affecting ELL students in mainstream classes may aid administration in planning sound educational programs that support the language and academic demands of ELL students. Survey data consistently indicated ELL students perceive classroom instruction differently from that of their non-ELL peers. Dialogue-centered classrooms in which teachers use modified curriculum with instructional patterns that focus on making content comprehensible through interactions and increased oral use of language may have a greater impact on the improvement of language development and academic aptitude. Teachers continue to struggle with the use of instructional conversations because this type of dialogue is not found in the traditional classroom (Cazden, 2001; DaSilva et al., 2009; DeJong et al., 2005). Although models have been developed to assist teachers with instructional conversations, research on the use of these models indicates a continued lack of proficiency and frequency of use (Short, 2011). Lack of immediacy behaviors when implementing these models can cause a failure in teachers' ability to connect with their ELL students (Allen et al., 2006; Chrisophel, 1990), rendering the training models ineffective. As this research demonstrates, ELL students seem to perceive supportive conversations and immediacy behaviors of their teachers (Fisher et al., 2005; Lantolf, 2011) as necessary elements of instruction needed to improve their motivation to learn.



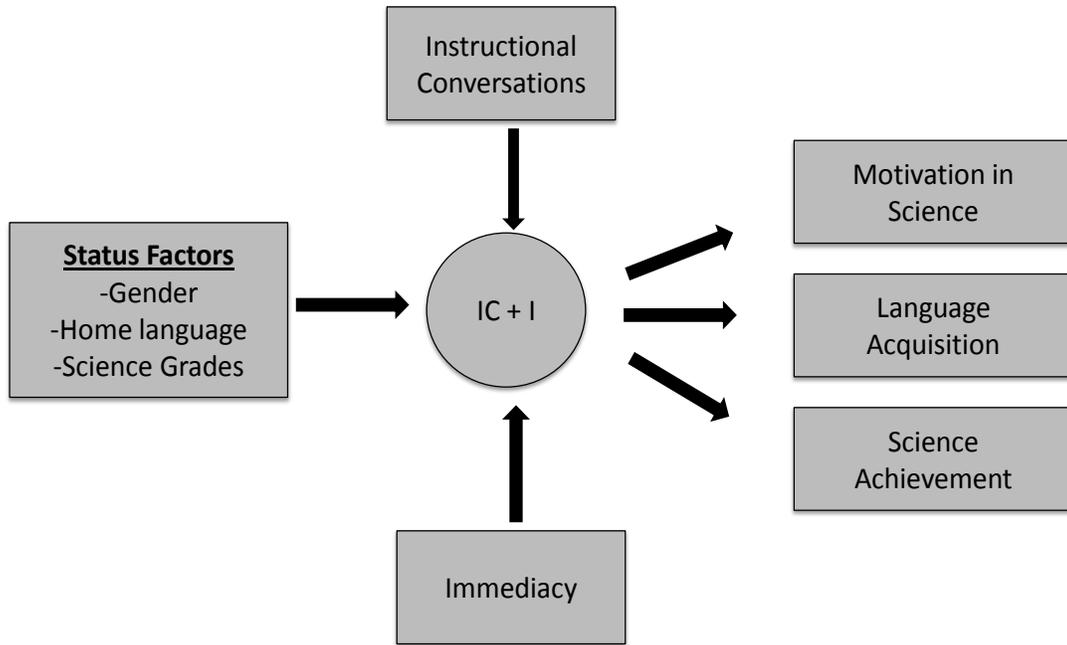
*The Input Hypothesis Model of L2 learning and production (adapted from Krashen, 1982, pp. 16 and 32; and Gregg, 1984)*

**Figure 2.1**

Active Filter Hypothesis

<b>Stages of Second Language Acquisition</b>			
<b>Stage</b>	<b>Characteristics</b>	<b>Approximate Time Frame</b>	<b>Teacher Prompts</b>
<b>Preproduction</b>	The student  Has minimal comprehension Does not verbalize Nods “Yes” and “No” Draws and points	0–6 months	Show me... Circle the... Where is...? Who has...?
<b>Early Production</b>	The student  Has limited comprehension Produces one- or two-word responses Participates using key words and familiar phrases Uses present-tense verbs	6 months–1 year	Yes/no questions Either/or questions One- or two-word answers Lists Labels
<b>Speech Emergence</b>	The student  Has good comprehension Can produce simple sentences Makes grammar and pronunciation errors Frequently misunderstands jokes	1–3 years	Why...? How...? Explain... Phrase or short-sentence answers
<b>Intermediate Fluency</b>	The student  Has excellent comprehension Makes few grammatical errors	3–5 years	What would happen if...? Why do you think...?
<b>Advanced Fluency</b>	The student has a near-native level of speech.	5–7 years	Decide if... Retell...
<b>Source:</b> Adapted from Krashen and Terrell (1983).			

**Figure 2.2**  
Stages of Language Acquisition



\*\*Note: Status Factors-Absences, Entry/Exit dates were unavailable at the time of data collection

**Figure 3.1**  
Conceptual Framework

<b>IC Rating Scale</b>	<b>0-----1-----2</b>	
<b>1. Creation of a Challenging but Non-threatening Atmosphere</b>	The climate of the Forum is primarily non-challenging (doesn't push understanding), un-stimulating, or intimidating.	The climate of the Forum is primarily challenging (consistently pushes understanding), stimulating, and non-threatening.
<b>2. Responsiveness to Audience or Listener Contributions</b>	The participant is rarely or never responsive to audience initiations, contributions, or current level of understanding.	The participant's talk is frequently or always responsive to audience initiations, contributions, or current level of understanding.
<b>3. Promotion of Discussion</b>	The participant relies mainly on literal level recall and known-answer questions, and rarely or never uses thematic, discussion-generating questions.	The participant rarely uses literal level recall and known-answer questions, but frequently uses thematic, discussion-generating questions.
<b>4. Use of Connected Discourse</b>	There is a complete or almost complete absence of connected discourse related to the theme (point/objective) of the story.	The story is always or almost always characterized by connected discourse related to the theme (point/objective) of the story.
<b>5. General Participation</b>	The conversation is participant - controlled and participation is participant - dominant	The control of the conversation is shared between participant and colleagues, and participation is widespread.
<b>6. Thematic Focus on Teaching</b>	No or minimal evidence of a teaching-connected goal or theme, as related to frameworks provided.	Overwhelming evidence of a teaching-connected goal or theme, as related to frameworks provided.
<b>7. Use of Background Knowledge and Relevant Schemata</b>	No or minimal (superficial) attempts to activate, supply, or make use of relevant background knowledge.	Consistent, systematic attempts to activate, supply, or make use of background knowledge.
<b>8. Use of Professional Teaching Vocabulary</b>	There are few or no instances in which the participant either elicits or models elaboration of the professional language of teaching.	The participant frequently and systematically elicits and/or models elaboration of the professional language of teaching.
<b>9. Authoritative Knowledge and Reflective Judgment in Support of Teaching Statements, Hypotheses, and Conclusions</b>	The participant rarely or never offers authoritative knowledge and/or reasoning behind, or in defense of, statements, hypotheses, and conclusions. Examinee statements reflect judgment based on information from a single perspective	The participant frequently offers authoritative knowledge and reasoning in defense of statements, hypotheses, and conclusions. Examinee statements reflect judgment based on information from several perspectives.
<b>10. Communication Skills</b>	Participant abuses conventions of grammar, spelling and punctuation in such a way as to detract from the content of the message.	The participant uses conventions of grammar, spelling and punctuation that support and enhance the content

**Figure 3.2**  
IC Rating Scale

### Performance Definitions for the Levels of English Language Proficiency

<b>6-Reaching</b>	<ul style="list-style-type: none"> <li>• specialized or technical language reflective of the content area at grade level</li> <li>• a variety of sentence lengths of varying linguistic complexity in extended oral or written discourse as required by the specified grade level</li> <li>• oral or written communication in English comparable to proficient English peers</li> </ul>
<b>5 - Bridging</b>	<ul style="list-style-type: none"> <li>• specialized or technical language of the content areas</li> <li>• a variety of sentence lengths of varying linguistic complexity in extended oral or written discourse, including stories, essays, or reports</li> <li>• oral or written language approaching comparability to that of English-proficient peers when presented with grade-level material</li> </ul>
<b>4 - Expanding</b>	<ul style="list-style-type: none"> <li>• specific and some technical language of the content areas</li> <li>• a variety of sentence lengths of varying linguistic complexity in oral discourse or multiple, related sentences or paragraphs</li> <li>• oral or written language with minimal phonological, syntactic, or semantic errors that do not impede the overall meaning of the communication when presented with oral or written connected discourse with sensory, graphic, or interactive support</li> </ul>
<b>3 - Developing</b>	<ul style="list-style-type: none"> <li>• general and some specific language of the content areas</li> <li>• expanded sentences in oral interaction or written paragraphs</li> <li>• oral or written language with phonological, syntactic, or semantic errors that may impede the communication, but retain much of its meaning, when presented with oral or written, narrative, or expository descriptions with sensory, graphic, or interactive support</li> </ul>
<b>2 - Beginning</b>	<ul style="list-style-type: none"> <li>• general language related to the content areas</li> <li>• phrases or short sentences</li> <li>• oral or written language with phonological, syntactic, or semantic errors that often impede the meaning of the communication when presented with one to multiple-step commands, directions, questions, or a series of statements with sensory, graphic, or interactive support</li> </ul>
<b>1 - Entering</b>	<ul style="list-style-type: none"> <li>• pictorial or graphic representation of the language of the content areas</li> <li>• words, phrases, or chunks of language when presented with one-step commands, directions, WH-, choice, or yes/no questions, or statements with sensory, graphic, or interactive support</li> <li>• oral language with phonological, syntactic, or semantic errors that often impede meaning when presented with basic oral commands, direct questions,</li> </ul>
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**Figure 3.3**  
ACCESS Scores

