

THE IMPACT OF THE ETHIC OF CARE ON THE TEACHING AND LEARNING
OF SCIENCE BY MIDDLE SCHOOL SCIENCE TEACHERS AND EL STUDENTS

by

RHONDA KAY RACKLEY

(Under the Direction of Mary M. Atwater)

ABSTRACT

Among the challenges of immigration is the need to educate students who are learning English and other content simultaneously. Immigrant students face difficulties regarding culture shock and depending on the reason for their immigration they may have suffered from religious or political intolerance. When these students enter classrooms in the United States, how should teachers best instruct them? There will be difficulties across the curriculum, but often science presents a special difficulty depending on a student's background. Teachers are not always aware of how to help these students. In this case study two middle school science teachers, Iris and Calla, were interviewed and observed to determine what impact the ethic of care had on their teaching of science and the learning of science by their English Learner (EL) students. Both teachers were considered to be caring teachers by their colleagues, immediate administrators or ESOL program officials. Through interviews of the teachers, classroom observations, interviews of some of their EL students and a

student questionnaire it was determined that Iris did act from an ethic of care but Calla, a very loving person, acted out of a virtue of care or a relational ethic. The implications for future research are that by acting from an ethic of caring, students benefit by mastering content and skills and teachers are provided a powerful pedagogical tool.

INDEX WORDS: EL, ELL, ESOL, Middle School, Science teaching, Ethic of care, Care ethics, Caring

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DEDICATION

This dissertation is dedicated to all of us teachers, researchers, students etc. who strive to be our best selves. For me personally, it has been through trying to follow the teachings of Jesus Christ, while I know for others it may be different religious leaders or outside the bounds of religion altogether. In a world that too often shows us the ugliness of the human spirit, I truly hope that those of us who pursue the path of love, kindness and peace will not “grow weary in well doing”.

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DEFINITION OF TERMS

ESOL- English to speakers of other languages. Older term that still describes some school and county departments that work with these students.

ESL- English as a second language

ELL- English Language Learner

EL- English Learner, current description of a student learning English as a second, third etc. language. This is the term that will be used in this study unless used in a quote from another source.

PHLOTE- Primary home language other than English. Recognizes that some students who are not served by ESOL programs may speak a different language at home. Parents may not speak English.

NEP- Non-English Proficient. Typically used to describe students who are unable to speak, read or write any English.

LEP- Limited English Proficiency. Used to describe students who are not quite at native speaking, reading or writing ability yet. This is the terminology used in NCLB to describe students served by ESOL programs.

Monitored- Student has exited or tested out of an ESOL program and is being observed during the first year or two. The goal is to insure exited students are making adequate progress without the additional help.

BICS- Basic Interpersonal Communication Skills, now referred to as social language, introduced by Jim Cummins.

CALP- Cognitive Academic Language Proficiency, now referred to as academic language, introduced by Jim Cummins.

ESOL Endorsement- Added to a teacher's certificate when they take additional course work required for teaching EL students English or content from a sheltered perspective.

PBIS- Positive Behavior Interventions and Supports is a program implemented in schools to improve academic outcomes by providing a safe and supportive environment. This is achieved in part by acknowledging positive student behaviors.

“Teachers deemed to work well with ELs”- Teachers who recognize the special needs of this population and are willing to expand their pedagogical skills to better meet the needs of this population.

CHAPTER 1

INTRODUCTION

How best to instruct English Learners, ELs, and to prepare those who teach them has been a concern and an area of research for some time now (Mora, 2000). The United States, a land of immigrants, has experienced another great wave of immigration over the last two decades. But the research has not been limited to the United States alone. Education researchers from many countries around the world have studied the impact of language learning and the associated building of content knowledge. Some studies have focused on the benefits of being taught in the native language while others have focused on the colonial language or dominant language in a country or principality (Tollefson, 1996; Johnstone, 2002; Okebukola, Owalabi & Okebukola, 2013). Some of these researchers have looked at preparing a generation of students for the future – English perhaps as the global language (Martin, 1999, 2008). Other researchers have considered the benefits of mastering one’s native language before or during the time that one is learning a second language (Crawford, 1999; Thomas & Collier, 2002). What many of these studies share is an inquiry into how second language learning occurs and how best to educate students in an additional language (de Jong, 2002; Echevarria, Short & Powers, 2003). Although consensus has been reached on some aspects, much more remains to be determined.

ELs in the Classroom

In the area of second language learning and linguistics, Cummins’ work (1979, 2000) on Basic Interpersonal Communication Skills, BICS, and Cognitive Academic Language Proficiency,

CALP have set the stage for a deeper understanding into how one masters “social language” and “academic language” (p. 67). Teachers and others are often confused when an immigrant student demonstrates a mastery of social conventions and language but “claim” to have difficulty reading or writing in English (or the second language). Cummins’ work helped us to understand that it is natural to master easier, context-rich “social language” long before one masters the more abstract, context-reduced “academic language”. So, although students should be learning both forms of language simultaneously, it may take several years before they master academic language and 10 years before they achieve near native proficiency. Accordingly, this leaves many wondering if non-English speaking immigrant students entering the middle and high schools of the United States can master both English and the necessary content coursework, or is it a hopeless cause.

Given this state of affairs, some researchers have focused their attention on what schools, teachers and teacher educators can do to help these students meet their potential (Mora, 2000; Echevarria, Short & Powers, 2003; Dong, 2007; Lee & Buxton, 2011). Some have advocated for bilingual education (Crawford, 1999; de Jong, 2002; Baker, 2006). Of all the possible solutions, this one has been the most controversial – at least in the U.S. bilingual education is increasingly seen as unlikely in parts of the United States where the immigrant population is still relatively new and purportedly, increasingly illegal. States such as Arizona and Georgia have gone so far as to pass laws to stymie the perceived illegal immigration- in large part because of the strain it is thought to put on schools and hospitals (Redmon, 2011). Still, even those who would like to implement bilingual education admit that it is not often a viable option when the number of bilingual content teachers is sparse, especially in mathematics and science. Some

schools/districts would not have a large enough population to support a bilingual education program if it were available. So, what other options are available for reaching the immigrant student who is learning a second language?

Since the Supreme Court ruling in *Lau v Nichols* in 1974 in which the court delineated the rights of “language minority students”, what bilingual education is or should be has been a topic of debate. Even states like California which had clearer guidelines for bilingual education faced drastic changes in the late 1990’s (Mora, 2000). How ELs were to be educated became even more contentious with the passage of the No Child Left Behind, NCLB, Act by President George W. Bush, on January 8th, 2002. Title III of this act held states, districts and schools accountable for the performance of their ELLs (Baker, 2006). The act made no mention of bilingualism or developing language competencies; instead schools were essentially left with high stakes assessments and English-only instruction. According to the National Center for Education Statistics (as cited in Mora, 2000), 54% of public school teachers state that they have ELLs in their classroom but only 20% believe that they are well prepared to teach them. So, what is happening in classrooms today? According to the literature, ELs are taught in a variety of ways. Some schools opt for one of several versions of bilingualism; others offer classes in ESOL, English to speakers of Other Languages. Some schools focus on Content-Based Instruction while others employ any number of the programs in a piece-meal fashion. Early-exit or Transitional bilingual education programs aim to quickly move students to all English classes. Other programs such as Dual Language Immersion or Developmental Bilingualism seek to develop students’ skills in two languages over the course of their schooling. The ESOL programs can vary as well. These students may be “pulled out” of so called regular education

classes to receive extra instruction in English or may be placed in classes with students of similar language ability while the teacher adapts the instruction in English to better meet the skill-level of the students. These programs and variations of them are typically what are seen in U. S. classrooms.

Initially, NCLB focused on the need for U.S. students to make adequate yearly progress in reading and mathematics, but beginning in 2007 schools were also required to demonstrate this same progress in science content. NCLB was replaced by the Every Student Succeeds Act (ESSA) in 2015 which allowed states to set their own goals and determine which standardized tests they would use (Education Commission of the States, 2016). But, ESSA still required testing in science at least once in each of the three levels of schooling and considered ELs a subgroup that must be monitored to ensure that they are not consistently underperforming.

So, science teaching in the United States has been beleaguered for some time. Although the argument can be made that this has occurred for almost a century or more (DeBoer, 1999), many point to the launching of Sputnik by the Soviets in 1957 as the first perceived national crisis in science education (Rutherford, 2005). Then, as now, science achievement was thought to be tied to the nation's economic future. The most recent Trends in International Mathematics and Science Study (TIMSS) from 2015, showed marginal improvement in mathematics and flat science scores for U.S. fourth and eighth grade students when compared to the 2011 scores. It is also significant that although U.S. scores are above average, this seems due to the students in the higher percentiles while the lower percentiles lag behind the international average. (NCES, 2016).

ELs in the Science Classroom

How then does this current debate impact English Learners, ELs, in the science classroom? Although many teachers feel ill prepared to teach EL students, they are required by law to teach them. Many content specialists are apprehensive and even resentful, but the number of EL students entering U.S. schools shows no signs of abating (Anstrom & Lynch, 1998). Still, if native English-speaking students have difficult grasping the nature of science, as well as problem solving skills how can our EL students? Since language is part of culture, EL students will often have different world views and perspectives regarding the culture of science (Cushner, McClelland, & Safford, 1996). How do teachers make science meaningful to them? How do they meet the National Science Content Standards that stress “establishment of an adequate knowledge base and demonstration of logical connection between scientific concepts” (NRC, 1996)? Or the Next Generation Science Standards that includes ELs as a special group in its’ Appendix D in which it stresses “all standards for all students” (NGGS, 2013). These are no small feats and yet it is essential that this growing population of ELs is prepared to participate successfully in the U.S. society.

Again, embedded in the different proposed programs designed to meet the needs of the EL population is the idea that these young people come from different cultural landscapes. Not only is their first language different from their second, but their way of viewing and perhaps interacting with the world is different. For the classroom teacher, this is tantamount to not only teaching English and/or their content but “navigating cultural borders” or what some have referred to as “crossing borders” (Jegede & Aikenhead, 1999).

This can be very difficult under the best circumstances, but when one adds oversized classes, minimal resources, and unprepared teachers with little support systems – it can seem impossible. Certainly, this must lead to failure in many respects. This is exemplified when we examine the graduation and drop-out rates for the largest population of immigrant students – Latinos (Huntington, 2004; Cassidy & Bates, 2005). Yet, there are also success stories amidst much of the bad news. In her review of research on ELLs and science coursework, Janzen focused on the use of SFL, Systemic Functional Linguistics, as a means of teaching both science content and writing in science (2008). Odom, Stoddard, and LaNasa, (2007) focused on teacher instructional practices and science achievement with this population of students. Still others have suggested that we look at the affective domain to improve student learning (O’Connor, 2008; Shann, 1999; Van Sickle & Spector 1996). When young children first enter the educational system, we recognize their need to feel safe and cared for. The first few years of school involve learning but also other student-centered activities to build skills and opportunities for the students to bond with the teacher in “loco parentis”. During this time in which formal learning begins students are learning the system of school and this requires patience and kindness in addition to pedagogical skill. Not surprisingly, the importance of transmitting content knowledge by lecture increases steadily from elementary through secondary levels of schooling. Still, the importance of the affective domain and the cultural context in teaching and learning has been recognized (Schulte, Slate, & Onwuegbuzie, 2008).

The Impact of Caring

Primary school teachers are more likely to give caring as a motivation for becoming a teacher, yet they also express the difficulty of dealing with the tensions between meeting students’

emotional needs versus the need to instruct (Vogt, 2002). In the middle school years, there has been a call for a return to the middle school philosophy, namely the three R's of relationships, relevance, and rigor (Midgley & Edelin, 1998). This return to a more student-centered focus is especially needed in urban middle schools (Ellis, 2008). Given that urban middle schools have higher rates of poverty and single family homes; the role of the school becomes even more significant in the healthy development of students. According to Hewson, Kahle, Scantlebury and Davies (2001), teacher expectations and teacher knowledge have a positive impact on the achievement of urban middle school students. In another study, Shann (1999) found that when urban middle school students perceived their teachers to be caring they fared better academically. Alder (2002) has suggested that caring and academics are not in diametric opposition but perhaps a confluence more attuned to Maslow's hierarchy of needs at the safety and social levels. In her study, she found that along with taking a personal interest and communicating with students, that the ability to maintain order and provide a safe environment is a characteristic of caring teachers. Although the research on caring in secondary schools is somewhat sparse, there is some research that supports the concept of caring in secondary classrooms. Some researchers indicate that much like young children who first enter school need to be provided encouragement, patience and kindness as they become acclimated to the public-school systems; perhaps students from different ethnic, economic or language backgrounds from the mainstream also need teachers who operate from a caring perspective (Muller,2001).