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## APPENDICES

## Appendix A-IRB, Surveys, Consent Forms

**NC STATE UNIVERSITY**

North Carolina State University  
is a land-grant university and a  
constituent institution of the  
University of North Carolina

**Office of  
Research  
and  
Innovation**

Division of Research  
Administration

**From:** Deb Paxton, IRB Administrator  
North Carolina State University  
Institutional Review Board

**Date:** February 4, 2013

**Title:** English Language Learners in Mainstream Science Classrooms:  
Understanding the Impact of Teachers' Use of Immediacy and  
Instructional Conversation Behaviors on Students' Language  
Acquisition and Achievement

**IRB#:** 2994

Dear Brady Kocher,

The project listed above has been reviewed by the NC State Institutional Review Board for the Use of Human Subjects in Research, and is approved for one year. **This protocol will expire on 1/31/14 and will need continuing review before that date.**

NOTE:

1. You must use the attached consent forms which have the approval and expiration dates of your study.
2. This board complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU the Assurance Number is: FWA00003429.
3. Any changes to the protocol and supporting documents must be submitted and approved by the IRB prior to implementation.
4. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days by completing and submitting the unanticipated problem form on the IRB website.
5. Your approval for this study lasts for one year from the review date. If your study extends beyond that time, including data analysis, you must obtain continuing review from the IRB.

Sincerely,



Deb Paxton  
NC State IRB

**Surveys**  
**Immediacy Behavior Scale**

Below are description of things your science teacher may have been doing or saying during class. For each item, circle the number 0-4 which indicates the behavior of your science teacher

Scale: Never =0      Rarely = 1      Occasionally = 2      Often = 3      Very Often = 4

**Verbal Items:**

1. My science teacher uses personal examples.
2. My science teacher talks about his/her experiences outside our classroom
3. My science teacher asks encourages students to talk in class.
4. My science teacher gets into discussions based on something a student brings up even when this doesn't seem to be a part of his/her lecture
5. My science teacher uses humor in class (My science teacher tries to be funny in class.)
6. My science teachers calls students by name
7. My science teacher calls me by name
8. My science teacher gets into conversations with individual students before or after class

**Questioning/Feedback items:**

9. My science teacher has initiated conversations with me before, after or outside this class
10. My science teacher provides feedback on my individual work through comments on papers or oral discussions
11. My science teacher calls on students to answer questions even if they have not indicated that they wanted to talk
12. My science teacher asks how students feel about an assignment, due date or discussion topic
13. My science teacher invites students to meet with her/him outside class if they need additional help
14. My science teacher asks questions that have specific, correct answers
15. My science teacher asks questions that solicit viewpoints or opinions
16. My science teacher praises students' work, actions or comments

**Verbal items:**

17. My science teacher criticizes or points out faults in students' work, actions or comments
18. My science teacher will have discussions about things unrelated to class with individual students or with the class as a whole

**Nonverbal items**

19. My science teacher uses his/her hands or body while talking to the class
20. My science teacher uses a dull / mono-tone voice when talking to the class
21. My science teacher smiles at class when talking.

22. My science teacher seems tense (uptight) when talking to the class.
23. My science teacher gives “high-fives”, handshakes or pats on the back during class.
- 24.

### **Instructional Conversation (IC) Scale**

Instructional Conversation Survey-Below are a description of things your science teacher may have been doing or saying during class discussions. For each item, circle the number 0-4 which indicates the behavior of your science teacher

Scale: Never =0      Rarely = 1      Occasionally = 2      Often = 3      Very Often = 4

- 1. During classroom discussions, my science teacher is aware of the needs of all students**
- 2. During classroom discussions, my science teacher attends to the needs of all students**
- 3. During classroom discussions, my science teacher acknowledges the responses made by all students**
- 4. During classroom discussions, my science teacher responds to student statements**
- 5. During classroom discussions, my science teacher values everyone’s contributions**
6. During classroom discussions my science teacher makes sure everyone is participating
- 7. During classroom discussions, I have an equal chance of participating as everyone else**
- 8. During classroom discussions, my science teacher helps me understand the material**
9. During classroom discussions, my science teacher uses examples that help me understand the topic being presented
10. During classroom discussions, my science teacher helps me get my thoughts together
11. During classroom discussions, my science teacher does not talk the entire time
12. During classroom discussions, I am encouraged by the teacher to explain my point of view.
13. During classroom discussions, I am encouraged by the teacher to defend my statements.
- 14. During classroom discussion, my science teacher asks questions that require me to make connections beyond the textbook**

**\*Bolded items represent the conversational elements**

\*Non-bolded items represent the instructional elements

### **Intrinsic Motivation Inventory (IMI)**

For each of the following statements, please indicate how true it is for you, using the following scale:

Scale: Never = 0      Rarely = 1      Occasionally = 2      Often = 3      Very Often = 4

1. For each of the following statements, please indicate how true it is for you, using the following scale:
2. While I am in science class I was thinking about how much I enjoyed it.
3. I did not feel at all nervous about doing science work.
4. I think I am pretty good at science.
5. I find science very interesting.
6. While in science class, I feel tense while doing assignments.
7. I felt relaxed while in science class
8. I didn't really have a choice to be in science
9. While in science class, I am satisfied with my performance on assignments.
10. I was anxious while in science class
11. I think science is very boring.
12. While in science class, I feel like I am doing what I wanted to do while I was working on the class assignments
13. I felt pretty skilled at completing my science work.
14. I think science is very interesting.
15. While in science class, I feel pressured while doing an assignment.
16. I would describe the assignments in science as very enjoyable.
17. In my science class, I do the assignments because I had no choice.
18. After working at this task for awhile, I felt pretty competent.

### **Academic Control**

For each of the following statements, please indicate how true it is for you, using the following scale:

Scale: Never = 0      Rarely = 1      Occasionally = 2      Often = 3      Very Often = 4

1. I have a great deal of control over my grades in science class
2. The more effort I put into this science class, the better I do
3. I see myself as largely responsible for how I do in science class
4. There is little I can do about my grades in science class
5. When I do poorly in science, it's usually because I haven't given it my best effort
6. My grades are basically determined by things beyond my control and there is little I can do to change that.

### **Achievement Emotions Questionnaire (AEQ)**

For each of the following statements, please indicate how true it is for you, using the following scale:

Scale: Never = 0      Rarely = 1      Occasionally = 2      Often = 3      Very Often = 4

1. Thinking about science class makes me feel uneasy
2. I get embarrassed when participating in science class
3. I get tense and nervous while studying for a science test
4. I feel panicky when taking an test in science class

## Consent Forms

### ELL-English

North Carolina State University  
**INFORMED CONSENT FORM for RESEARCH – (SURVEYS; ELL Students & Parents**

**Title of Research Study:** *English Language Learners in Mainstream Science Classrooms: Understanding the Impact of Teachers' Use of Immediacy and Instructional Conversation Behaviors on Students' Language Acquisition and Achievement*

**Principal Investigator:** Brady Kocher ([brkocher@ncsu.edu](mailto:brkocher@ncsu.edu))

**What are some general things you should know about research studies?**

Your child is being invited to take part in a research study. I am completing this study as part of my PhD research. Your child has the right to be a part of this study, to choose not to participate or to stop participating at any time. The purpose of the research study is to gain a better understanding of how students' perceptions of their science teachers' ability to create closeness through structured interactions and discussions impact student achievement in science. In this consent form you will find specific details about the research in which your child is being asked to participate. If you do not understand something in this form it is your right to ask the researcher to explain more about the study or get more written information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher, Brady Kocher, or my faculty adviser, Dr. Heather A. Davis ([heather\\_davis@ncsu.edu](mailto:heather_davis@ncsu.edu); 919-824-1226).