If teaching is sometimes an emotionally taxing profession, then teachers of immigrant students or in high diversity schools are perhaps taxed even greater emotionally. In a study of teacher burnout in Israeli primary and secondary schools, Tatar and Horenczyk (2003) found that

teachers in high diversity schools in terms of ethnicity and language were significantly more likely to find it difficult to establish relationships with students. This is troubling given other researchers' views in regards to students living along the United States–Mexico border. Lopez, Gonzalez and Fierro argue that teachers can stimulate motivation and engagement by creating “caring and emancipatory spaces” for students (as cited in Schulte, et. al., 2008). In their study, Tatar and Horenzczyk (2003) also indicated that teachers with assimilationist views in schools that they perceived as assimilationist regarding immigrants showed even higher teacher burnout rates. Initially, the assimilationist view which incorporates an ethic of justice might seem easier and more direct, but perhaps in the long term it is the least effective means of teaching. The assimilationist teachers in this study held expectations that students should master the new language and culture quickly. So, what initially appears more laborious – establishing relationships and recognizing students as whole persons – might prove to be both more effective for students and teachers alike. Interestingly, Tatar and Horenzczyk also found that teachers who were less assimilative who worked in schools that they perceived to be less assimilative had the least burnout rates (2003).

Defining Caring

So, as some researchers have suggested, the role of caring in educating students – even those in secondary schools is significant. But what exactly is this caring? Is it a personality trait, mere sentimentality, being nice or giving hugs? In his research of students' perceptions of caring teachers, Teven (2001) examined personality traits and characteristics that students believed communicated caring, such as teachers' immediacy, responsiveness, and assertiveness. He also attempted to delineate the “misbehaviors” that indicated non-caring

which the students believed to be verbal aggression. How caring should be defined and how it is perceived by students has been addressed by other researchers, as well. In their study of 208 sixth-grade students, Hayes, Ryan and Zsellar (1994) used both a survey instrument and student essays to categorize behaviors that students perceived as demonstrating caring on the part of a teacher. Ultimately, how we define caring is significant to our understanding of how it can positively impact our schools and individual classrooms. It is not enough to simply feel affection for a student but their needs must be perceived and acted upon (Cassidy & Bates, 2005). Again, caring is not simply a particular characteristic of the teacher but something that she does (Goldstein, 2002). In the field of education, Nel Noddings' (2003) work in this area has provided the path to understanding how an ethic of care can and should be practiced in our schools. The caring she describes is not a stance but an obligation of a moral person (Noddings, 2003). So, instead of a list of behaviors that characterize an individual, caring is a way of being in relation; therefore, the actions taken by the one caring are not rule-bound but are part of the relationship between the one-caring and the one cared-for (Goldstein, 2002; Noddings 2003, 2010, 2012). Determining whether or not caring is occurring involves observing the action and its outcome between the one-caring and the cared-for. Although in a global sense, the actions are predictable – doing what brings about a favorable outcome- they are also varied in response to different students and situations (Goldstein, 2002; Noddings,2003).

An Ethic of Care

The work of Gilligan (1982) initiated an understanding that morality and moral development as it was reasoned at the time did not take into account another legitimate perspective based in emotions rather than reason. With this consideration of morality from a more feminine

perspective as opposed to the more dominant ethic of justice and Noddings' (2003) explanation of what it means to care and how one acts upon this unktion to be a moral person, we come upon an ethic of care. In her explanation of ethical caring Noddings states that it arises out of natural caring and it is based on relationships. In these relationships, there is the one-caring and the cared-for. Each of us has been cared-for to some degree in our lives and it is this natural caring that we implicitly identify as good (Noddings, 2003). One of the outcomes of experiencing this natural caring is the formation of the ethical self. It is this ethical self which acts as a bridge between our actual self and the ethical ideal. This ethical ideal is a realistic view of ourselves as one-caring; a role which natural-caring teaches us is "good. Noddings (2003) states "the primary aim of all education must be the nurturance of the ethical ideal" (p. 6).

Ethical caring is not necessarily emotional, although it is founded on the notions of relationships, experiences and a sense of receptivity to others or what Noddings refers to as "engrossment". Ethical caring like natural caring involves wanting what is best for the one cared-for. This means being receptive to the individual, listening attentively and using motivational displacement. Caring for the other means that the one-caring displaces one's self-interest for that period of time in order to care for the other (Noddings, 2003). The intensity and duration of this caring varies by situation. When acted upon by professions such as teaching and nursing the ethic of care would mean wanting the best for the cared-for. Noddings is clear though that coercion is not caring and in certain instances it may be difficult to determine if caring has occurred (2003).

Since the cared-for must acknowledge to some degree that they have been cared for this can be problematic at least from the stand point of a researcher or observer. Noddings makes a

distinction between “care as a virtue” and “care as relation”. A teacher who simply does what she perceives is best for the child in an effort to be fair, for example, is not necessarily demonstrating care from the student’s point of view (Noddings, 2002, 2003,2012). Care might be better demonstrated by being attentive to the student.

So, in order for a teacher to be considered “caring” he or she must have demonstrated that he or she can establish, more or less regularly, relations of care in a wide variety of situations” (Noddings, 2001a, 2003). This may involve engaging in conversations cross-culturally among teachers. Noddings acknowledges different ways of demonstrating care will likely exist within specific communities. Caring teachers will need to recognize that different ethnic or racial groups may find specific behaviors or attitudes as indicative of caring relations (Noddings, 2001a). If teachers fail in one situation, it does not preclude them from succeeding in another or bar them from being “caring” teachers (Noddings, 2001a, 2003). Ultimately, “Caring teachers not only listen to students and respect their legitimate interests, but they also share their wisdom with students” (Noddings, 2001a, 2005). However, because the caring may not be acknowledged until much later, the ethic of care is imbued with a degree of tentativeness (Noddings, 2003). So, from the perspective of a researcher examining the relationships between students and teachers and trying to determine if the teacher is building caring relationships will be more difficult than simply looking for particular characteristics or behaviors that the teacher exhibits. Instead, it will involve observing and interviewing the teachers and students in order to determine if the teacher is building caring relationships which do not involve treating every student and situation the same but truly demonstrating engrossment and motivational displacement in each situation.

Why is it not enough to look at particular characteristics displayed by a teacher over a period of time? This would be appropriate if one wanted to determine if a teacher was kind, affectionate or effective; however, trying to determine if a teacher is operating from an ethic of care which underpins her pedagogical skills, interactions with peers, students and parents is quite different. A teacher guided by an ethic of care will exemplify it with all her students whether they are ELs, a different race, religion etc. Although based in emotions, an ethic of care is not limited to feelings alone – the type of feelings that may lead to teacher burnout. In O'Connor's, study of three middle grades teachers, she found that one of the caring teachers considered leaving teaching because her care for her students was so utterly exhausting (2008). However, an ethic of care empowers teachers “to make thoughtful professional choices about their interactions with their students” (Goldstein, 2002, p. 31).

Purpose of the Study

The issue of helping all students including ELs to become successful in science is now of national importance. In many respects, as a nation we view success in the sciences as significant for our future prosperity. Given that a greater portion of our future citizens will come from this group of students it behooves us to educate them well. Certainly, this involves preparing new science teachers in terms of their knowledge of content and technical skills. But, it might also be beneficial if these teachers who currently exhibit caring as a characteristic, were able to allow an ethic of care to increase their pedagogical skill so that they did not simply rely on the “warm, fuzzy” view of caring. This view of caring is not unwarranted but may be difficult to sustain over a longer period of time or less likely to influence student success in academic classes. So, a

better understanding of how some teachers use this ethic of care can be beneficial to the teaching profession as a whole and teaching across cultural borders in particular.

The following research questions will guide the study:

1. How do middle school science teachers of EL students define caring? As a virtue, or Rule-bound perspective?
2. How do these middle school science teachers' definitions of caring vary based on the context from which students and classroom situations arise?
3. How do middle school EL students determine if their science teachers are caring? What actions on the part of their science teachers do students perceive to be indicative of caring?
4. How do both middle school EL students and their science teachers believe caring impacts the learning of science content in the classroom and if so, why?

Summary

The need to adequately educate all students entering into the classrooms in the United States is a huge feat. The additional drive to ensure that the U.S. maintains a workforce educated in science and mathematics has increasingly become an issue of concern. Standardized tests such as those associated with NCLB and ESSA add to the pressures that science teachers already feel and with the inundation of immigrant students who may not speak English, this has been compounded. Among the factors likely to impact these students' ability to be successful in U.S. classrooms is the affective domain, but simply caring about the students is not sufficient. This research seeks to understand how an ethic of care might more adequately help teachers meet the needs of this growing student population.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

The challenges of teaching and learning science in today's secondary schools are well documented (Rakow, 1999; Bouillion & Gomez, 2001; Dong, 2007; Gonzales, Williams, Jocelyn, Roey, Kastberg & Brenwald, 2008). Teachers are required to use pedagogical skills, draw on a wealth of content knowledge while staying abreast of current breakthroughs in science and technology, organize laboratory investigations, and facilitate classroom learning among many other priorities. This is no easy undertaking. These concerns are somewhat exacerbated by issues outside the teacher's control that come from the school's administration, district office, or government. Added to this growing concern are students of different abilities, backgrounds, cultures and increasingly- languages (Anstrom & Lynch, 1998; Bryan & Atwater, 2002; Settlage, 2004).

For those who teach middle school students there are added concerns that come along with this difficult time of early adolescence. It may seem difficult or even impossible to effectively teach so many students under these conditions each day. The purpose of this chapter is to "set the stage" or draw on the literature to present the history that has shaped the teaching of English Learners; a review of the pertinent terms used to describe those who learn English in K-12 in the U.S.; a look at the different teaching models that have been and continue to be used to teach content to English Learners; the impact of ELs in classrooms; related teacher factors that

impact ELs' learning; as well as, the need for an ethic of care in today's middle school science classrooms.

The Role of the Middle School

Rooted in the concept of in “*loco parentis*” is an understanding that teachers, especially primary school teachers, are responsible for not simply educating students in their parents' absence but to care for their well-being. So, some degree of nurturing behavior is expected from primary school teachers, especially in the earlier grade levels. However, as students move towards pre-adolescence, even primary teachers feel that some moderation in the affective domain is necessary (Vogt, 2002). Yet, the value of the affective domain and cultural context in teaching and learning is not limited to primary school students (Schulte, Slate, & Onwuegbuzie, 2008). The change in teacher attitudes and teaching styles as students move from elementary to middle school has been described as “an unfortunate mismatch” for young adolescents (Feldlaufer, Midgley, & Eccles, 1988).

Ironically, though the emphasis on achievement tests may have increased over the last decade, the crucial needs of this period of adolescence have not. It is still a time of identity formation, physical and emotional changes, and a need for both structure and nurture (Caskey & Anfara, 2007; Tan & Burton, 2007). Early adolescence continues to be a time in which students become more vulnerable to gangs, teen pregnancy, and drugs use. While many issues such as parental involvement and teacher expectations and knowledge have been shown to impact student achievement, there is also evidence to suggest that students in urban communities do better academically when they perceive that their teachers care about them (Hewson et. al, 2001, Shann, 1999). This seems reasonable when one considers that middle school students often

withdraw from their parents during this time of identity formation. Middle school students also state that they do not feel as close to their teachers as they did in elementary school. This is very unfortunate when one considers that during the middle school years there are more fights and cases of bullying (Wigfield, Lutz, & Wagner, 2005). Of even greater concern is demonstrated in Katz (1999) research involving immigrant, Latino middle school students who perceived their teachers to be racist and uncaring and so chose to “drop out” of school and into gangs.

The teachers focused solely on the academics and meeting the demands put on them by the school’s administration and the results for the immigrant Latino population were disastrous.

It may be clear to many that middle school is challenging to the “average” child in the United States. Many even recognize that this challenge is magnified multiple times for poor students, students of color and students from single-parent homes in urban areas. But, perhaps the challenge is even greater for some immigrant students who are learning a new language, living in a new country, and dealing with all the other aspects early adolescence (McCarthy, 1998). In their longitudinal study on the academic trajectories of immigrant youth, Suarez-Oroco et al (2010), found that “formal and informal relationships with supportive adults and mentors helped newcomers to navigate the complicated transition into a new country”. Perhaps of even greater concern was that their research indicated that those students who did not fare well academically were the least likely to have these familial or non-familial supportive relationships. Clearly, middle school is a time in which it is critically important that appropriate caring relationships are established between teachers and this population so that they can be guided into making good decisions in both academics and in their personal lives.

Commonly used terms in Language Acquisition

Before exploring the historical background centering on immigrants and K-12 education in the United States, it is appropriate to explore the somewhat problematic use of multiple terms used to describe immigrant students learning English in K-12 in the U.S. With the initial passage of the Bilingual Education act in 1968 the term language “minority “was used. Aspects of this law were later challenged in California. Afterwards, the Lau Remedies came into effect in 1975 in which the term Limited English Proficient or LEP was ascribed. This term was also used much later in the language of 2001’s No Child Left Behind Act (Crawford, J.,1999). Because the terms language “minority” and “limited English proficient” (LEP) are part of official U.S. documents they continue to be used or at least referred to in the literature. However, educators and researchers are more likely to use these terms only in reference to the official documents.

Those who actually teach English to immigrant students are more likely to use the terms English as a Second Language or ESL and in recent years English to Speakers of Other Languages, ESOL which acknowledges that some students may already speak two or more languages. It seems that the intent of the name changing has been to more accurately describe both the students and their needs in the classroom without diminishing the importance of their first language by declaring a deficiency in English. Still later, James Crawford (2013) of the Institute for Language and Education Policy introduced the term English Language Learner, ELL, as both a more politically correct and inclusive term over ESOL while being more positive than LEP. Increasingly some K-12 teachers and even Crawford himself are simply using English Learners.

In this review of the literature the term EL will be used in order to acknowledge its description of a critical aspect of these students needs in the classroom without implying any deficiency. This term is currently the most widely used in the fields of ESOL and bilingual education, although the researcher acknowledges the nascent but increasing use of the term “emergent bilinguals” which while positive does not describe those who are already bilingual and currently learning English (García, Kleifgen, & Falchi, 2008). The terms language “minority” and limited English proficiency (LEP) will be used for the sake of accuracy when quoting a U.S. document or when referring to the work of researchers who chose to use the term.

Historical Background

The last 50 years of U.S. history have seen massive changes in many aspects of our daily lives. In some respects, this is also seen in the educational system particularly in who is being educated. During the early 1900’s, few students actually attended high school and even less graduated (DeBoer, 1991). When science was taught during this time the emphasis was on its practical utility. With the increase in immigration, urban poverty and crime, it was thought that students needed to understand the spread of infectious disease, sanitation and the ills of alcohol abuse. Schools were needed to teach the “dominant values of society” (DeBoer, 1991). Prior to that time science had narrowly made its way into the school curriculum with its promise to develop intellectual skills, reasoning and developing content and contributing members of society (DeBoer, 1991).

Later, the Progressive Era, 1917 – 1957 saw the advent of general science and the merging of physiology, botany and zoology into one class – biology. Given that so few students finished high school it was deemed important that they get the “basics” in the year or two that they

remained. Toward the end of this time period, at the close of the Second World War, the nation experienced a major drain in science faculty and college science majors. President Truman's scientific research board believed that science knowledge was key to national survival. There was then a move to introduce two tracks one for those who were deemed "gifted and talented" and one for everyone else. Around this same time period, Joseph Schwab discussed the urgent national need for a large portion of society to understand fluid enquiry in lieu of the older model -stable inquiry. Whereas stable inquiry focused on the conclusions of science, a fluid enquiry would involve interpreting facts and examining the theoretical evidence that supports scientific theory. He and others began to see the need for students to reason like scientists (DeBoer, 1991).

With the passage of the Immigration and Nationality Act of 1965, the criteria for racial admission were eliminated and expanded immigration from Asia and Latin America. The act emphasized family unification over occupational skills thus increasing Mexican immigration (Baker, 2006). So, it was no longer the more educated who were immigrating to the U.S. but more migrant workers and their families. Furthermore, Title VI of the 1964 Civil Rights Act prohibited discrimination on the grounds of race, color, or national origin in programs or activities receiving federal financial assistance. In 1968, The Bilingual Education Act, Title VII of the Elementary and Secondary Education Act of 1965 was passed. The Act served as a guide for state and local policy regarding language minority students. Its primary aim was, "providing meaningful and equitable access for English-language learners to the curriculum". This Act provided bilingual education to language "minority" students who were also economically poor. Only states or school districts with significant language minority populations were required to meet the conditions of the act (Crawford, 1999). An underlying theme of these reform efforts is

that the federal educational policy provided national goals while local education agencies were required to design and implement programs (Wiese & Garcia, 1998).

So, at a time when the nation saw a pressing need for a greater percentage of its populace to understand science and science inquiry, strides were being made to ensure that the “disadvantaged” ELs were given an opportunity to learn in both their primary language and English. This trend toward a more equitable society continued into the 1970s with the Lau v Nichols court case in 1974 which established language “minority” status as a claim for discrimination based on the Civil Rights Act. Still, no particular instructional approach was required but schools had to “take affirmative steps to rectify the language deficiency in order to open its instructional program to these students” (Wiese & Garcia, 1998, p.4). A year later the Lau Remedies required bilingual education in districts in which the civil rights of students had been violated.

By the late 1990’s, “Limited English Proficient” students made up approximately 11.4% of the U.S. student population. On January 8th, 2002, President George W. Bush signed the No Child Left Behind Act into law. It was a reauthorization of the Elementary and Secondary Act of 1965 and a repeal of the Bilingual Education Act. Schools and districts were now encouraged to move to English-only due to mandatory high-stakes testing. States, districts and schools were accountable for the performance of LEP students and were required to first identify languages other than English in the population; develop academic assessments; use English language proficiency assessment with the LEP annually; include the LEP in the reading and mathematics assessments with appropriate accommodations. More importantly this Act represented a shift

from LEP or ELs being the responsibility of the ESOL departments and teachers to their being the responsibility of all teachers including science teachers.

This emphasis on the responsibility of the content teachers was clarified in 2007 when science assessments were added to reading and mathematics as areas covered under NCLB. How best to teach all students, including ELs, is continuing to grow as an area of research. Because “the quality of schooling that immigrant students receive largely depends on the capacity of the local communities in which they reside” (McDonnell & Hill, 1993, p. xii), schools with larger percentages of ELs fare better than those with smaller populations (Callahan, et. al. 2009). Still, many of the districts and schools in question, lack the resources to educate immigrant or native born students well. Schools serving the largest percentages of these students may have Spanish speaking teachers but not teachers speaking other immigrant languages (McDonnell & Hill, 1993).

With the publication of the 2011 TIMSS results, we were reminded that the mathematics and science scores of fourth and eighth grade students in the U.S. were now slightly above the international average which indicated a slight improvement or no change (NCES, 2012). Still, the achievement gap between Whites and Blacks, as well as, Whites and Latinos was substantial (NCES, 2012). In response to this bleak news, the U.S. Secretary of Education, Arne Duncan stated that “educational opportunity cannot depend on the color of your skin, your zip code or the size of your bank account” (Duncan, 2012, p.1). One might add nor your country of origin or primary language.

Perception of the U.S. Public

Few would argue against the claim that the United States is a nation founded on immigration. Still, who the immigrants are and where they come from has changed and continues to change

the face of this nation. Up until the 1950s, 85% of immigrants to the United States came from European nations but by the 1980s, 85% of immigrants came from developing countries (Crawford, 1998). What had been used in previous generations as a symbol of nationalism in times of war, English-only has become a movement in response to the fast shifting demographics (Crawford, 1998).

This move towards English-only is especially, used in respect to Latinos. Their ever-increasing numbers and the concern over “undocumented status” has reawakened fears of “two Americas” divided by language (Huntington, 2004). This concern has grown with the last census report indicating that Latinos are now the nation’s largest “minority” group and growing (Huntington, 2004). Although other immigrant groups are certainly represented in the increasing immigration rates, Latinos are by far the largest group representing some 80% of ELs entering U.S. schools (Genesee, Lindholm-Leary, Saunders & Christian, 2005). So, some U.S. citizens see this virtual block of new immigrants who choose to settle in the same communities as failing to assimilate. One hears stories of people living in the U.S. for years without ever speaking English because they do not have to speak English so long as they stay in their communities. Perhaps a greater concern involves non-Spanish speaking citizens living in or near these communities. They state that they feel like they are in another country and many find this so uncomfortable that they move or emigrate from those locales to other U.S. cities such as the exodus from Miami in the late 1980’s which was represented by the bumper sticker slogan, “Will the last American to leave Miami, please bring the flag?” (Huntington, 2004, p.7).

Programs Designed for English Learners (ELs)

A review of the literature reveals school programs in which ELs are taught include some versions of bilingual education, ESOL and some forms of Content Based Instruction. Although bilingual education is often interpreted as learning that occurs in two languages, the percentage of time spent on either language denotes differences in program goals and outcomes. With some programs aiming to quickly move students to all English classes such as Early-exit or Transitional programs and other varieties focusing on true bilingualism such as Dual Language Immersion or Developmental Bilingual education. ESOL or English to Speakers of Other Languages students may be pulled out of “regular” classes for a period or more in which they are grouped by ability level in English and the teacher uses English adapted to the students’ proficiency level and supplements it with gestures and visual aids. Similarly, Content Based Instruction programs involve adapting the classroom English to the student’s proficiency level and it is supplemented with specific strategies and techniques. These programs are not always clearly delineated, however. One or more programs might even be operational within the same school. Given the diversity of L1, or primary language populations in particular districts, schools and even classrooms, an eclectic approach may well be deemed the best method for educating English Learners, ELLs (DiCerbo,2001).

Schools having bilingual programs vary in their purposes and their implementation. Although the primary focus may be on language learning, a cultural or societal context is also evident. According to Lambert (as cited in Cummins, 1979) additive bilingualism will occur if the L2 is not considered more prestigious than the L1, primary language. Unfortunately, many immigrant students experience subtractive bilingualism given that there is pressure to replace or demote the

first language which may have a negative impact on ELs' self-concepts (Cummins, 1979). To monolinguals, any form of bilingualism might be thought of as positive but in subtractive bilingualism there is a shame or sense of inferiority associated with one's first language and perhaps culture. So instead of adding a new language to their repertoire, these students learn English, only to lose the natural affinity of their first language and culture. Clearly, any program identified as English-only or immersion will tend to lead to subtractive bilingualism, but how do other programs fare?

Early exit is a form of bilingual education which has the aim of quickly providing students with enough English to be pushed into a mainstream classroom as soon as possible. In early exit programs, ELs will speak the same native language and both the L1 and L2 will be used in content classes but the development of L1 only serves to assist a quick transition to English (Baker, 2005). Late Exit and Two-way or dualism programs stress bilingualism. In the late Exit programs, the ELs are more likely to attain true biliteracy. Again, the students will have the same L1 and both the L1 and L2 will be used in content courses but more instruction will occur in English as the students' proficiency increases. This program differs in that more time is allowed for developing the L1. The dual language or two-way programs aim to help ELs and native English speakers each become bilingual although this is not always achieved (DiCerbo, 2001). Some have argued that these programs may hold a greater benefit for those who are already advantaged while sometimes excluding ELs in order to maintain predetermined percentages of native English speakers to ELs (Valdes, 1997). Although the term bilingual would seem to suggest two languages, this does not signify equal usage of each language. The language of instruction may vary by content or time. For instance, mathematics and science may

be taught in English while history may be taught in the L1. Two of the major models for time are 90-10 programs and 50-50 programs (Gomez, Freeman, & Freeman, 2005). Even so, based on a current review of research of ELs and the learning of science, bilingual programs in general appear to be underrepresented across the nation (Janzen, 2008).

Bilingual education programs. The debate concerning the effectiveness of bilingual education is of longstanding (Crawford, 1999). Truly, these programs are as varied in their conceptions as they are in their implementations and like all programs some are effective and others are less so. It is not enough that the teacher speaks another language; she must also be explicitly aware of the nature of second language acquisition and the theories of bilingualism (Genesee, Lindholm-Leary, Saunders, & Christian, 2005; Baker, C., 2006). Despite these concerns, researchers still show evidence that knowing two languages can provide an academic benefit. Not only do students with strong literacy in their L1 progress more successfully in L2 literacy than ELs without those experiences and skills but they also have higher academic achievement, heightened meta-linguistic awareness, and enhanced self-esteem (Ngai, 2002). This serves as a reminder that the ELs entering U.S. schools vary in their prior education in their L1 (Lee, 2005). It is here that bilingual education can have a positive impact by helping the students attain literacy in their L1; then they should more easily transfer their skills into their L2 (Genesee, Lindholm-Leary, Saunders & Christian, 2005).

In a study designed to examine high school classrooms that promoted the success of ELs, Henze and Lucas (1993) observed a biology teacher who had a bilingual endorsement. The class was taught in Spanish with the exception of a few key vocabulary words which were given in English. The students were engaged and focused on their energetic teacher. Although the lesson

was in Spanish to help develop their metalinguistic awareness, they were also building the English vocabulary. The primary purpose of this class was the learning of biology. The students had full access to the content and were able to grasp the content at a higher level of complexity than they would have been able to do in English, a language they were still learning (Henze & Lucas, 1993). Also, by allowing the students to communicate their science knowledge in Spanish, the teacher promoted general literacy as well as academic learning which can in turn promote English language proficiency (Lee & Avalos, 2002).

Findings from the four-year project, the School Reform and Student Diversity Study, which analyzed four schools considered to be exemplary in teaching mathematics and science to ELs suggests the relevance and need for bilingual programs (Minicucci, 1996). One of the goals of the Haitian Creole bilingual program which served Haitian immigrants from K through eighth grade is the acquisition of literacy in both English and Haitian Creole. One of the teachers in the fifth through eighth grade bilingual program was Haitian American. The classes were taught in Haitian Creole because of the range of fluency of English amongst the students but important concepts were presented in both English and Haitian Creole. Students were able to answer questions in English or Haitian Creole and this did not appear to interfere with the students' ability to learn either the core content or English (Minicucci, 1996). The science program in this study was a collaborative effort between the Technical Education Research Center (TERC), a non-profit education research firm in Massachusetts and teachers of the participating schools. Given that the TERC researchers study what and how ELs learn in inquiry-based science classes, the science lessons centered on students making observations and seeking answers to their questions through use of the scientific method (Minicucci, 1996). It would seem that this is the

level of science understanding that the science education community has suggested is needed by all students (NRC, 1996).