**What is the purpose of this study?**

The purpose of this research study is to gain a better understanding of how students feel about their science teacher and what instructional behaviors their science teacher may do to improve science motivation, language acquisition, and academic achievement of all students. This is a cross sectional study, which means the information requested can all be collected during one visit. If you and your child agree to be a part of this study, in one of your child's science classes, he/she will be asked to fill out a short survey that asks your child about 1) his/her perceptions of their science teacher's ability to create closeness in the classroom, 2) his/her perception of their science teacher's ability to use instructional practices that support understanding of scientific content concepts 3) his/her perception of their science teacher's ability to use discussions to promote knowledge of scientific content concepts. 4) his/her motivation within the science classroom 5) his/her perceived freedom of choice within the science classroom, and 6) his/her level of anxiety within science class. Completing the survey should take no longer than 30 minutes each time. This year, 6<sup>th</sup>-8<sup>th</sup> grade science teachers have agreed to help with reminding students to return permission forms to the sealed boxes in their classroom and with allocating time during class to complete the survey.

Your child is NOT required to participate in this project as part of his/her science course. Your child's grade in science will NOT be affected by your decisions to volunteer or decline to participate in the study. You or your child may choose to stop participating at any time throughout the course of the study.

**Permission to Access Your Child's Language Acquisition Scores, Science Grades, and other Demographic Data:** With your permission, I would like to collect data from your child's school concerning his/her grades and available standard achievement test scores for each grade that he/she completes (e.g. EOG, EOC, PSAT, SAT, ACT), language acquisition scores and demographic data. This information will be used to help understand if student perceptions of their science teacher's immediacy (closeness) and instructional conversation behaviors improve academic achievement of our English Language Learners in science. By signing this form you agree to allow your child's science teachers to provide us with this information at the end of each quarter and the academic year.

**Risks:**

There are no known risks to your child for participating in this research. You might be concerned about whether your child's teacher will 'find out' what they reported on the survey or your child may be concerned that there is one 'right' answer. It is important for you to remember, there are no right or wrong answers – I am simply interested in understanding your child's perceptions and opinion. Each student will be assigned a confidential ID number to protect his/her responses. Students names will not appear on any of the surveys and teachers will not have access to Project ID numbers. Results for individual students will not be shared with anyone including school staff, parents or the student. Only combined data will be shared. Your child's science teacher will not give or collect the survey. Your child's science teacher will also not circulate the room during the administration of the survey.

**Benefits:**

There are no direct benefits to you and your child for participating however, information gained in this evaluation will hopefully aid in improving our understanding about the way in which mainstream science teachers can assist ELL students in their process of language acquisition and to illuminate instructional responsive practices that support the academic needs of ELL students. .

**Confidentiality (Privacy):**

All survey responses, assessments, and work completed will be kept confidential. All survey data entered into an electronic project database will be identified by the Project ID. These Project IDs will not appear on any of the paper-and-pencil surveys. Data will be stored on a password protected computer. Only the principal investigator and the trained research assistants associated with the project will have access to this database. On-line survey data will be kept on a secure, password protected server in which only the principal investigator has access to the account.

. Identifiable information will be destroyed by August 1, 2020. No identifying information (i.e. names or Project IDs) will appear on the surveys or will be used in reports or in research papers. The school and teachers will NOT have access to Project IDs. Only combined data will be used in reports or in research papers.

**Compensation:**

I plan on offering a raffle drawing to increase participation. Items within the drawing will strictly consist of school related supplies. Each student that returns permission for will be entered into drawing which would take place on a school by school basis and immediately following the survey.

**What if you have questions about this study?**

If you have questions at any time about the study or the procedures, you may contact the researcher, Brady Kocher, at NC State University College of Education, 602J Poe Hall-P, 2321 Stinson Dr., Raleigh, NC 27695 or [brkocher@ncsu.edu](mailto:brkocher@ncsu.edu)

**What if you have questions about your rights as a research participant?**

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, NCSU IRB Administrator for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/ 515-4514) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148).

**(Please Retain this Top Form)**

**Title of Research Study:**     *Understanding the impact of teacher immediacy behaviors and instructional conversations for science learning and vocabulary acquisition: Comparison across native and non-native LEP speakers*

**Principal Investigators:**     Brady Kocher ([brkocher@ncsu.edu](mailto:brkocher@ncsu.edu))

**Consent to Participate:**

Dear Parent or Guardian,

Please go over this form with your child to make sure you both understand what you are giving permission for:

“I have read and understand the above information. I have received a copy of this form. If I agree to allow my child to participate in this study I understand that I may withdraw his/her participation at any time.”

Child's Name (please print) \_\_\_\_\_

Parent/Guardian's signature \_\_\_\_\_ Date \_\_\_\_\_

Please check one of the choices below:

\_\_\_\_\_ I do give permission for my child to participate and give permission to access their scores and demographic information

\_\_\_\_\_ I do not give permission for my child to participate or give permission to access their scores and demographic information

(Please print a contact e-mail or US Mail address)

Dear Student,

Please go over this form with your parents to make sure you both understand what you are giving permission for:

“I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may stop participating at any time.”

Student's signature \_\_\_\_\_ Date \_\_\_\_\_

**(Please have your son/ daughter return this form to the sealed box in their science teacher's room.)**

## ELL-Spanish

**Universidad Estatal de Carolina del Norte**  
**FORMULARIO DE CONSENTIMIENTO PARA PARTICIPAR DE LA**  
**INVESTIGACIÓN – (ENCUESTAS; estudiantes y padres de estudiantes que están**  
**aprendiendo el idioma inglés (ELL: English Language Learners)**

**Formulario de consentimiento válido del 31 de enero, 2013 al 31 de enero, 2014.**

**Título del trabajo de investigación: Estudiantes del idioma inglés en clases de ciencias de escuelas convencionales: Comprender el impacto que causa el Uso de la Proximidad y las Conversaciones Constructivas por parte de los maestros en la adquisición del lenguaje y en los logros de los estudiantes.**

**Investigador principal: Brady Kocher ([brkocher@ncsu.edu](mailto:brkocher@ncsu.edu))**

**¿Qué cosas generales deberías saber sobre los estudios de investigación?**

Su hijo ha sido invitado a participar de un estudio de investigación. Este estudio forma parte de la investigación que estoy realizando para mi doctorado (PhD). Su hijo tiene el derecho de formar parte de este estudio, puede también decidir no participar, o dejar de participar cuando lo desee. El propósito de este estudio es obtener una mejor comprensión de cómo las percepciones de los estudiantes acerca de la habilidad de los docentes de ciencias para crear acercamientos a través de interacciones y diálogos estructurados impactan el logro del estudiante en dicha clase. En este formulario de consentimiento se le explicarán detalles específicos sobre el estudio al que se le ha pedido a su hijo que participe. Si usted no comprende algún punto de este formulario, tiene derecho a pedirle más explicaciones al investigador, o recibir más información por escrito. Ud. recibirá una copia de este formulario de consentimiento. Si tiene dudas sobre su participación, no dude en contactar al investigador, Brady Kocher, o a su tutor universitario, la Dra. Heather A. Davis ([heather\\_davis@ncsu.edu](mailto:heather_davis@ncsu.edu); 919-824-1226).

**¿Cuál es el propósito de estudio?**

El propósito de este estudio es lograr comprender mejor lo que piensan los estudiantes de la maestra de ciencia, y qué técnicas instructivas puede poner en uso el docente para mejorar el interés de los estudiantes sobre las ciencia, y a su vez incrementar la adquisición del lenguaje, y el logro académico de todos los estudiantes.

Este estudio es de corte transversal, es decir toda la información que se va a necesitar se puede obtener en una visita/charla. Si usted y su hijo aceptan ser parte de este estudio, en una de las clases de ciencia de su hijo, él o ella tendrá que completar una encuesta corta sobre: 1) qué piensa su hijo sobre la habilidad de su maestro para crear proximidad en el aula, 2) qué piensa su hijo sobre la habilidad de su maestro para usar prácticas instructivas que apoyan la comprensión de conceptos con contenido científico, 3) qué piensa su hijo sobre la habilidad de su maestro del uso del diálogo para promocionar el conocimiento de conceptos con contenido científico, 4) la motivación de su hijo en la clase de ciencia, 5) la percepción de su hijo sobre la libertad de elección dentro de la clase de ciencia, y 6) su nivel de ansiedad en la clase de ciencia. Las encuestas se podrán completar en aproximadamente 30 minutos. Este

año, las maestras de ciencias de 6-8 grados han acordado ayudar a los chicos para que recuerden poner los permisos en las cajas selladas que se encuentran en sus aulas, y en darles tiempo durante la clase para completar las encuestas.

Este proyecto NO forma parte de la materia de ciencias. Las notas en ciencia no serán afectadas por su decisión de participar o rechazar participar. Usted o su hijo pueden elegir dejar de participar en cualquier momento de la investigación.