Others attest to the valuable knowledge from their L1 that ELs bring to the science classroom. In their case studies with content teachers and bilingual coteachers, Roseberry and Warren (as cited in Luykx, Lee, & Edwards, 2009) provided results that indicated that when ELs were able to freely discuss science related topics in their home languages, teachers were able to capitalize on these inherent resources in the promotion of scientific inquiry. So not only did this validate the knowledge held by ELs but likely allowed the students to develop a deeper understanding of the science concepts.

Science and mathematics are often considered related subjects in that the physical sciences depend on the language of mathematics. In fact, much of the concern over the United States place in the global economy is thought to hinge on our ability to educate our students in both disciplines (NSTA, 2004; NCES, 2012, 2016). So, studies in mathematics education can also provide insight into the benefits of maintaining the L1.

Gutstein et.al. (1997) observed that elementary and middle school Mexican American students greatly benefited from well prepared bilingual mathematics teachers. Although he did not elaborate on the type of bilingual program or exact use of L1 and L2, all the teachers who participated in this study which involved a culturally relevant pedagogy, were bilingual. The vignettes provided indicated a greater use of English in instruction, however, with Spanish being used for clarification. Based on the researchers' observations, the teachers were able to help the students think more critically and build on informal mathematics knowledge.

In a dual language program in Massachusetts referred to as the Barberi Two-Way Bilingual Education program, de Jong (2002) showed how the program benefited both ELs and native English speakers. In the elementary school studied, 25% of the students were ELs and the program was entering its 11th year. Although the program continued through middle and high school, the content courses of mathematics and science were taught in English exclusively in the upper grades. During the elementary school years, however, both English and Spanish were used to teach mathematics. Although 12 of the 13 teachers were bilingual, they did not switch languages while teaching in order to discourage students from tuning out (de Jong, 2002). By fifth grade, both the ELs and native English speakers performed above grade level in mathematics when compared to the national norm on the Stanford Achievement Test which was taken in English.

English to speakers of other languages (ESOL). The two programs which represent the greatest proportion of those implemented for ELs are ESOL (English to Speakers of Other Languages) and Content Based Instruction (CBI). Although these are two distinct programs many school systems use both approaches. ESOL has become a varied program in its own right, however. Some schools use ESOL as a class that lasts one period. The student may be pulled out of the regular class for a portion of the day; it may be a resource center for ELs who need extra help. In another form of this program, bilingual or ESOL certified teachers are used for 2-3 years until ELs gradually acclimate to the mainstream classroom in a kind of structured immersion. This is the type of ESOL program that Harklau (2004) noted in her case study of four Chinese ethnic immigrant students in a northern California high school.

In her 3 ½ year ethnographic study of contrasts between mainstream and ESL classes, Harklau (2004) describes a “makeshift” system in which little adjustment was made for the EL population. Students were served by the ESL program for language and a sheltered social studies class in which the teacher taught all EL students while ostensibly using techniques to aid them in both language acquisition and in mastering the subject matter. In general students saw the ESL classes as easier; the researcher suggests that this may have been due to the learning of “everyday” English in addition to more rigorous academic English. Although the students differed in their perceptions, in general they saw the ESL class as stigmatized for students who were lazy or not smart. Yet it was in the ESL classes with skilled teachers that they spoke, were engaged and participated actively. In their mainstream classes, where the opportunity for more authentic use of English and conversation with native speakers was available, students were often quiet and tuned out. Harklau observed that many of the mainstream teachers virtually ignored the ELs. The teachers were not malicious, but their instruction was geared toward native speakers and they felt or saw no need to change. The content was often not made comprehensible for ELs. In this instance Harklau suggested that the ESOL teachers and mainstream teachers work together to better meet the needs of the students, given that the current program appeared to simply be a makeshift attachment to the native English program. As such, many ELs were relegated to lower level mainstream classes because it was thought they could be more successful in less challenging classes (Harklau, 1994). Again, the emphasis of the researcher and that of the school was learning of English and content.

Content-based instruction. Like many of the programs associated with ELs, content based instruction has taken on myriad forms. Even before the NCLB required ELs to be tested

and show improvement in the content areas, it had seen much growth, but since the act was passed, many researchers have focused on schools and classrooms that have implemented this program in some form.

In a study of exemplary biology teachers of ELs in Queens, NY, Dong (2007) identified techniques and strategies used by content teachers to make the content comprehensible. Although the teachers had different pedagogical skills, levels of education and second language acquisition training, they were each responsive to the needs of their ELs. Dong considered that the teachers offered models for effective teaching of ELs. Although the teachers did teach content and stress English language development, they were not bilingual and incapable of adequately supporting or helping students to maintain their L1.

Other studies have also considered the question, “How can content teachers also become effective teachers of ELs?” Specifically, the Cognitive Academic Language Learning Approach (CALLA) and the Sheltered Instruction Observation Protocol are two programs which can be categorized as Content-based Instruction and are also sometimes used in conjunction or as part of an ESOL program (Harklau, 1994; Echevarria, Short, & Powers, 2003). The programs differ in their frameworks but they each attempt to improve upon the learning of content by ELs.

The Cognitive Academic Language Learning Approach (CALLA). This program predates many of the current content-based programs. It was developed in 1986 and has been used in both ESOL and bilingual classrooms (Chamot, 1995). Based on cognitive learning theory, CALLA suggests ways that teachers can have students reflect on their own learning as well as identify effective instructional practices for ELs.

In her paper on the implementation of CALLA in the Arlington Public Schools in northern Virginia, Chamot focused on the Mathematics and Science programs and student achievement. In a five-year longitudinal study, she tracked the progress of students in the CALLA program and those in a comparison group who preceded CALLA by one year. Although the emphasis in this study and implementation was to increase EL's success in mathematics and science courses, the researchers recognized the need for bilingual assistance. The students were provided with bilingual counselors, parent workshops were instituted, teachers were provided with professional development and Spanish-speaking bilingual assistants were in some ESOL classes.

However, even with these significant features in place, the researchers and teachers educated in CALLA recognized the need for bilingual instruction. The degree of L1 support was uneven in the schools, however. Some teachers were actually bilingual while others knew some Spanish. In both cases, teachers used the L1 when necessary to make the content comprehensible. This was not the case for ELs from smaller populations such as the Vietnamese, however. For smaller EL populations help was requested from the community, but this seems to have had no impact on classroom instruction and was used more for translating letters and other documents. Although improvement was shown even amongst the beginning ELs, who were not initially targeted for the program, the researchers soon saw the need for the native language to explain new concepts and make the content knowledge and skills explicit. Still the results of this six- year longitudinal study indicate that regarding science achievement, 57% of the CALLA participants earned a "B" or better in science and maintained that average through high school. Whereas in the comparison group, which consisted of students in the group a year preceding the CALLA study, 29% earned a "B" or better and this decreased to 22% in high school.

Another finding of this study is that the professional development opportunities appear to have better prepared the teachers, but the researchers noted that the teachers did not recognize the need for more explicit teaching of metacognitive learning strategies and content.

Because this program was inclusive of parents, teachers and other community members, a greater number of people had a vested interest in doing what was best for the students. As a result of the initial implementation, the Citizen's Advisory Committee for the school system's ESOL program recommended bilingual instruction for Spanish-speaking students in introductory mathematics courses.

Despite the obvious concern for the EL students in the school district, it is clear that the emphasis was on learning English and learning enough to also learn the necessary content requisite for high school graduation. Any mention of bilingualism is from a more Early-exit form or as a means of effectively transitioning to mainstream classes. Although this goal in itself is not problematic, the underlying paradigm is. Whatever success is achieved as a result of this program is entrenched in the notion of assimilation and subtractive bilingualism (Baker, 2006). Within the group of concerned citizens, parents and educators there may not have been a conscious desire to "stamp out" the L1, yet English was certainly set up as a more prestigious and powerful substitute for the students L1. This can especially be seen in Chamot's comments regarding the use of L1 and L2 in academic and social settings. Apparently, the lower level ESOL classes used both their L1 and L2 for academic purposes, but only the L1 was used for socializing. However, as the students progressed into higher level ESOL classes the trend was to use English almost exclusively with an occasional use of the L1 for clarification of academic content.

There is much support for content based instruction in its many forms. As a result of research in second language learning over the last few decades, we recognize that ELs need to learn language in a meaningful context in which the content is made comprehensible (Grabe & Stoller, 1997). Accordingly, the students should learn both content and language simultaneously without having to wait for their language skills to catch up before they are introduced to content classes (Chamot, 1995).

The SIOP model. A similar approach to teaching ELs is found in the SIOP model which was first introduced in 1999 by Echevarria, Short, and Powers (2000). The Sheltered Instruction Observation Protocol is a framework for teachers that enables them to present the content using strategies and techniques that make the content comprehensible to ELs. In the process, teachers assist students in the development of language skills across the four domains of reading, writing, speaking and listening (Echevarria, Short & Powers, 2006).

SIOP is not the first program to use these types of strategies to improve student learning of content, however. Other forms of sheltered instruction (SI) or specially designed academic instruction in English (SDAIE) are used across the country. They each help content teachers to modify their teaching of the regular core curriculum in order to make it understandable to ELs. Yet, because the strategies and techniques used vary and teachers have not been explicitly taught how to deliver such lessons, the effective use of these strategies have been uneven (Echevarria, Short, & Powers, 2006). The SIOP model attempts to address these failings by providing a cohesive framework with explicit training of teachers.

After the SIOP instrument was shown to be both a valid measure of sheltered instruction and highly reliable, a group of teachers were prepared to implement the protocol. Classrooms on

both the West and East coasts were chosen based on whether or not their districts provided sheltered classes for ELs. The study included 346 students in grades six through eight. A smaller comparison group was also chosen based on socioeconomic and teacher similarities. In this study, the writing assessment from the Illinois Measurement of Annual Growth in English (IMAGE) was used. The results of pre- and post- tests of this standardized test of reading and writing showed a statistically significant improvement for the SIOP group which indicated an improvement of 2.9 points to 0.7 points for the comparison group. Although this model is currently used by teachers of science, mathematics, social studies and language arts, only expository writing has been evaluated extensively. Yet the SIOP model is not designed for improvement of writing skills in particular, so the researchers see this as an indication that students developed their writing skills in their content classes. The researchers note, however, that without an explicit model such as SIOP, then language development will be overlooked by content teachers as they pursue their core curriculum (Echevarria, Short, & Powers, 2006). The effectiveness of the SIOP model is still being assessed since the results of the two-year longitudinal study were first published. It remains to be seen how effective the SIOP model is in helping ELs achieve in science classes. Although the results of the study show a greater improvement between pre- and post- test scores of the SIOP student group than the control student population it was not statistically significant. In part this was due to the transiency of the student population, limitations on teacher preparation to use the model due to time constraints, and fewer school and teacher participants than originally planned (Echevarria, Richards-Tutor, Canges, & Francis, 2011). This research focused on the science learning of middle school ELs, but the model does not enhance L1 maintenance. Like other sheltered or content-based

programs, the outcome is monolingualism or mainstreaming. Given the English-only policies in many states this seems to be the current trend (Mora, 2000).

The Significance of Current Programs for ELs

As has been noted, the need for high quality science education has been rooted in the U.S. psyche since the launch of Sputnik, and in recent years the need seems to have grown even more so (DeBoer, 1992; NSTA, 2004). Although it is a contested issue, there is some concern that fewer native born U.S. students choose to major in the sciences, engineering, and mathematics (Austin, 2011). Even more significantly, the U.S. workforce's demand for science and engineering graduates is expected to double that of other occupations thereby leading to severe shortages (NSTA, 2004). Given the proportional increase in immigrant students in U.S. schools it seems both advantageous and necessary that they be well prepared along with native-born U.S. students to enter the fields of science and engineering. The major reform documents in science education stress the need for all students, including ELs, to have high quality science instruction, but do not give specific guidelines (Luykx, Lee, & Edwards, 2007). Hence, individual schools and school districts are left with finding the means to address the needs of their students. This has led to countless methods or programs which are sometimes piecemeal (DiCerbo, 2001).

Given the pressure on school districts to prepare ELs for high stakes assessments in English and content areas at as a low a cost as possible it seems CBI will continue to be seen as some form of panacea. Perhaps, from the perspective of many stakeholders, CBI accomplishes the primary mission of schools. Unfortunately, what it fails to do is use an additive approach to bilingualism that increases the number of bilingual and biliterate "Americans" instead of maintaining the monolingual status quo. Even more importantly, we may hasten the drop out of

some of our ELs while diminishing the cultural and linguistic heritage of others (Miniucci, 1996).

Yet any program that is especially designed for ELs is an improvement of the widely-used method of submersion or mainstreaming. In secondary schools across the United States putting ELs who still struggle with English in regular content classes is still a common practice especially in smaller metropolitan, suburban and rural areas that have in recent years' experienced rapid increases in this student population but do not yet have the resources or teachers to meet their needs (Echevarria, Short, & Powers, 2003). This of course is unfair to both the ELs and the unprepared teachers (Lee & Avalos, 2002).

ELs in the Classroom

Between the years of 1996 and 2001, Thomas and Collier (2002) investigated the various services five school districts in four major regions of the United States provided for their English Language Learners. The schools included two rural, two urban and one suburban school system. This mixed study produced qualitative and quantitative data from more than 210,000 students. Although 80 languages were represented in the student population, approximately 80% of the students spoke Spanish as their primary language and three of the five school districts provided data focused only on this majority language group.

A substantial quantity of data was collected in this longitudinal study. The researchers found that in general those districts that implemented programs designed for long-term goals of closing the achievement gap were more effective. On the other hand, districts that utilized quick, short-term programs were ineffective. Concerning groups of ELs, Thomas and Collier found

that those students whose parents refused ESL or bilingual services were more likely to show decreases in reading and mathematics by grade 5 and to drop out of school by 11th grade.

Students in 50-50 developmental bilingual programs fared better than any other group. This group was comprised of Hispanic students who were being taught in both Spanish and English. Their progress in reading was statistically better after four years of bilingual teaching than all other groups. They were followed by students in 90-10 dual language programs and then 90-10 developmental programs. These results indicate that when given sufficient time and education in the primary language, students fared better in reading English.

Similarly, when tested on reading in Spanish, all bilingual programs scored above the 60th percentile with many in the 70th. The results further indicated that when tested in Spanish, it was clear that their actual reading ability was above that of native English speakers. When their mathematics skills were tested through the medium of Spanish, all bilingual education students score above the 60th percentile, again significantly higher than the native English students' scores in mathematics. This trend was also seen in native English speakers participating in dual language programs. These students maintained their English, added a language and scored above the 50th percentile in all subject areas.

More general results of this study indicated that socioeconomics had an 11 – 12% effect on scores, but this effect was dwarfed by the effects of primary language schooling. So, the more schooling a student has had in their home country, the higher their achievement when in English only classes. However, students with interrupted schooling in their first language were typically below grade level when schooled in English only.

Other results pointed to the goals of school programs. Programs that focused on long-term achievement were more effective. For instance, although it initially appears that students who quickly move into mainstream English classes do better, this is only in the short term. As the students who participate in bilingual programs for three or four years reach middle and high school they outperform the first group. Unfortunately, even the best programs in practice only close half the achievement gap.

The implications of this study are immense. Thomas and Collier (2002) certainly demonstrate the significance of primary languages for almost all aspects of learning. It would seem that during this era of “English-only”, we are purposefully choosing less effective means of educating ELs. Also, as a result of No Child Left Behind, school districts feel a push to exit students from ESOL as quickly as possible in order to meet AYP or adequate yearly progress, but this is unlikely to benefit students in the long-term. This study demonstrates that even the best programs do not close the perceived achievement gap that exists between European Americans and ELs. Yet it also demonstrates that when schooled in Spanish, Hispanic EL’s showed better reading skills than their European American counterparts. This leads to other questions regarding the impact of language and other aspects of culture on the learning of students of color.

Although researchers in bilingualism and ESOL have stressed the significance of language, there are other issues which may also play a role. For instance, was Spanish valued or held in esteem in these schools with bilingual programs? Did this positively impact the students’ self-esteem? Were other aspects of culture recognized and valued? What was the role of the community and parents? What were the attitudes and perspectives of teachers in these school districts? These questions are significant because it is clear that a common practice in many

classrooms is not to acknowledge diversity or to include specific strategies for teaching ELs through the medium of English (Lee, 2009).

ELs and science (and other content classes)

An overview of research involving ELs and content classes indicates that science education has the greatest breadth of published articles when compared to those published in social studies or mathematics education. Yet it is also true that in the field of science education most of this research is at the elementary school level (Janzen, 2008). This is especially problematic when one considers that Capps et al. (as cited by Janzen, 2008) found that 7% of high school students are foreign-born immigrant whereas only 4% of elementary school students are foreign-born immigrants and 5% of students in K-12 are immigrants while 14% are children of immigrants. So, although there are many books and articles that are published that provide strategies or ideas about effective instruction of ELs, most are not based on empirical research, even fewer are dedicated to secondary science classes and virtually none focus on issues of efforts to maintain the L1 within the public-school system. Current efforts seem focused on the learning of English and content to the detriment of ELs' L1.

How has this impacted the teaching of content courses such as science in communities with new burgeoning immigrant populations? Many of these new bastions for immigrants have looked at other states and communities with historically large immigrant populations and chosen not to emulate them. A lack of bilingual teachers and a desire to immediately assimilate new immigrants in lieu of the educational models of other states, led to almost immediate mainstreaming (Harklau, 1994). In some ways, the concern regarding the failure of some

immigrants to assimilate along with the perceived failure of bilingual education programs led to poor educational choices for ELs (Genesee, Lindholm-Leary, Saunders & Christian, 2005; Huntington, 2004). This is in spite of research that clearly shows improved educational outcomes for students participating in bilingual education programs the longer they participated in such programs. But ultimately any well-structured specialized program for ELs serves the students better than mainstreaming or piecemeal programs (Genesee, Lindholm-Leary, Saunders & Christian, 2005; Huntington, 2004). Although the ELs may be served by the school's ESOL program, in middle and high schools they often have science, mathematics and social studies in so-called "regular classes". They are taught science largely by teachers who feel ill-equipped to teach ELs. The situation is perhaps even more of a concern in urban schools which face difficulties in recruiting science and special education teachers and who have twice as many ESL students as the national average (Settlage, 2004).

So, many ELs do not participate in class discussions or group assignments (Harklau, 1994). Yet, increasingly, science teachers are beginning to add sheltered techniques and other strategies to increase the comprehensibility of the content for ELs. With help from educators in linguistics, ESOL and languages, science education researchers are devising programs to improve the teaching and learning of science content for all students including ELs. In fact, many old pedagogical skills long thought to be effective are used again under this umbrella of increasing the success of ELs. Cooperative groupings, teaching metacognitive skills, using prior knowledge and others are again being hailed as effective teaching practices for all students (Dong, 2007).

Teacher Factors

Even as the nation's student population increases in cultural and linguistic diversity, the nation's teaching staff has grown more homogenous. Today, the nation's teachers are typically White, female, monolingual and middle class (Feistritzer, 2011). Many of these teachers exhibit conservative attitudes and express a wish to only teach students like themselves (Goodwin, 2002). The viewpoint of these conservatively-minded teachers is understandable when one considers that a difference in culture between teachers and students can create difficulties in both teaching and learning. It is also likely that these teachers are not confident in their ability to teach students of color or EL students (Settlage, 2004). For the most part these teachers are also immersed in the Western-style model of education which will clearly inform their pedagogy. This style of education is characterized by scientific ways of understanding the world, extracting information from print resources, abstract reasoning and individualism while the ELs may come from a less scientific view of the world and a collective orientation (Decapua & Marshall, 2011). However, since the immigrant population is likely to continue increasing, it is important that all teachers develop a more culturally sensitive and linguistically appropriate approach to classroom instruction (Dong, 2004). Given that culture has such a significant role in accessing students' prior learning, this is a critical concern in the teaching of ELs (Lee, 2005).

According to the National Commission on Teaching and America's Future (as cited in Menken & Antunez, 2001) teacher expertise is the "single most important factor" when predicting student achievement. Similarly, recent reform efforts in science education have identified the subject matter knowledge of teachers as being one significant determinant of teacher quality and teacher effectiveness in the classroom (Atwater & Butler, 2006). This is

particularly unfortunate in science education where so many teachers lack the depth of knowledge in the science disciplines (Lee, 2009). Without this deeper knowledge, teachers may hold some of the same misconceptions as their students and depend heavily on textbooks as opposed to stressing inquiry learning (Lee,2009).

Other attributes of teacher quality such as certification have been shown to have a positive impact on the effectiveness of science teachers. Each of these aspects of teacher expertise is thought to also measure the teacher's deep content knowledge. Given that 25% of newly hired teachers lack the qualifications for their particular position, the impact on all students, especially EL students may be alarming. According to the Education Trust (as cited in Menken & Antunez, 2001), the lack of an effective teacher in the classroom can lower a student's achievement by one full level over the course of a school year. Considering that EL students often attend urban schools which also have a greater number of teachers who have less experience or who hold provisional certification, the effect on these students' learning may be devastating (Goodwin, 2002). Given the disproportionate number of Latinos who "drop out" of high school and their relatively large numbers this is both a disservice to the Latino community and the future of this country (Zuniga, Olson, & Winter, 2005).

However, even if teachers have a strong academic background in their science content; they may not have the expertise of teaching the English language along with content. And if the current trend towards content teachers teaching ELs continues, then content teachers will also need to be language teachers (Stoddart et al., 2002). This ability to integrate language instruction with science instruction is still in the nascent stages. In the meantime, ELs in urban, rural and

even suburban districts are put in a position of “potential failure” due to an inability to access the content through the medium of the English language (Lee, 2005).

So even as the need for teacher expertise in science has yet to be realized, we find that in order to effectively teach this nation’s diverse student population more expertise is needed. Not only must teachers have deep content knowledge, be adept at sound pedagogical skills, but also exhibit expertise in teaching ELs. This will require more training on the part of teachers and more planning and implementation on the part of schools and districts.

Given the increasing number of EL students being served by mainstream teachers, it is imperative that a better understanding of these teachers’ attitudes towards ELs and their beliefs be ascertained. Bryan and Atwater (2002) recognized the importance of teachers examining their own beliefs about students of different backgrounds. For as they stated, “teacher’s beliefs have an impact on the quality of science learning occurring in classrooms”. Sadly, these teachers may not even recognize that their own stereotypes of students may impact student learning because their beliefs and attitudes are unexamined.

Regarding teacher attitudes and ELs, Reeves (2006) attempted to provide more information. She also considered teacher attitudes towards not only EL inclusion but also modifying assignments, professional development, and perceptions of second language acquisition. The original research questions were based on an analysis of a study of teacher experiences with EL inclusion and consisted of a 38-item survey of teacher attitudes and perceptions and 4 case studies of content-teachers. The research questions guiding this study were the following: what are teacher attitudes toward EL inclusion in mainstream classes; teacher attitudes toward the

modification of coursework for ELs; teacher attitudes toward ESL professional development; and teacher perceptions of second-language acquisition process.

In a mid-sized city school district of 12 high schools located in the southeastern, United States with only 1.5% of ELs, Reeves (2006) chose the four high schools with the largest population of ELs to focus on for the purposes of this study. She then asked all subject-area teachers from those schools to participate. 91% of the surveys distributed in faculty meetings were returned. After eliminating two surveys completed by non-subject area teachers, she had 279 surveys to analyze.

Regarding demographic information, Reeves determined that 77.8% of the participants stated that they had experienced EL inclusion; 15.1% had not taught ELs and 7.2% did not respond to the question. Perhaps, even more insightful, 90.3% of the participants indicated that they had received no specialized professional development for teaching ELs. The results of the actual survey instrument indicated that participants slightly agreed that they had a welcoming attitude towards ELs. Most, 75%, reported that inclusion of ELs created a positive educational atmosphere in their classrooms yet 40% believed that not all students benefited from inclusion of ELs. Given the discrepancy in attitudes towards EL inclusion and teaching them in class, Reeves suggested that a degree of socially acceptable answers may have been in effect. Even though the survey was anonymous, the participants were aware that the researcher was pursuing a Ph.D. in ESL.

Concerning mainstreaming, 75% agreed or strongly agreed with the statement that ELs should not be mainstreamed until a minimum level of English proficiency. Similarly, 70% stated that they “did not have enough time to deal with the needs of EL students”. Teachers were tolerant

towards some coursework modification. But they disagreed that simplifying or lessening the coursework for ELs was good practice. Yet, more than 80% thought it good practice to allow ELs more time for assignments. A slight majority of the participants were unwilling to allow the effort of ELs to influence the grading procedures. It is commendable that teachers do not want “watered down” assignments and will allow extended time but they do not seem to understand work modified based on student’s language proficiency. This is likely due to a lack of training in working with ELs.

Regarding professional development, 82% of the participants perceived that they were not educated to work with ELs but they were ambivalent towards further education. In fact, 45% disagreed with the statement, “I am interested in receiving more training in working with ESL students”. Reeves suggested that although teachers need professional development, they don’t want it for any number of possible reasons: poor history of professional development, don’t see a need, don’t want to teach ELs. These results are aligned with other research indicating that even content teachers who have ESOL certification are unlikely to continue professional development (Lee, 2009).