**Permiso para acceder a los puntajes de su hijo sobre la adquisición del lenguaje, las notas de la clase de ciencias, y otra información de índole demográfica:**

Con su permiso, me interesaría recoger información sobre la escuela de su hijo, sus notas, los puntajes de las evaluaciones estandarizadas (por ejemplo, EOG, EOC, PSAT, SAT, ACT), puntajes sobre la adquisición del lenguaje, e información de índole demográfica. Esta información se utilizará para lograr comprender si las percepciones del estudiante sobre la cercanía o proximidad que logra la maestra de ciencia y sus prácticas de diálogo instructivas mejoran el rendimiento académico de los estudiantes del idioma inglés en la clase de ciencia. Al firmar este formulario, usted estaría dándole permiso a los docentes de ciencia a que nos provean con dicha información al final de cada cuatrimestre, y al final del año académico.

**Riesgos:**

El hecho de que su hijo participe de esta investigación no conlleva ningún riesgo. Puede que le preocupe que la maestra ‘se entere’ de lo que su hijo ha expresado en la encuesta. A su hijo puede preocuparle que exista una ‘única respuesta correcta’. Es importante que recuerde que no hay respuestas correctas o incorrectas: simplemente me interesa entender las percepciones y las opiniones de su hijo. Cada estudiante tendrá un número de identificación confidencial para proteger sus respuestas. Los nombres de los estudiantes no aparecerán en ninguna de las encuestas y los docentes no tendrán acceso a los números de identificación asignados para el proyecto.

Los resultados individuales de cada estudiante no serán compartidos con nadie (ni personal escolar, ni padres, ni estudiantes). Se enseñarán resultados en forma combinada o grupal. El maestro de ciencia de su hijo no dará las encuestas, ni las recogerá. Tampoco se acercarán a los estudiantes participantes durante la administración de la encuesta.

**Beneficios:**

No existen beneficios directos para usted o su hijo por participar. Sin embargo, se espera que la información recaudada ayude a mejorar nuestro entendimiento sobre las maneras en que las maestras de ciencias podrían ayudar a los estudiantes del idioma inglés en su proceso de adquisición del lenguaje, y a su vez, iluminar prácticas instructivas que apoyen las necesidades académicas de los estudiantes del idioma inglés.

**Confidencialidad (Privacidad):**

Todas las respuestas a las encuestas, las evaluaciones, el trabajo realizado se guardará en forma confidencial. Toda información relacionada a las encuestas se volcará en una base de datos electrónica con su Número de Identificación del Proyecto. Dichos números no aparecerán en ninguna de las encuestas impresas. La información se almacenará en una computadora protegida con una clave. Únicamente el investigador principal y los asistentes entrenados para la investigación tendrán acceso a esta base de datos.

Las encuestas realizadas en línea (online) se almacenarán en un servidor protegido con una clave segura, a la que solo el principal investigador tendrá acceso. Cualquier información

identificativa será destruida antes del 1 de agosto de 2020. Ninguna información que pueda ser identificada (por Ej. Nombres o Números de Identificación) aparecerá en las encuestas o será utilizada en informes o en trabajos de investigación. Ni la escuela, ni los estudiantes tendrán acceso a los Números de Identificación del Proyecto. Sólo información combinada o grupal se utilizará en los informes o en los trabajos de investigación.

**Compensación:**

Tengo planeado organizar una rifa para incentivar a los estudiantes a que participen de este proyecto. Los elementos a rifar serán únicamente útiles escolares. Cada estudiante que entregue el formulario de consentimiento firmado participará de sorteos que se llevarán a cabo en las escuelas e inmediatamente después de la encuesta.

**¿Qué pasa si tienes preguntas sobre este estudio?**

Cualquier pregunta que tenga en cualquier momento sobre este proyecto o sobre el procedimiento, puede contactar al investigador, Brady Kocher, en la Universidad Estatal de Carolina del Norte (NC State University College of Education, 602J Poe Hall-P, 2321 Stinson Dr., Raleigh, NC 27695) o enviándole un correo electrónico: [brkocher@ncsu.edu](mailto:brkocher@ncsu.edu).

**¿Qué pasa si tienes preguntas sobre los derechos como participante de la investigación?**

Si usted siente que no ha sido tratado de acuerdo a lo descrito en este formulario, o que sus derechos como participante han sido violados durante el curso de este proyecto, puede contactar a Deb Paxton, gerente del Comité de NCSU IRB para el Uso de Seres Humanos Como Objetos de Investigación (Box 7514, NCSU Campus (919/ 515-4514) o a el Sr. Matthew Ronning, Vicerrector Asistente, Administración de la Investigación, Box 7514, NCSU Campus (919/513-2148).

(Por favor, quédese con la parte de arriba)

**Título del Estudio de Investigación: Comprender el Impacto de la Práctica de Proximidad del Docente y de los Diálogos Instructivos en el Aprendizaje de Ciencia y Adquisición de Vocabulario: Estudio Comparativo entre Hablantes Nativos del Idioma Inglés, y Hablantes No-Nativos con un Inglés Limitado.**

**Investigador Principal:** Brady Kocher ([brkocher@ncsu.edu](mailto:brkocher@ncsu.edu))

**Consentimiento a Participar:**

Querido padre o tutor:

Por favor, lea este formulario con su hijo/a y asegúrese de haber entendido lo que están autorizando:

“He leído y entiendo la información descrita anteriormente. He recibido una copia de este formulario. Si acepto darle permiso a mi hijo/a a participar de este estudio, entiendo que puedo retirarlo del proyecto cuando lo desee.”

Nombre del estudiante (en imprenta) \_\_\_\_\_

Firma del padre/tutor \_\_\_\_\_ Fecha: \_\_\_\_\_

Por favor, marque una de las opciones a continuación:

\_\_\_\_\_ Autorizo a mi hijo/a a participar y doy permiso para que se acceda a los puntajes y a la información de índole demográfica.

\_\_\_\_\_ NO autorizo a mi hijo/a a participar NI doy permiso para que se acceda a los puntajes o a la información de índole demográfica.

(Por favor, escriba su correo electrónico (e-mail) en imprenta para poder contactarlo/a, o su dirección postal dentro de los Estados Unidos)

Querido estudiante:

Por favor, lee este formulario con tus padres y asegúrense de haber entendido lo que están autorizando:

“He leído y entiendo la información descripta anteriormente. He recibido una copia de este formulario. Acepto participar de este estudio y entiendo que puedo retirarme cuando lo desee.”

Firma del estudiante: \_\_\_\_\_ Fecha:

**(Por favor, asegúrese de que su hijo/a deposite este formulario en la caja sellada que se encuentra en el aula de la maestra de ciencias.)**

**Universidad Estatal de Carolina del Norte**  
**FORMULARIO DE CONSENTIMIENTO PARA PARTICIPAR DE LA**  
**INVESTIGACIÓN – (ENCUESTAS; estudiantes que no están aprendiendo el idioma**  
**inglés, y sus respectivos padres)**  
**Formulario de consentimiento válido del 31 de enero, 2013 al 31 de enero, 2014.**

**Título del trabajo de investigación: Estudiantes del Idioma Inglés en Clases de Ciencias de Escuelas Convencionales: Comprender el Impacto que Causa el Uso de la Proximidad y las Conversaciones Constructivas por Parte de los Maestros en la Adquisición del Lenguaje y en los Logros de los Estudiantes.**

**Investigador principal: Brady Kocher ([brkocher@ncsu.edu](mailto:brkocher@ncsu.edu))**

**¿Qué cosas generales deberías saber sobre los estudios de investigación?**

Su hijo ha sido invitado a participar de un estudio de investigación. Este estudio forma parte de la investigación que estoy realizando para mi doctorado (PhD). Su hijo tiene el derecho de formar parte de este estudio, puede también decidir no participar, o dejar de participar cuando lo desee.

El propósito de este estudio es obtener una mejor comprensión de cómo las percepciones de los estudiantes acerca de la habilidad de los docentes de ciencias para crear acercamientos a través de interacciones y diálogos estructurados impactan el logro del estudiante en dicha clase. En este formulario de consentimiento se le explicarán detalles específicos sobre el estudio al que se le ha pedido a su hijo que participe. Si usted no comprende algún punto de este formulario, tiene derecho a pedirle más explicaciones al investigador, o recibir más información por escrito. Ud. recibirá una copia de este formulario de consentimiento. No dude en contactar al investigador, Brady Kocher, o a su tutor universitario, la Dra. Heather A. Davis ([heather\\_davis@ncsu.edu](mailto:heather_davis@ncsu.edu); 919-824-1226).

**¿Cuál es el propósito de estudio?**

El propósito de este estudio es lograr comprender mejor lo que piensan los estudiantes de la maestra de ciencia, y qué técnicas instructivas puede poner en uso el docente para mejorar el interés de los estudiantes sobre las ciencia, y a su vez incrementar la adquisición del lenguaje, y el logro académico de todos los estudiantes.