The study also provided information regarding the place of English and second language learning. For instance, 82% of the participants supported the notion of making English the official language of the U.S, but only 39% thought the ELs should not use their native language at school. Major findings of this study regarded teacher perceptions of second language learning and the time necessary to master a language. Over 70% of the teachers thought that ELs should be able to acquire English in two years. This is disconcerting because teachers may begin to deem students lazy or unintelligent based on this misconception. It is well known in ESOL and

linguistic circles that only BICS or social language can be mastered in two years, CALP or academic language takes much longer to master (Cummins, 1980). Although science education has a great deal of research regarding ELs, much of this is at the elementary level and focused on those teachers in particular (Lee, 2005; Janzen, 2008; Lee, Maerten-Rivera, Buxton, Penfield, & Secada, 2009; Lee & Maerten-Rivera, 2012).

In their comparative study of immigrant and involuntary “minorities”, Gibson and Ogbu (1991) remind us of the deeper social complexities inherent in “minority” status and the considerable implications in education. Also of concern when considering teacher factors are societal views. For although the origins of today’s immigrants may have changed, some aspects of society have not. Although Gibson (1991) found that teachers are more likely to have positive attitudes towards immigrant “minority” students than involuntary “minorities”, there is concern regarding the high school drop-out rates among some EL student populations (Sheng, Sheng, & Anderson, 2011). This is especially of concern regarding Spanish-speaking ELs who representing the fastest growing group of ELs because some evidence suggests that those in the fastest growing populations are at higher risk of dropping out (Sheng, Sheng, & Anderson, 2011). Perhaps as a result of countless school systems being unprepared to meet the needs of this growing population and societal views, these students who typically have a greater optimism about their life chances and about the instrumental value of education may now begin to view school in the same frame as the involuntary minority groups (Gibson, 1991). It is then even more important that teachers are both culturally and emotionally responsive and that they demonstrate caring to their students (DeCapua & Marshall, 2011).

Situating the Ethic of Care in Moral Philosophy

Ethics is a branch of philosophy that examines human values and concerns how we should live and act (Stokes, 2005). The 18th century philosopher, Immanuel Kant took a duty based or deontological view of normative ethics. This stance can be summarized in the axiom “Act toward others in such a way as to meet obligations and avoid wrongdoing” (Rachels, 2003, p. NO). The actual behavior can be recognized as right or wrong and so man is obligated to choose right over wrong. The difference between right and wrong is known intuitively and recognized in religious texts and in common practice.

Kant also introduced the notions of hypothetical imperatives which are ethical obligations that arise from a particular goal or desire and the categorical imperative which states “Act in such a way that your actions could become a universal standard that others ought to obey”. Thus, one should live and act according to his highest principles. According to Kant, the principle is to be followed without exception for it is a universal law and as such it is absolute (Rachels, 2003; Stokes, 2005). This is even true when one does something “bad” in order to promote “good”; for instance, lying to save a person’s life. In Kant’s view simply doing one’s duty was sufficient because it is impossible to know all possible outcomes, thus a person who chooses “right” or in this case, not lying, is not morally responsible for the outcome. Yet one who chooses to lie, even for a supposed good, with a disastrous result is morally responsible. This rules-based thinking is based on duty or what we ought to do, rather than what we think might work.

An alternate view of normative ethics is ends-based which requires that one considers the dilemma and then decide, “What produces the greatest good for the greatest number?” This is utilitarianism and is associated with the English philosopher Jeremy Bentham and John Stuart

Mill but was initially proposed by David Hume in the 18th century (Rachels, 2003; Stokes, 2005). It involves forecasting outcomes. Philosophers consider this a form of consequentialism or a teleological principle. It focuses on the results of an action and not the motives behind the behavior or the rule that was followed to arrive at the conclusion. So, the fundamental idea of this theory is results oriented. By considering the greatest good, utilitarianism is not concerned with individual rights but does place limits on how the individual may be treated. Furthermore, John Stuart Mill stated that we must be “as strictly impartial as a disinterested and benevolent spectator” (Rachels, 2003, p. 168). So, utilitarianism diminishes our personal relationships. It is the original theory or Act utilitarianism that undermines personal relationships and individual rights in that it stresses that each individual action should be considered in reference to the Principle of Utility. So, the consequences of a particular action need to be evaluated on its own merits. The new version or Rule utilitarianism, asserts that one should follow whatever rule that will bring about the greatest good, makes room for individual rights and personal relationships. For instance, rules regarding loyalty and individuals’ rights should be accepted because in general practice they would promote the greatest good in society.

Both the Kantian and the rule-base utilitarian theories of ethics rest on laws. Held (2006) considers them to both come from more of an ethic of Justice perspective. So, after centuries of “ought” and “duty” in normative ethics, the 1960s saw a return to the ancient Greek concept of virtues. In answer to the question, “What makes an act right?” the virtue ethics would respond values or virtues determine the rightness of an act. This return to virtue identified with the Aristotelian view but further explicated the nature of the theory. So, whereas Aristotle indicated that virtues were habitual traits of character, the modern adherents desired to differentiate

between virtues and vices by adding "... that is good for a person to have" (Rachels, 2003; Stokes, 2005). Aristotle saw virtues poised between two extremes. So, a virtue is found midway between a vice of extremes and a vice of deficiency. Among these virtues are characteristics such as benevolence, fairness, patience, prudence, tolerance, loyalty, courage etc. (Rachels, 2003). Although the degree of significance of these virtues may differ somewhat across societies, the major virtues are not tied to a particular society but to the human condition. Virtue ethics appeal to our sense of partiality for friends and family since some virtues such as loyalty and friendliness require some partiality. The virtue ethics also appear more natural and appealing. A virtuous person whose virtue is compassion chooses to help a wounded person or animal not from a cold sense of duty but because through habituation they internalized its "rightness". One of the major appeals of the virtue ethics is its ability to account for moral motivation and partiality. There are virtues that lend themselves to impartiality such as beneficence and those that are clearly partial to friends and family such as loyalty. Yet, despite the advantages of virtue ethics, some have argued that it is incomplete. As a theory of ethics, it states that one should act virtuously and defines virtues, but what happens when there is a conflict between two possible virtues? Does one take precedence? Is there a rule? These are the questions that led some to conclude that virtue ethics is incomplete (Rachels, 2003). Still, it stands as a testament to the need of normative ethics to accommodate both the public and private lives.

The ethics of care does not belong to the virtue ethics but it is relational (Held, 2006; Noddings, 2005). It is the willingness to consult feelings and ultimately consider relationships that differentiates the ethics of care from utilitarianism, Kantian ethics, and virtue ethics. As a

theory of ethics, care is grounded in the theory of relational feminism. Nel Noddings' approach to ethics is in the tradition of psychologist Carol Gilligan, in that she acknowledges the differences in how men and women in western society view morality (Preissle, 2006; Noddings, 2001b, 2015). Noddings identifies the dominant male perspective as Logos. This is the voice of the masculine and it includes the notions of justice, fairness and justification. It is this voice that is valued in western society at-large as well as in the realm of moral philosophy (Noddings, 2001b, 2003). This justice ethic is "anchored in the individual, in his/her rights, duties and liberty" while care ethics are rooted in "women's experiences... and the maintenance of caring relations" (Noddings, 2015 p. 72). Because care ethics are so closely associated with women's experiences, Noddings reminds us of the difference between caring and caregiving. Caregiving is considered an activity that may or may not incorporate an ethic of care (Noddings, 2015).

According to Noddings (2003, 2005), ethical caring arises out of natural caring and it is based on relationships. In these relationships, there is the one-caring and the cared-for. Each of us has been cared-for to some degree in our lives and it is this natural caring that we implicitly identify as good. One of the outcomes of experiencing this natural caring is the formation of the ethical self. The 'ethical self' acts as a bridge between our actual self and the ethical ideal. This ethical ideal is a realistic view of ourselves as one-caring; a role which natural-caring teaches us is "good".

Ethical caring like natural caring involves wanting what is best for the one cared-for. Caring for the other requires that the one-caring displaces her self-interest, for that period of time, in order to care for the other. In the case of both Kantian ethics and rule-utilitarianism, rules or what one "ought" to do prevails. Both are more in line with the western male moral

perspective of fairness and justice. They provide rules or standards that one should follow in order to maintain this fairness or justice. The two theories do not recognize impartiality or a sense of morality that appeals to the emotions or intuition. What each of these offers is a view of moral theory that applies a standard to be followed by each individual. In the case of Kantian ethics, man knows right from wrong and must choose right for it is every rational being's duty.

Rule-utilitarianism on the other hand, is not absolute in that it considers the greater good. This is largely based on the context. Here, one should follow the rule which promotes the greatest good. Although this theory allows room for personal relationships and partiality, the emphasis is still on the greatest good and a somewhat cold sense of duty.

With the reappearance of the virtue ethics, a theory that looks to the individual's character, not absolute laws or the greatest common good, came to fruition. The virtue ethics are appealing because a "good" person seems to be good by choice not because they are following a rule. The virtuous person acts because this is who they are or their disposition (Held, 2006).

In a similar vein the ethics of care is about the people involved, as well. It is the only one of the discussed theories of ethics that fully acknowledges relationships between people. It does not impose the cold duty of Kant or rule-based utilitarianism. It goes beyond rule utilitarianism's flirtation with partiality and acknowledgement of personal relationships. It also goes beyond virtue ethics. Whereas virtue ethics views a person as virtuous because they habitually act in a certain manner, the ethics of care goes further (Held, 2006). The ethics of care involves the formation of an ideal self, but the individual chooses in each caring relation how best to proceed. The ethics of care is deeply contextualized and nuanced (Noddings, 2003). This form of ethics is actually based in relationships. It is not simply "open" to the concept of relationships such as

rule utilitarianism but it is steeped in the relationship between the one-caring and the one cared-for. The ethics of care does not exist outside of relationships whereas the virtue of care can. It is an ethic that arises out of natural caring and as such is perhaps imbued with a strength not considered necessary in the normative ethics of Logos (Noddings, 2003, 2012).

Attributes of The Ethic of Care

A caring relation involves two persons; there is the one-caring and the cared-for. The one-caring has an ethical self which acts as bridge between her actual self and the ethical ideal (Noddings, 2001a, 2003,2012). Natural caring has taught the one-caring that this ethical ideal (realistic view of one caring) is good. So, by acting on this ethical ideal the one-caring displaces her own self-interest and is receptive and attentive to the one cared-for.

The one-caring is substituting caring as relation for care as a virtue if her desire is simply to do what is best in order to be fair (Noddings, 2003). However, care as relation requires attentiveness, sharing wisdom or knowledge, demonstrating interest and respect in the cared-for's life. Caring as a relation will require more time and effort on the part of the one-caring and will also require that the one cared-for perceives that she has been cared for by the one-caring. This does not preclude the cared-for from having an ethical self or ideal for in the best circumstances; the cared-for would also develop an ethical self and become one-caring (Noddings, 2003, 2012).

Perhaps, many teachers are described as caring. Often this means the teacher exhibits the virtue of care, fairness or friendliness. In this sense, they are truly caring teachers from a virtue ethics perspective in the same way that a person who never lies is considered honest. However,

a caring relation requires more than the habit of caring but an actual engrossment and motivational displacement on the part of the teacher if she is to be the one-caring (Noddings, 2003). A teacher who cares in this manner is not just considering the common good, duty or virtue but the individual student and her needs. This is significant because if a teacher is truly building caring relations they will endeavor to meet both the assumed and expressed needs of the students. Good teachers can likely determine the assumed needs of students but a relation is required to find out what needs the students express. Of course caring teachers will need to continually develop competence in different areas of knowledge and skills in order to be able to meet the varied student needs (Noddings, 2010). In fact, Noddings, has stated that not just needs but the interests of the students should be addressed as well (Noddings, 1995, 2003, 2005, 2012). A teacher who regards the ethic of care undergirds their pedagogy and interaction with students with this ethic. The ethic of care is not “on top of all other demands” that teachers need to do but it provides a framework or foundation for their teaching (Noddings, 2012).

Still, determining if a teacher is acting from an ethic of care or care as a virtue can be challenging. One major distinction between these two views of caring is the focus. In care as a virtue, the focus is on being a caring person. In the ethic of care, the focus is on establishing a relation with the cared-for. Whereas a teacher acting from the virtue of care might do what she thinks is best for the student, a teacher acting from an ethic of care will build a caring relation with the student and in their interactions try to see things from the student’s perspective. This does not mean simply imagining what the teacher would want if she were the student but truly receiving the student as an individual with their own needs, wants and interests (Noddings, 2003, 2010, 2012).

However simply attending to the students is insufficient (Noddings, 2003, 2010). Teachers needing to demonstrate engrossment and motivational displacement in their interactions. So, an observer should see the teacher attending to the student when a question is asked and not easily distracted but fully investing in the student during that interaction. Noddings suggests that the main goal of the one-caring is to “preserve and enhance” caring in oneself and in others (Noddings, 2003, p. 172). So, a teacher acting from an ethic of care will want to nurture caring in her students. This will require that she dialogues with students; models caring; confirms students; and gives opportunities for the student to practice caring (Noddings, 2003, 2010).