**¿Qué tendré que hacer si participo de este estudio?**

Este estudio es de corte transversal, es decir toda la información que se va a necesitar se puede obtener en una visita/charla. Si usted y su hijo aceptan ser parte de este estudio, en una de las clases de ciencia de su hijo, él o ella tendrá que completar una encuesta corta sobre: 1) qué piensa su hijo sobre la habilidad de su maestro para crear proximidad en el aula, 2) qué piensa su hijo sobre la habilidad de su maestro para usar prácticas instructivas que apoyan la comprensión de conceptos con contenido científico, 3) qué piensa su hijo sobre la habilidad de su maestro del uso del diálogo para promocionar el conocimiento de conceptos con contenido científico, 4) la motivación de su hijo en la clase de ciencia, 5) la percepción de su hijo sobre la libertad de elección dentro de la clase de ciencia, y 6) su nivel de ansiedad en la clase de ciencia. Las encuestas se podrán completar en aproximadamente 30 minutos Este año, las maestras de ciencias de 6-8 grados han acordado ayudar a los chicos para que

recuerden poner los permisos en las cajas selladas que se encuentran en sus aulas, y en darles tiempo durante la clase para completar las encuestas.

Este proyecto NO forma parte de la materia de ciencias. Las notas en ciencia no serán afectadas por su decisión de participar o rechazar participar. Usted o su hijo pueden elegir dejar de participar en cualquier momento de la investigación.

**Riesgos:**

El hecho de que su hijo participe de esta investigación, no conlleva ningún riesgo. Puede que le preocupe que la maestra ‘se entere’ de lo que su hijo ha expresado en la encuesta. A su hijo puede preocuparle que exista una ‘única respuesta correcta’. Es importante que recuerde que no hay respuestas correctas o incorrectas: simplemente me interesa entender las percepciones y las opiniones de su hijo. Cada estudiante tendrá un número de identificación confidencial para proteger sus respuestas. Los nombres de los estudiantes no aparecerán en ninguna de las encuestas y los docentes no tendrán acceso a los números de identificación asignados para el proyecto. Los resultados individuales de cada estudiante no serán compartidos con nadie (ni personal escolar, ni padres, ni estudiantes). Se enseñarán resultados en forma combinada o grupal.

**Beneficios:**

No existen beneficios directos para usted o su hijo por participar. Sin embargo, se espera que la información recaudada ayude a mejorar nuestro entendimiento sobre las maneras en que las maestras de ciencias podrían ayudar a los estudiantes del idioma inglés en su proceso de adquisición del lenguaje, y a su vez, iluminar prácticas instructivas que apoyen las necesidades académicas de los estudiantes del idioma inglés.

**Confidencialidad (Privacidad):**

Todas las respuestas a las encuestas, las evaluaciones, el trabajo realizado se guardará en forma confidencial. Toda información relacionada a las encuestas se guardará en archivadores bajo llave. Cualquier información identificativa será destruida antes del 1 de agosto de 2020. Ninguna información que pueda ser identificada (por Ej. Nombres o Números de Identificación) aparecerá en las encuestas o será utilizada en informes o en trabajos de investigación. Ni la escuela, ni los estudiantes tendrán acceso a los Números de Identificación del Proyecto. Sólo **información combinada o grupal se utilizará en los informes o en los trabajos de investigación.**

**Compensación:**

Tengo planeado organizar una rifa para incentivar a los estudiantes a que participen de este proyecto. Los elementos a rifar serán únicamente útiles escolares. Cada estudiante que entregue el formulario de consentimiento firmado participará de sorteos que se llevarán a cabo en las escuelas e inmediatamente después de la encuesta.

**¿Qué pasa si tiene preguntas sobre este estudio?**

Cualquier pregunta que tenga en cualquier momento sobre este proyecto o sobre el procedimiento, puede contactar al investigador, Brady Kocher, en la Universidad Estatal de Carolina del Norte (NC State University College of Education, 602J Poe Hall-P, 2321 Stinson Dr., Raleigh, NC 27695) o enviándole un correo electrónico: [brkocher@ncsu.edu](mailto:brkocher@ncsu.edu).

**¿Qué pasa si tienes preguntas sobre los derechos como participante de la investigación?**

Si usted siente que no ha sido tratado de acuerdo a lo descrito en este formulario, o que sus derechos como participante han sido violados durante el curso de este proyecto, puede contactar a Deb Paxton, gerente del Comité de NCSU IRB para el Uso de Seres Humanos Como Objetos de Investigación (Box 7514, NCSU Campus (919/ 515-4514) o a el Sr. Matthew Ronning, Vicerrector Asistente, Administración de la Investigación, Box 7514, NCSU Campus (919/513-2148).

**(Por favor, quédese con la parte de arriba**

Estudiantes que no están aprendiendo el idioma inglés, y sus respectivos padres  
**Título del Trabajo de Investigación: Estudiantes del Idioma Inglés en Clases de Ciencias de Escuelas Convencionales: Comprender el Impacto que causa el Uso de la Proximidad y las Conversaciones Constructivas por Parte de los Maestros en la Adquisición del Lenguaje y en los Logros de los Estudiantes.**

**Investigador Principal:** Brady Kocher ([brkocher@ncsu.edu](mailto:brkocher@ncsu.edu))

**Consentimiento a Participar:**

Querido padre o tutor:

Por favor, lea este formulario con su hijo/a y asegúrese de haber entendido lo que están autorizando:

“He leído y entiendo la información descrita anteriormente. He recibido una copia de este formulario. Si acepto darle permiso a mi hijo/a a participar de este estudio, entiendo que puedo retirarlo del proyecto cuando lo desee.”

Por favor, marque una de las opciones a continuación:

\_\_\_\_\_ Autorizo la participación de mi hijo/a.

\_\_\_\_\_ NO autorizo la participación de mi hijo/a.

Nombre del estudiantes (en imprenta) \_\_\_\_\_

Firma del padre/tutor: \_\_\_\_\_ Fecha: \_\_\_\_\_

(Por favor, escriba su correo electrónico (e-mail) en imprenta para poder contactarlo/a, o su dirección postal dentro de los Estados Unidos)

**(Por favor, asegúrese de que su hijo/a deposite este formulario en la caja sellada que se encuentra en el aula de la maestra de ciencias.)**

## Non-ELL

### North Carolina State University INFORMED CONSENT FORM for RESEARCH – (SURVEYS; non-ELL Students & Parents)

**Title of Research Study:** *English Language Learners in Mainstream Science Classrooms: Understanding the Impact of Teachers' Use of Immediacy and Instructional Conversation Behaviors on Students' Language Acquisition and Achievement*

**Principal Investigator:** Brady Kocher ([brkocher@ncsu.edu](mailto:brkocher@ncsu.edu))

#### **What are some general things you should know about research studies?**

Your child is being invited to take part in a research study. I am completing this study as part of my PhD research. Your child has the right to be a part of this study, to choose not to participate or to stop participating at any time. The purpose of the research study is to gain a better understanding of how students' perceptions of their science teachers' ability to create closeness through structured interactions and discussions impact student achievement in science. In this consent form you will find specific details about the research in which your child is being asked to participate. If you do not understand something in this form it is your right to ask the researcher to explain more about the study or get more written information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher, Brady Kocher, or my faculty adviser, Dr. Heather A. Davis ([heather\\_davis@ncsu.edu](mailto:heather_davis@ncsu.edu); 919-824-1226).

#### **What is the purpose of this study?**

The purpose of this research study is to gain a better understanding of how students feel about their science teacher and what instructional behaviors their science teacher may do to improve science motivation, language acquisition, and academic achievement of all students.

#### **What will happen if you take part in the study?**

This is a cross sectional study, which means the information requested can all be collected during one visit. If you and your child agree to be a part of this study, in one of your child's science classes, he/she will be asked to fill out a short survey that asks your child about 1) his/her perceptions of their science teacher's ability to create closeness in the classroom, 2) his/her perception of their science teacher's ability to use instructional practices that support understanding of scientific content concepts 3) his/her perception of their science teacher's ability to use discussions to promote knowledge of scientific content concepts. 4) his/her motivation within the science classroom 5) his/her perceived freedom of choice within the science classroom, and 6) his/her level of anxiety within science class. Completing the survey should take no longer than 30 minutes each time. This year, 6<sup>th</sup>-8<sup>th</sup> grade science teachers have agreed to help with reminding students to return permission forms to the sealed boxes in their classroom and with allocating time during class to complete the survey.

Your child is NOT required to participate in this project as part of his/her science course. Your child's grade in science will NOT be affected by your decisions to volunteer or decline

to participate in the study. You or your child may choose to stop participating at any time throughout the course of the study.