A caring teacher needs to dialogue with students in an open and respectful manner because the teacher sees the student as moral being whose ethical self needs to be nurtured (Noddings, 2003). Inherent in dialogue is the building of a relationship grounded in respect and trust. Although the teacher may have wisdom to share, she also listens and respects the student’s opinions and perspectives (Noddings, 2003). In dialoguing with students, teachers have an opportunity to establish caring relationships that will likely be necessary for ensuring a measure academic achievement (Noddings, 1995). Noddings anticipates, however, that teachers will likely face conflicts at times regarding “putting aside the assumed need to learn a specific aspect of subject matter and address the expressed need of the student” (2015, p. 772). So, if a student needs emotional support or some moral direction it may supersede the subject matter at hand (2015).

Because a caring teacher aims to enhance caring in her students, she will model caring in her classroom and interactions. As students observe their teacher or interacts with her they are learning what it means to care. Noddings provides an example of an issue of bullying in which a

caring teacher cares for both the perpetrator and the victim and must convey this in helping to resolve the issue. Students need to know that even when they fail at caring that they are not a lost cause and teachers can help them by modeling care in each situation (Noddings, 2010)

In addition to the teacher building a relationship with the individual student, she should give the student an opportunity to practice caring himself. This is nurtured in classrooms in which students are allowed to work cooperatively and support each other (Noddings, 2003, 2010).

Here the emphasis is not just on the learning outcomes but also the development of the student as a caring being. Students would also be encouraged to build relationships with one another that are based on care. Noddings acknowledges that some of the original ideals in cooperative grouping have been lost and sometimes group work is built around competition and not on working together to accomplish a common task (Noddings, 2010). She recognizes that competition plays an important role in our global society but it should not be to the exclusion of teaching students the importance of cooperation (Noddings, 2012).

Another aspect of the ethic of care observable in the classroom setting is confirmation. Teachers confirm students by attributing the best possible (realistic) motives for their actions. This provides an attainable, ideal image of himself that is much better than what he has demonstrated by his actions (Noddings, 2003 p. 193) Noddings describes the significance of confirmation as an integral part of dialogue and practice.

Confirmation, the loveliest of human functions depends upon and interacts with dialogue and practice. I cannot confirm a child unless I talk with him and engage in cooperative practice with him. It is not confirmation to pronounce someone better than he is at something if he has no inclination toward that something or cannot achieve the goals we expect of him. Simply to

have high expectations for our students in general is not confirmation.... I must receive the other – see clearly what he has actually done, and receive the feelings with which it was done. Out of what may be a mixture of feelings and motives, I choose the best to attribute to him. Thus, we are realistic; we do not hide what is there. But we are also idealistic... (Noddings, 2003, p.196.)

According to Noddings, confirmation helps to nurture the student's ethical ideal. In a classroom setting this might take the form of a student responding to a question from the teacher and instead of the teacher immediately correcting the student, she expresses what is correct or insightful about the student's response. In the case of a bully a teacher might attribute the student's behavior to wanting to show themselves to be strong or smart but encourages them to demonstrate this in an acceptable manner. The aim of the teacher is to point the student towards his best self, intellectually and ethically (Noddings, 1995, 2003, 2010).

Ultimately, whether or not caring has occurred is determined by the response or lack thereof from the cared-for or student. Noddings suggests that this recognition by the cared-for is a necessary and unique aspect of the ethic of care (Noddings, 2003, 2010). Because it is a relation, it involves two persons and a caring relation cannot be established without the recognition of caring on the part of the student. This does not require that the student expresses gratitude to the teacher or supplies a gift but responds in a manner indicative of having recognized or received the caring. This response completes the relation and is "confirmatory evidence that the teacher is on the right track" (Noddings, 2010 p.391). The lack of this "reinforcing response" over time could lead to exhaustion and burnout for teachers (Noddings, 2010, p. 392). The response of the student will vary with the situation but may take a number

of forms including the following: cooperation, effort, questions, comments, or smile and nod (Noddings, 2003 p.181, 2012).

The Ethic of Care in Secondary Classrooms

Although the research on caring in secondary schools is sparse, there is some research that supports the concept of caring in secondary classrooms. Muller (2001) found that much like young children who first enter school need to be provided encouragement, patience and kindness as they become acclimated to the public-school system; perhaps students from different ethnic, economic or language backgrounds from the mainstream also need teachers who operate from an ethic of care. If teaching is sometimes an emotionally taxing profession, then teachers of immigrant students or in high diversity schools are perhaps greatly taxed emotionally. In a study of teacher burnout in Israeli primary and secondary schools, Tatar and Horenzczyk (2003) found that teachers in high diversity schools in terms of ethnicity and language were significantly more likely to find it difficult to establish relationships with students. This is troubling given other researchers views in regards to students living along the U.S.-Mexico border. Lopez, Gonzalez, and Fierro argue that teachers can stimulate motivation and engagement by creating “caring and emancipatory spaces” for students (as cited in Schulte, et.al., 2008). In their study, Tatar and Horenzczyk (2003) also indicated that schools with assimilationist views regarding immigrants showed even higher teacher burnout rates. Initially, the assimilation view incorporating an ethic of justice might seem easier and more direct, but perhaps in the long term it is the least effective means of teaching. So, what initially appears more laborious – establishing relationships and recognizing students as whole persons-- might prove to be both more effective for students and teachers alike.

In a study of undergraduate and graduate students, Schulte, et. al. (2008) sought to determine their views of effective high school teachers. Latino students made up the majority of the studies participants and the overall age range for all participants was from 17 to 58 with an average age of 29.97 years. Over 35% of the students were the first in their family to attend college and they represented a diversity of majors. Knowledge of subject matter and pedagogy was emphasized by more than 27% of them while patience and caring followed with 23.7% and 19.0% respectively. There were interesting disparities along gender lines, however. Males ranked the most important characteristic of an effective secondary teacher as being 'knowledgeable' at 39.2%. This was followed by patience 21.6%, teachers well prepared 18.4% and tied for third was both caring and communication 16.8% each. The females had a tie for first between knowledgeable and patience 24.3%. These were followed by caring 19.6% and being understanding 17.8%. This disparity was also seen across ethnicities. White students were more likely to rank knowledge first 38.8% followed by caring 23.7% and communication 19.4%. Latino students also ranked 'patience' first but with only 25.4% followed by "knowledgeable" 23.8% and caring 17.4%.

Although the results of Schulte et al. (2008) reflect the thoughts of college students, it also gives an indication of what students a few years removed from the secondary school system deem necessary attributes for effective secondary teachers. One view of these results might seem to focus on the fact they were ostensibly high school graduates who pursued higher learning whereas the perspective of those who did not complete high school or go on to college are not reflected in this study. Yet the disparity found among ethnic groups and along gender lines is significant. Simply being knowledgeable of the subject matter and pedagogy was not the

most significant attribute of an effective secondary school teacher for Latino students or female students. Instead these groups chose an affective attribute – patience; one wonders what the results of a similar study done amongst their high school classmates who dropped out might reveal. Similarly, White students ranked caring as the second most important characteristic of an effective high school teacher.

According to Cassidy and Bates (2005), the students who most need care such as ELs and the poor are less likely have these kinds of teachers. Given their youth, it probably seems easier to care for or about children in elementary school at least when compared to the emerging adulthood of adolescence. It is for this reason that simply having teachers with dispositions for caring is not sufficient. Instead what is necessary is educators who practice an ethic of caring. An ethic of care is based on establishing relationships such as teacher-student and student-student. By forming relationships and garnering mutual trust, teachers help to provide a classroom environment conducive to learning for all students. Moreover, an ethic of care is not based on the adorability of a student. Perhaps, primary schools are more conducive to an ethic of care by their very structure of one teacher and 20 to 30 students throughout the school day. Middle and high schools on the other hand are more transitory with one teacher seeing 100 to 150 students a day or more (Vogt, 2002).

So, what is needed is not mere sentimentality because caring involves overt actions that are effectual. Students dealing with the transition from one country or culture to another need some of the same patience and kindness that we currently find necessary in elementary schools. This is not to insinuate that the students are less mature than their peers or somehow “needy”, they may simply be more open to learning, participating and engaging in class activities when

relationships are established (Battistich, et al, 1997). Of course, this will take work on the part of the teacher because of the different perceptions of care. Although, some aspects of caring may be near universal, there are likely cultural and familial norms. If true caring relationships are to be established, the cared-for must recognize that caring is occurring (Noddings, 2003). It is not enough to simply feel affection for a student but their needs must be perceived and acted upon (Cassidy & Bates, 2005).

Yet this may prove to be more difficult for some teachers given that teachers often prefer to teach in school settings similar to that in which they were educated and there may be a cultural mismatch or cultural (dis)synchronization (Tatar & Horenczyk, 2003). Of even more concern however, is when these teachers place all their focus on what they consider caring and relinquish their primary duty of contributing to their students' cognitive growth (Tatar & Horenczyk, 2003). The attitude of teachers of "at-risk", poor, ELs and students of color cannot be that of the "babysitters" or true caring is not occurring and certainly not an ethic of care which seeks to meet the needs of students (Noddings, 2003; Ben-Peretz, Mendelson & Kron, 2003)). Yet, it is possible that a caring teacher at times may find it necessary to use class time to develop a caring and trusting environment (Noddings, 2005, 2012).

In regards to the needs of other ethnic groups, research suggests that since some African Americans place more value on interdependence, cooperation and "groupness", then establishing relationships based on trust and mutual respect would provide a classroom environment more conducive to their learning (Hayes, Ryan, & Zseller, 1994; Carnes, 1998). An ethic of care on the part of teachers might be laborious given the preeminence of the pressured communications that arise from the emphasis on standardized testing (Hayes, Ryan, & Zseller, 1994). Yet the

positive effect of caring classrooms on students' academic effort and social growth has been strongly presented in the literature (Ferreira & Bosworth, 2001; Cassidy & Bates, 2005). In their study of the ethic of care in middle school science classrooms, Van Sickle and Spector (1996) may have provided one example of how this can be accomplished. Their study focused on building relationships between teacher, student and content. The teachers who participated in the study were perceived by their students as caring. They used cooperative learning techniques and other strategies to build relationships teacher-student, student-student and teacher-student- content. It appears that they maintained a strong focus on science content while balancing the needs of their students.

The caring and related activities exhibited by teachers are asserted by some to be “non-work” because there is no economic benefit (Forester, 2005). Still, just as teaching requires emotional work so caring teachers may have an added burden of emotional labor. Seeking to understand different perspectives and developing empathy is requisite for many professions (Isenbarger & Zembylas, 2006). This may often be considered only from a negative view point connected to and job dissatisfaction. But, in their case study of a caring teacher, Isenbarger and Zembylas (2006) suggest that the emotional labor of caring teachers may also have positive aspects related to teacher impact, commitment and professional satisfaction. O'Connor's (2008) work further explicates the positive aspects of caring as emotional labor; her research suggests that this emotional aspect of teaching is often given as a justification for remaining in the profession by caring teachers. This is in spite of the same teachers' comments on how exhausting they sometimes find teaching.

The ethic of care presents to the individual teacher what at once looks like another “hoop to jump through” or a “warm fuzzy” which cannot be analyzed, but in essence it is already rooted in the concept of teaching which is still thought to be a “caring profession” (Hargreaves & Goodson as cited in O’Connor, 2008; Webb & Blond,1995). The ethic of care is also a useful framework for gaining more understanding of teachers’ views on the nature of their work (Vogt, 2002). Of course, how one defines or conceptualizes care will have a bearing on how teachers perceive it in relation to their professional work. Aspects of the ethic of care are highly subjective in that it is at the juncture of private and public life. Still an ethic of care goes beyond simple definitions and points to something more substantive and enduring. For both teachers who are considered caring and those who are not, it provides a perspective that is both professional and relational. For those who are morally oriented towards an ethic of justice, it is interesting to note that regardless of ethnicity or gender, when people are emotionally involved in a situation, we orient towards an ethic of care (Vogt, 2002). Certainly, many teachers are not given to mothering or parenting their students, but they will recognize that there are other ways to build relationships based on showing commitment and concern or any number of behaviors on the part of the teacher that show students that they truly care about them.

Teaching has been aptly described as a “profoundly complex endeavor” (Goldberg, 2002 p. 74). Today’s teachers have countless concerns and for many this now includes how best to teach students from different ethnic and language backgrounds. States and school systems have considered various ways of addressing these challenges each demonstrating different levels of success. Ultimately, whatever programs, policies or professional development that is put into place must interface with teachers and students. There are many teacher factors that may impact

student learning and performance. One which is now making in-roads in educational research is the ethic of care. Unfortunately, the use of the ethic of care as it applies to the learning of science is minimal at present. Still, the relationships between teachers and students have been shown to be a factor in student performance in science classes (Van Sickle & Spector, 1996). Given the increase in the immigrant population in the United States and concerns about STEM fields such as science, regarding this unique group of young people perhaps more consideration should be given to the ethic of care which is based not purely on sentiment or “warm fuzzy” feelings but a deliberate conscious choice to be moral as it applies to helping ELs reach their potential in U.S. classrooms.