**Risks:**

There are no known risks to your child for participating in this research. You might be concerned about whether your child's teacher will 'find out' what they reported on the survey or your child may be concerned that there is one 'right' answer. It is important for you to remember, there are no right or wrong answers – I am simply interested in understanding your child's perceptions and opinion. Each student will be assigned a confidential ID number to protect his/her responses. Students names will not appear on any of the surveys and teachers will not have access to Project ID numbers. Results for individual students will not be shared with anyone including school staff, parents or the student. Only combined data will be shared.

**Benefits:**

There are no direct benefits to you and your child for participating however, information gained in this evaluation will hopefully aid in improving our understanding about the way in which mainstream science teachers can assist all students in their process of science language acquisition and to illuminate instructional responsive practices that support the academic needs of all students.

**Confidentiality (Privacy):**

All survey responses, assessments, and work completed will be kept confidential. Data will be stored securely in locked filing cabinets. Identifiable information will be destroyed by August 1, 2020. No identifying information (i.e. names or Project IDs) will appear on the surveys or will be used in reports or in research papers. The school and teachers will NOT have access to Project IDs. Only combined data will be used in reports or in research papers.

**Compensation:**

A raffle drawing will be used to increase student participation. Items within the drawing will strictly consist of school related supplies. Each student that returns permission for will be entered into drawing which would take place on a school by school basis and immediately following the survey.

**What if you have questions about this study?**

If you have questions at any time about the study or the procedures, you may contact the researcher, Brady Kocher, at NC State University College of Education, 602J Poe Hall-P, 2321 Stinson Dr., Raleigh, NC 27695 or [brkocher@ncsu.edu](mailto:brkocher@ncsu.edu)

**What if you have questions about your rights as a research participant?**

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, NCSU IRB Administrator for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/ 515-4514) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148).

**(Please Retain this Top Form)  
Non-ELL Student and Parent**

**Title of Research Study:** *English Language Learners in Mainstream Science Classrooms: Understanding the Impact of Teachers' Use of Immediacy and Instructional Conversation Behaviors on Students' Language Acquisition and Achievement*

**Principal Investigators:** Brady Kocher ([brkocher@ncsu.edu](mailto:brkocher@ncsu.edu))

**Consent to Participate:**

Dear Parent or Guardian,

Please go over this form with your child to make sure you both understand what you are giving permission for:

"I have read and understand the above information. I have received a copy of this form. If I agree to allow my child to participate in this study I understand that I may withdraw his/her participation at any time."

Please check one of the choices below:

\_\_\_\_\_ I do give permission for my child to participate

\_\_\_\_\_ I do not give permission for my child to participate

Child's Name (please print) \_\_\_\_\_

Parent/Guardian's signature \_\_\_\_\_ Date

\_\_\_\_\_  
(Please print a contact e-mail or US Mail address)

**(Please have your son/ daughter return this form to the sealed box in their science teacher's rooma)**

## Science Teacher

North Carolina State University  
**INFORMED CONSENT FORM for RESEARCH – Science Teachers**  
*This form is valid February 16, 2012 to February 16, 2013*

**Title of Research Study:** *English Language Learners in Mainstream Science Classrooms: Understanding the Impact of Teachers' Use of Immediacy and Instructional Conversation Behaviors on Students' Language Acquisition and Achievement.*

**Principal Investigators:** Brady Kocher ([brkocher@ncsu.edu](mailto:brkocher@ncsu.edu))

**What are some general things you should know about research studies?**

You and your students are being invited to take part in a research study. You have the right to be a part of this study, to choose not to participate or to stop participating at any time. The purpose of this research study is two-fold: 1) to gain a better understanding of how English Language Learners (ELL) students' perceptions of immediacy and instructional conversation behaviors impact language acquisition and academic achievement within the science classroom and 2) to determine if ELL perceptions of immediacy and instructional conversations behaviors of science teacher differ from non-ELL students. Participating in this study does not guarantee you any specific benefits but you may find it interesting. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form it is your right to ask the researchers to explain more about the study or get more written information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher, Brady Kocher, or my faculty adviser, Dr. Heather A. Davis ([heather\\_davis@ncsu.edu](mailto:heather_davis@ncsu.edu); 919-824-1226).

**What is the purpose of this study?**

The purpose of this research study is to gain a better understanding of student perceptions of their science teacher's immediacy (closeness) and instructional conversation behaviors that may improve language acquisition and academic achievement of our English Language Learners.

**What will happen if you take part in the study?**

This is a cross sectional study, which means the information requested can be collected during one visit. If you and your students agree to be a part of this study, your students will be asked to fill out a short survey that asks your student's about 1) his/her perceptions of their science teacher's ability to create closeness in the classroom, 2) his/her perception of their science teacher's ability to use instructional practices that support understanding of scientific content concepts 3) his/her perception of their science teacher's ability to use discussions to promote knowledge of scientific content concepts. To participate in this study, you do not have to do anything besides give us permission to ask the students in your classes questions about their perceptions of your class and your school.

**Risks:**

There are minimal known risks to you for participating in this research. For this project, however, you are considered a 3rd party research participant. This is because your students will be sharing their perceptions of their experiences in your classroom. You may be concerned that this data could be used against you. I have taken several steps to protect you as a 3rd party participant. First, in order to protect your privacy, I notified administrators at your school that only a subset of eligible teachers would be asked to participate so they will not know if you decided to volunteer or decline. Your administrator will not be told which teachers in your school consented to participate. Second, data from individual students will be confidential; that means only the researcher will have access to individual reports. Only combined data, where any information potentially identifying you or your students has been removed, will be reported. Finally, only aggregate data will be reported. That means that I will merge data from teachers in this school and others. There will be no way for administrators to know which data came from your class.

Your participation is NOT a requirement of your job.

**Benefits:**

There are no direct benefits to you and your students for participating however, information gained in this evaluation will hopefully aid in improving our understanding about the way in which mainstream science teachers can assist ELL students in their process of language acquisition and to illuminate instructional responsive practices that support the academic needs of all students.

**Confidentiality (Privacy):**

All survey responses, assessments, and work completed will be kept confidential. Data will be stored securely in locked filing cabinets and identifiable data will be destroyed by August 1, 2020. No identifying information will be used in reports or in research papers. Only combined data will be used in reports or in research papers.

**Compensation:**

You will not receive any compensation for participating. A raffle drawing will be used to increase student participation. Items within the drawing will strictly consist of school related supplies. Each student that returns permission for will be entered into drawing which would take place on a school by school basis and immediately following the survey.

**What if you have questions about this study?**

If you have questions at any time about the study or the procedures, you may contact the researcher, Brady Kocher, at NC State University College of Education, 602J Poe Hall-P, 2321 Stinson Dr., Raleigh, NC 27695 or [brkocher@ncsu.edu](mailto:brkocher@ncsu.edu)

**What if you have questions about your rights as a research participant?**

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, Administrator of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/ 515-4514) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148).

**Consent to Participate:**

Dear Teacher,

Please go over this form and make sure you have read it and understand what you are giving permission for.

“I have read and understand the above information. I have received a copy of this form. I agree to allow my students to participate in this study with the understanding that I may withdraw my consent at any time.”

Teacher signature \_\_\_\_\_ Date  
\_\_\_\_\_

## Teacher Recruitment Email

Dear:

My name is Brady Kocher and I am a PhD candidate within the Curriculum and Instruction department at NC State University. The purpose of this e-mail is to request your participation in a research study that will specifically target middle school science teachers. Participating in this study does not guarantee you or the school any specific benefits but you may find it interesting. The purpose of this research study is two-fold: 1) to gain a better understanding of how English Language Learners (ELL) students' perceptions of immediacy and instructional conversation behaviors impact language acquisition and academic achievement within the science classroom and 2) to determine if ELL perceptions of immediacy and instructional conversations behaviors of science teacher differ from non-ELL students

### **What you should know:**

You and your students are being invited to take part in a research study. You have the right to be a part of this study, to choose not to participate or to stop participating at any time. This is a cross sectional study, which means the information requested can be collected during one visit. For the majority of the participants, surveys will be administered in classroom groups by the principle investigator. Teachers will be asked to be present for classroom management purposes; however they will be asked not to circulate the room during administration nor handle the surveys at any point. If you and your students agree to be a part of this study, your students will be asked to fill out a short survey that asks your student's about 1) his/her perceptions of their science teacher's ability to create closeness in the classroom, 2) his/her perception of their science teacher's ability to use instructional practices that support understanding of scientific content concepts 3) his/her perception of their science teacher's ability to use discussions to promote knowledge of scientific content concepts. To participate in this study, you do not have to do anything besides give us permission to ask the students in your classes questions about their perceptions of your class and your school.

### **Risks:**

There are minimal known risks to you for participating in this research. For this project, however, you are considered a 3rd party research participant. This is because your students will be sharing their perceptions of their experiences in your classroom. You may be concerned that this data could be used against you. I have taken several steps to protect you as a 3rd party participant. First, in order to protect your privacy, I notified administrators at your school that only a subset of eligible teachers would be asked to participate so they will not know if you decided to volunteer or decline. Your administrator will not be told which teachers in your school consented to participate. Second, data from individual students will be confidential; that means only the researcher will have access to individual reports. Only combined data, where any information potentially identifying you or your students has been removed, will be reported. Finally, only aggregate data will be reported. That means that I will merge data from teachers in this school and others. There will be no way for administrators to know which data came from your class.

### **Benefits:**

There are no direct benefits to you and your students for participating however, information gained in this evaluation will hopefully aid in improving our understanding about the way in which mainstream science teachers can assist ELL students in their process of language acquisition and to illuminate instructional responsive practices that support the academic needs of all students.

**Confidentiality (Privacy):**

All survey responses, assessments, and work completed will be kept confidential. Data will be stored securely in locked filing cabinets and identifiable data will be destroyed by August 1, 2020. No identifying information will be used in reports or in research papers. Only combined data will be used in reports or in research papers.

**Compensation:**

You will not receive any compensation for participating. A raffle drawing will be used to increase student participation. Items within the drawing will strictly consist of school related supplies. Each student that returns permission for will be entered into drawing which would take place on a school by school basis and immediately following the survey.

**What if you have questions about this study?**

If you have questions at any time about the study or the procedures, you may contact the researcher, Brady Kocher, at NC State University College of Education, 602J Poe Hall-P, 2321 Stinson Dr., Raleigh, NC 27695 or [brkocher@ncsu.edu](mailto:brkocher@ncsu.edu)

**Attached to this email is a ‘consent to participate ‘form and additional information regarding this study. If you are willing to participate in this study, please sign the bottom portion of the consent form and place the form in the locked box, located in the front office.**

Thank you for your time and consideration

## **Recruitment Email, School Administrator**

Dear:

My name is Brady Kocher and I am a PhD candidate within the Curriculum and Instruction department at NC State University. The purpose of this e-mail is to request your schools participation in a research study that will specifically target middle school science teachers. Participating in this study does not guarantee your school any specific benefits but you may find it interesting. The purpose of this research study is two-fold: 1) to gain a better understanding of how English Language Learners (ELL) students' perceptions of immediacy and instructional conversation behaviors impact language acquisition and academic achievement within the science classroom and 2) to determine if ELL perceptions of immediacy and instructional conversations behaviors of science teacher differ from non-ELL students

### **What you should know:**

Your school is being invited to take part in a research study. You have the right to be a part of this study, to choose not to participate or to stop participating at any time. This is a cross sectional study, which means the information requested can be collected during one visit. If you agree to be a part of this study, your students will be asked to fill out a short survey that asks your student's about 1) his/her perceptions of their science teacher's ability to create closeness in the classroom, 2) his/her perception of their science teacher's ability to use instructional practices that support understanding of scientific content concepts 3) his/her perception of their science teacher's ability to use discussions to promote knowledge of scientific content concepts.

### **Risks:**

There are minimal known risks for participating in this research. For this project, however, your teachers are considered a 3rd party research participant. This is because your students will be sharing their perceptions of their experiences in your teacher's classroom. Your teachers may be concerned that this data could be used against them. I have taken several steps to protect them as a 3rd party participant. First, in order to protect their privacy, administrators will not be told which teachers in the school consented to participate. Second, data from individual students will be confidential; that means only the researcher will have access to individual reports. Only combined data, where any information potentially identifying you or your students has been removed, will be reported. Finally, only aggregate data will be reported. That means that I will merge data from teachers in this school and others. There will be no way for administrators to know which data came from which class.

### **Benefits:**

There are no direct benefits to you and your school for participating however, information gained in this evaluation will hopefully aid in improving our understanding about the way in which mainstream science teachers can assist ELL students in their process of language acquisition and to illuminate instructional responsive practices that support the academic needs of all students.

### **Confidentiality (Privacy):**

All survey responses, assessments, and work completed will be kept confidential. Data will be stored securely in locked filing cabinets and identifiable data will be destroyed by August 1, 2020. No identifying information will be used in reports or in research papers. Only combined data will be used in reports or in research papers.

**Compensation:**

You will not receive any compensation for participating. A raffle drawing will be used to increase student participation. Items within the drawing will strictly consist of school related supplies. Each student that returns permission for will be entered into drawing which would take place on a school by school basis and immediately following the survey.

**What if you have questions about this study?**

If you have questions at any time about the study or the procedures, you may contact the researcher, Brady Kocher, at NC State University College of Education, 602J Poe Hall-P, 2321 Stinson Dr., Raleigh, NC 27695 or [brkocher@ncsu.edu](mailto:brkocher@ncsu.edu)

Thank you for your time and consideration

## **Appendix B**

### **Hierarchical Regression Equations**

Q 1: How do ELL (English Language Learners) students' perceptions of their science teachers' instructional conversations and immediacy behaviors relate to their intrinsic motivation?

Q 2: How do ELL (English Language Learners) students' perceptions of their science teachers' instructional conversations and immediacy behaviors relate to their anxiety?

Q 3: How do ELL (English Language Learners) students' perceptions of their science teachers' instructional conversations and immediacy behaviors relate to their feelings of autonomy in science?

Q 4: How do ELL (English Language Learners) students' perceptions of their science teachers' instructional conversations and immediacy behaviors relate to their academic achievement?

#### **Step 1**

$$Y (\text{outcome}) = b_0 + b_1x_1 (\text{gender}) + b_2x_2 (\text{home language}) + b_3x_3 (\text{science grades}) + e$$

#### **Step 2**

$$Y (\text{outcome}) = b_0 + (\text{gender, home language, science grades}) + b_4x_4 (\text{conversational IC}) + b_5x_5 (\text{instructional IC}) + b_6x_6 (\text{verbal immediacy}) + b_7x_7 (\text{non-verbal immediacy}) + b_8x_8 (\text{questioning/feedback immediacy}) + e$$

**Appendix C**  
**Factor Analysis Statistical Data**

**Explained Variance IC Scales**

	1 Factor	2 Factors		Total
	Factor Loading	1	2	
Instructional Conversations (all)	46.76	30.74	20.59	51.33
Instructional Conversations (non-ELL)	51.10	33.71	22.27	55.98
Instructional Conversations (non-ELL)	43.37	28.93	20.02	48.95

**Explained Variance Immediacy Scales**

	1 Factor	3 Factors			Total
	Factor Loading	1	2	3	
Immediacy (all)	23.99	23.62	7.33	3.57	34.51
Immediacy (non-ELL)	26.15	25.85	9.26	5.31	40.42
Immediacy (ELL)	23.13	22.76	5.71	4.02	32.48

### Factor Loading IC Scales

Instructional Conversations (ALL)	Component		Mean	Std Dev
	1	2		
2. .... my science teacher acknowledges the responses made by ALL students.	.761	.131	3.86	1.07
4. .... my science teacher values everyone's contributions.	.745	.251	3.85	1.10
5. .... my science teacher makes sure everyone is participating.	.736	.194	4.08	1.10
7. .... my science teacher helps me understand the topic.	.731	.365	4.11	1.13
8. .... my science teacher uses examples to help me understand the topic being presented.	.712	.305	4.20	.96
1. .... my science teacher is aware of the needs of ALL students.	.687	.261	3.87	1.07
14. .... my science teacher makes sure ALL students in the class understand the topic.	.685	.341	4.04	1.12
6. .... I have an equal chance of participating as everyone else.	.685	.094	4.17	1.12
3. .... my science teacher responds to ALL students' statements or comments.	.655	.306	3.85	1.10
9. .... my science teacher helps me get my thoughts together.	.596	.538	3.53	1.24
10. .... my science teacher talks the entire class.	-.011	.704	3.90	1.19
12. .... I am encouraged by the teacher to defend my point of view or comments.	.411	.698	3.20	1.23
11. .... I am encouraged by the teacher to explain my point of view.	.484	.640	3.31	1.24
13. .... my science teacher asks questions that require me to make connections beyond the textbook.	.258	.614	3.37	1.23

### Factor Loading IC Scales

<b>Instructional conversations (ELL)</b>	<b>Component</b>		<b>Mean</b>	<b>Std. Dev</b>
	<b>1</b>	<b>2</b>		
7. .... my science teacher helps me understand the topic.	.838	.648	4.04	1.19
8. .... my science teacher uses examples to help me understand the topic being presented.	.771	.598	4.12	.99
5. .... my science teacher makes sure everyone is participating.	.760	.521	4.01	1.12
14. .... my science teacher makes sure ALL students in the class understand the topic.	.753	.573	4.12	1.08
4. .... my science teacher values everyone's contributions.	.716	.505	3.76	1.11
1. .... my science teacher is aware of the needs of ALL students.	.708	.529	3.81	1.07
2. .... my science teacher acknowledges the responses made by ALL students.	.676	.349	3.71	1.08
3. .... my science teacher responds to ALL students' statements or comments.	.672	.415	3.88	1.10
6. .... I have an equal chance of participating as everyone else.	.662	.462	3.94	1.20
12. .... I am encouraged by the teacher to defend my point of view or comments.	.628	.797	3.09	1.26
9. .... my science teacher helps me get my thoughts together.	.763	.779	3.51	1.27
11. .... I am encouraged by the teacher to explain my point of view.	.638	.750	3.25	1.24
13. .... my science teacher asks questions that require me to make connections beyond the textbook.	.356	.702	3.19	1.26
10. .... my science teacher talks the entire class.	.347	.567	3.86	1.19

### Factor Loading IC Scales

Instructional Conversations non-ELL	Component		Mean	Std. Dev
	1	2		
4. .... my science teacher values everyone's contributions.	.842	.392	3.94	1.11
2. .... my science teacher acknowledges the responses made by ALL students.	.811	.391	4.02	1.03
14. .... my science teacher makes sure ALL students in the class understand the topic.	.806	.444	3.95	1.16
7. .... my science teacher helps me understand the topic.	.801	.444	4.19	1.05
8. .... my science teacher uses examples to help me understand the topic being presented.	.788	.345	4.28	.92
3. .... my science teacher responds to ALL students' statements or comments.	.783	.532	3.81	1.10
9. .... my science teacher helps me get my thoughts together.	.746	.602	3.54	1.22
5. .... my science teacher makes sure everyone is participating.	.744	.290	4.14	1.07
1. .... my science teacher is aware of the needs of ALL students.	.731	.467	3.92	1.06
6. .... I have an equal chance of participating as everyone else.	.688	.088	4.40	.98
13. .... my science teacher asks questions that require me to make connections beyond the textbook.	.602	.461	3.56	1.19
10. .... my science teacher talks the entire class.	.169	.773	3.94	1.19
11. .... I am encouraged by the teacher to explain my point of view.	.732	.744	3.38	1.25
12. .... I am encouraged by the teacher to defend my point of view or comments.	.672	.697	3.31	1.19

### Factor Loading Immediacy Scales

Immediacy (ALL)	Factor			Mean	Std. Dev
	1	2	3		
1. .... uses personal examples about his or her life in discussion.	.155	.758	-.259	2.93	1.17
2. .... talks about his or her experiences outside our classroom.	.116	.749	-.261	2.90	1.21
3. .... encourages students to talk about science with each other.	.235	.469	-.118	3.32	1.21
4. .... goes off on tangents in response to things students brings up during lecture.	.057	.480	-.081	2.63	1.22
5. .... tries to be funny in class.	.216	.516	-.202	3.03	1.26
8. .... has conversations with individual students before or after class.	.059	.449	-.322	2.93	1.23
9. .... has conversations with me before or after class.	.357	.146	-.212	2.23	1.22
10. .... provides feedback on my individual work through comments on papers.	.686	.131	-.368	2.91	1.29
12. .... asks how students feel about assignments, due dates or discussion topics.	.663	.125	-.322	2.80	1.29
13. .... invites students to meet with him or her outside class if they need additional help.	.587	.098	-.285	2.45	1.30
15. .... asks questions that require me to give my own viewpoint or opinion.	.491	.174	-.579	3.24	1.94
16. .... praises students' work, actions and comments.	.565	.253	-.620	3.16	1.21
18. .... uses hand or body motions while talking to the class.	.245	.189	-.388	3.79	1.21
20. ... tries to make eye-contact with everyone in the class.	.373	.167	-.720	3.72	1.32
21. ... smiles at the class when teaching.	.620	.223	-.587	3.49	1.33
23. ... gives 'high-fives', handshakes, or pats on the back for good work.	.612	.217	-.331	2.40	1.41

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization

### Factor Loading Immediacy Scales

Immediacy (ELL)	Factor			Mean	Std. Dev
	1	2	3		
1. .... uses personal examples about his or her life in discussion.	- .031	.685	-.209	2.80	1.21
2. .... talks about his or her experiences outside our classroom.	- .097	.694	-.211	2.73	1.27
3. .... encourages students to talk about science with each other.	.046	.461	-.025	3.32	1.17
4. .... goes off on tangents in response to things students brings up during lecture.	.022	.601	-.169	2.60	1.25
5. .... tries to be funny in class.	.149	.491	-.079	2.82	1.25
8. .... has conversations with individual students before or after class.	- .177	.420	-.187	2.74	1.23
9. .... has conversations with me before or after class.	.382	.074	-.139	1.99	1.20
10. .... provides feedback on my individual work through comments on papers.	.685	.070	-.244	2.64	1.24
12. .... asks how students feel about assignments, due dates or discussion topics.	.531	-.085	-.291	2.85	1.27
13. .... invites students to meet with him or her outside class if they need additional help.	.586	-.002	-.363	3.26	1.33
15. .... asks questions that require me to give my own viewpoint or opinion.	.404	.147	-.547	3.06	1.19
16. .... praises students' work, actions and comments.	.319	.138	-.531	2.91	1.15
18. .... uses hand or body motions while talking to the class.	.157	.047	-.305	3.73	1.25
20. ... tries to make eye-contact with everyone in the class.	.116	.203	-.653	3.50	1.36
21. ... smiles at the class when teaching.	.413	.050	-.528	3.28	1.25
23. ... gives 'high-fives', handshakes, or pats on the back for good work.	.581	.016	-.394	2.22	1.36

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization

### Factor Loading Immediacy Scales

Immediacy (Non-ELL)	Factor			Mean	Std. Dev
	1	2	3		
1. .... uses personal examples about his or her life in discussion.	.317	.806	-.024	3.05	1.11
2. .... talks about his or her experiences outside our classroom.	.325	.772	.079	3.08	1.23
3. .... encourages students to talk about science with each other.	.418	.485	.028	3.32	1.25
4. .... goes off on tangents in response to things students brings up during lecture.	.091	.374	.278	2.66	1.19
5. .... tries to be funny in class.	.265	.558	-.028	3.26	1.24
8. .... has conversations with individual students before or after class.	.242	.482	-.194	3.12	1.21
9. .... has conversations with me before or after class.	.342	.185	-.069	2.47	1.19
10. .... provides feedback on my individual work through comments on papers.	.709	.159	-.322	3.20	1.28
12. .... asks how students feel about assignments, due dates or discussion topics.	.796	.356	-.248	2.74	1.31
13. .... invites students to meet with him or her outside class if they need additional help.	.555	.182	-.141	2.56	1.25
15. .... asks questions that require me to give my own viewpoint or opinion.	.515	.197	-.551	3.47	1.15
16. .... praises students' work, actions and comments.	.727	.345	-.458	3.42	1.21
18. .... uses hand or body motions while talking to the class.	.323	.399	-.401	3.86	1.16
20. ... tries to make eye-contact with everyone in the class.	.557	.131	-.716	3.95	1.24
21. ... smiles at the class when teaching.	.755	.349	-.416	3.72	1.36
23. ... gives 'high-fives', handshakes, or pats on the back for good work.	.612	.357	-.087	2.58	1.44

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization

## **Appendix D CREDE Model**

### **CREDE's philosophy**

- All children can learn.
- Children learn best when challenged by high standards.
- English proficiency is an attainable goal for all students.
- Bilingual proficiency is desirable for all students.
- Language and cultural diversity can be assets for teaching and learning.
- Teaching and learning must accommodate individuals.
- Schools can mitigate risk factors by teaching social and learning skills.
- Solutions to risk factors must be grounded in a valid general theory of developmental, teaching, and schooling processes.

### **The CREDE Five Standards for Effective Pedagogy**

An important facet of CREDE's work is the development of a pedagogy that has been proven to be effective in educating all students, especially at-risk students. The Five Standards for Effective Pedagogy do not endorse a specific curriculum but, rather, establish ideals for best teaching practices that can be used in any classroom environment for any grade level or group of students.

#### **The Five Standards for Effective Pedagogy.**

- Teachers and Students Working Together Use instructional group activities in which students and teacher work together to create a product or idea (known as joint productive activities).
- Developing Language and Literacy Skills across all Curriculum Apply literacy strategies and develop language competence in all subject areas.
- Connecting Lessons to Students' Lives Contextualize teaching and curriculum in students' existing experiences in home, community, and school.
- Engaging Students with Challenging Lessons Maintain challenging standards for student performance; design activities to advance understanding to more complex levels.
- Emphasizing Dialogue over Lectures Instruct through teacher-student dialogue, especially academic, goal-directed, small-group conversations (known as instructional conversations), rather than lecture.