Summary

This chapter provides a review of the literature as it relates to ELs, the learning of science and Noddings’ ethic of care. EL students represent a growing population in the public schools of the United States over the last few decades. Many teachers feel additional pressure to prepare ELs for standardized tests. Although different forms of bilingual education, ESOL programs and piece meal programs have been used with varying degrees of success, many schools still have a “sink or swim” approach to this population of students. Very little research has focused on the ethic of care and its impact on the learning of science. This study seeks to fill a gap in the current literature as it relates to using the ethic of care to undergird the teaching of science to ELs in middle school.

CHAPTER 3

METHODOLOGY

Introduction

How do middle school science teachers of ELs who are deemed to work well with this population of students express caring in their teaching? How do these expressions align with an ethic of care? Do middle school ELs perceive these as expressions of caring? These are the questions that underpin this study. A teacher demonstrating an ethic of care is not merely relying on sentiment, but seeks to act in a deliberate and moral way to benefit each student (Noddings, 2003; Goldstein, 2002). This does not rest on a particular teacher's personality trait but a conscious and intentional act of will. It does not preclude the "warm, fuzzy" feelings often associated with natural caring but it also does not rest on them. The ethic of care comprises both affect and volition (Goldstein, 2002).

Conceptual Framework

Noddings's ethic of care provides a conceptual framework for this study of two middle school science teachers who were deemed to work well with the EL population of students. Using Noddings's ethic of care, this study sought to determine if and how teachers and EL students believe care is demonstrated in their middle school science classes. Of concern was whether or not teachers established relations with the students. Whether or not the teachers demonstrated an ethic of care would in part be defined by their engrossment with their students. Were there any signs of motivational displacement? A teacher operating from an ethic of care should attend to

the student accepting them fully for who they are and at times demonstrate motivational displacement. Again, the teacher would choose in her interactions with students to put the student's interest or need first (Noddings, 2003, 2005). Similarly, were their indications of the other aspects of a caring ethic, namely dialogue, modeling, practice and confirmation? A difficulty inherent in trying to determine if caring is occurring is recognizing that it is not a checklist of particular behaviors but considering the interactions that occurred and then looking at them through an ethic of care lens while also relying on the perspective of both teachers and students.

It is this conception of the ethic of care that is considered in these two case studies of two middle school science teachers of ELs. Each case is framed as an instrumental case study in that it is intended to provide further insight into the role of the ethic of care in relation to teaching middle school science to ELs (Stake, 1994). One teacher is new to the profession and teaches life science to seventh graders. The second teacher has 10 years of experience and teaches physical science to eighth graders. This study is framed as a multiple case study because the uniqueness of each teacher and their experiences seemingly bound them into separate cases. Both teachers are considered to be caring and "good" with ELs by their peers and immediate supervisors. So, in this study each teacher's classroom and what was observed and gleaned from interviews and student questionnaires is considered as an instrumental case study.

Subjectivity Statement

How does a student's culture and language impact teaching and learning in U.S. public schools? This is the question that attracted me to graduate studies in education. For the last 19 years, I have taught in a school system that has a substantially diverse immigrant population. I

have heard the concerns and sometimes complaints voiced by teachers regarding the ever-increasing EL population. Much of this is the appropriate concern raised by teachers who feel unprepared and inadequately educated to meet the needs of this population. However, there has sometimes been a more political slant in which the sentiments expressed amount to “Why are they here anyway?” Yet, as a result of the 1982 Supreme Court ruling – *Plyer v Doe*, teachers are required to teach every student regardless of nationality or legal status.

So, within these constraints and varying political beliefs, what is going on in the classroom? According to Symbolic Interactionism, “people act toward things based on the meaning those things have for them” (Blumer, 1969, p.2). Also, these meanings are derived from social interaction and modified through interpretation” (Blumer, 1969). So, notions of what exemplifies caring teaching may have different meanings for EL students and their teachers. Because of my own experiences as a teacher in public schools, I wonder if teachers who experience success with EL students are operating from an ethic of care which informs their practice.

Like many teachers, today, I have often felt overwhelmed by the pressures of high stakes testing especially as it relates to EL students. The need to teach science content to students still grappling with the basics of the English language sometimes may seem unattainable. Additionally, teachers often transfer external pressures on to students, the students may begin to feel inadequate or dumb (Kohn, 1999). As Kohn (1999, p. 96) stated, “...when they (teachers) feel pressured to produce results, they in turn tend to pressure their students”. Furthermore, this pressure tends to have the opposite effect than what is desired. Students often do worse under these conditions (1999, p. 96).

I know the difficulty in teaching students who do not speak or understand English. Trying to ensure that each student feels accepted and welcomed is perhaps the first hurdle for teachers. Next the teachers must determine just what the student does and does not understand. This process can be both fluid and frustrating.

After I was reintroduced to Nodding's work during my first year of graduate school, I began to reexamine my own experiences with this group of students and those of coworkers. I began to wonder what role if any did caring have on some teachers' success with this group of students. It has been difficult for me and others to move away from this tacit understanding of caring and to view it as an ethic with the power to influence and undergird the actual pedagogical skills and classroom management that teachers employ. I know what it is to feel that you are on the verge of "burning out" and many of my respected colleagues and I acknowledge the necessity of summer and winter breaks for some form of restoration of our energies and resources. I have since determined; however, that this view of caring as specifically an emotion of the "gentle smiles and warm hugs" variety cannot be sustained by most teachers and may actually have the opposite of the desired effect (Goldstein, 2002). Operating from this view of what it means to be caring may lead to burnout and ineffectiveness as a teacher (Maslach, 2003; Tepper, 2007).

Study Approval Process

The process of gaining access to the school involved two layers of permissions. I was urged by members of my committee to access the online UGA Institutional Review Board (IRB) site immediately to both become acquainted with it and to begin the necessary preparations. After setting up my study in the online IRB site, I began to use the documents provided and follow the guiding instructions to prepare letters, permission slips for teachers, students, and parent permission slips using the IRB templates. Following the IRB guidelines, I was also alerted that I

needed to script any communication between myself, the teachers, and their students for the purposes of recruitment and include it in my application process. So the emails and letters that I would distribute were finalized and uploaded along with all the other required documents. In the meantime, I completed my proposal and submitted it to the Flowers School district. I was able to use some of the materials generated from the IRB site in the application to the district. The district approval was granted after a few months prior to the UGA IRB approval. I was able to indicate in the UGA IRB site that I had applied for district approval for my study and uploaded the Flowers School District approval to the UGA IRB site upon receipt of the approval letter granting me access to Blossom Middle School. The UGA IRB process was completed once my major professor, Dr. Mary Atwater, submitted the study for approval. A few clarifications had to be made before the IRB approved the study and I was required to complete a pilot study because my interview protocols and questionnaires were self-designed. I presented a copy of the approval letter from the district to the administrative office at Blossom Middle School (pseudonym) and each teacher participant was given a copy when I began the study.

The UGA IRB's requirement that I conduct a pilot study, required that I use one of the life science teachers that I initially had lined up for the actual study. This also delayed the start of the actual study by a semester. After completing the pilot study and analyzing the data, I made some changes to the questionnaire and student interview questions. I believe this proved beneficial because the pilot study students were intermediate ELs whereas the two study groups were considered higher and lower level ELs based on their English literacy skills. I think that the intermediate group of students helped me to word the questionnaire and interview protocol in a manner that made it accessible to both groups of students in the study.

After finalizing the Pilot study and making the minor changes to the interview protocols and

questionnaire, I was able to finalize the requirements of the IRB and began looking for another teacher for the study. I reached out to the District's ESOL program and was apprised of another teacher at the same school who was considered a science teacher who had experienced success in working with the EL population.

Description of Context

The Setting. The Flowers School district (pseudonym) is a large, urban district found in a large Southeastern U.S. metropolitan area. Over the last two decades the district has changed from majority European American to a diverse community with large Latino, African American and Asian populations. The district prides itself on having maintained high academic standards throughout this transition and it has been recognized nationally as providing a good educational environment even though there are a number Title I schools, with a majority of students receiving free or reduced lunch. On almost every standardized measure the district exceeds the state and often the National average. Within the district there are schools that are majority African American, others are majority Latino and still others are largely European American. Still, most schools are almost balanced between these groups.

The District's ELL program uses an ESOL pull out format. EL students have their language arts classes separate from the mainstream Language arts classes but attend the other subject area classes with all other students. A few high schools in the district have introduced the SIOP model or some variation thereof in order to ensure that EL students entering high schools with low English skills could learn English along with the content classes using sheltered techniques. The district-wide expectation is that ESOL teachers and content teachers will work together to insure that the needs of the EL student population is met. The

district's ESOL program also has a stated goal of helping students to maintain their L1, or primary language.

These goals and expectations are not known throughout all schools, however, unless the school's faculty has participated in the ESOL program's school-wide professional development course.

This study took place in a middle school with a very diverse population, Blossom Middle (pseudonym). According to the most recent school accountability report, the school has over 2000 students in grades 6 through 8. The racial and ethnic makeup of the school is 35% Latino, 27% African American, 18% European American, 15% Asian and over 4% are multiracial [State, 2016]. The school serves a population in which 63% of the students are on free or reduced lunch and over 10% of its students are served by the ESOL program. The 10% does not reflect those whose parents opted out of the ESOL program or those who have exited out of the program recently.

Regarding standardized tests and other measures such as eighth grade promotion, Blossom Middle is an average middle school within the district but exceeds the average middle school in the state. When the school's scores are adjusted for poverty level, Blossom middle outperforms their predictors. Like several other middle schools in the district, Blossom middle is a PBIS,

Positive Behavior Intervention & Supports, school in which students' good behavior leads to monitored free time on certain days along with other positive rewards.

Selection of Participants

The teacher participants in this study included one seventh grade life science teacher and one eighth grade physical science teacher. Initially the plan was to use two life science teachers

because it is an area of expertise for the researcher and would likely help in evaluating the effectiveness of the teaching and learning. However, the need for a pilot study and outside teacher commitments required that one of the life science teachers be used in the pilot study. The participants represented a purposive sampling of teachers deemed to work well with the EL population of students by their superiors, namely administration and the science curriculum lead. For each case, the study took place over the course of a 2 – 4-week unit.

For the eighth grade science teacher, Iris, I chose to interview students in her third period because those students were able to communicate with me in English. Although this class had fewer EL students, all seven quickly returned both the parental permission slips and their own permission slips to participate in the study. They also all turned in their questionnaires. Four of these seven students were interviewed based on their ability to do so and their response to the questionnaire. The original plan was to interview students who believed their teacher was caring and those who did not. However, all of her students indicated that she was caring but two were more neutral in their appraisal scoring her 4 versus 5 - the highest rating on the scale. These two and two other students, who were willing to be interviewed and who turned in the additional parental permission paper work, were then interviewed for 20 to 30 minutes. Despite being so new to speaking in English, their efforts to explain themselves were truly commendable.

There was some difficulty in setting up time to observe and meet with the seventh grade science teacher, Calla. She had several scheduling conflicts which delayed my observations of her class. The initial interview was in October but the observations and second interviews took place in early May. Prior to my observing her classes in May, I met with Calla for 30 minutes to review what we had covered in our first interview. Her thoughts and opinions had not changed

but she did have a few new stories to share about her interactions with students. The students from her fourth period were chosen for this study because it had more EL students and she preferred this class for the study. It took a few weeks before Calla's students returned their permission slips and I was able to give them the questionnaire. After, I collected the questionnaires and reviewed them, I handed out the permission slips for interviews. Again, this took a few more days beyond the week that I had planned for initially. Eventually I was able to interview three of the four students in Calla's class because three of the four had returned the requisite permission slip. All three of Calla's student in this interview group considered her to be a caring teacher. I interviewed them for 20 to 30 minutes on their "free day". I was concerned that this might be unfair to the students but they shared that they weren't doing anything and seemed surprised that I was concerned about protecting their free time.

Data Collection

The design of this research project was somewhat interactive in the sense that it was ongoing and systemic (Maxwell, 2005). After initial contact with teachers, students were given consent forms to have signed by a parent in order to have them complete a questionnaire and possibly be interviewed. Both teachers were interviewed on two different occasions: prior to beginning the unit and at the conclusion of the unit. I used interview protocols for semi-structured interviews (see Appendices A and B). The teachers' and students' consents were obtained in order to record the interviews on audiotape. I also observed each teacher on two days. Field notes were taken on those days of observations which occurred at the beginning and middle of the units. At the beginning of the unit, the students were given a questionnaire (see Appendix C) to determine their thoughts about caring teachers and whether or not their teacher demonstrated

caring in their science class. After analyzing the questionnaire responses and determining which students had turned in completed forms, a purposive sampling of students was made. The objective was to find four EL students (two males and two females) who viewed their teacher as caring and four EL students (two males and two females) who did not view their teacher as caring for an interview. However, all of the 12 students who returned the forms (seven from one teacher and five from another) identified their teachers as caring. The degree to which students saw their teachers as caring was taken into consideration when considering whom to interview. So, both students who rated their teachers as a four on a 1-5 point Likert scale were chosen for interviews given that the other 10 students ranked their teachers at five. The majority of the 12 students who returned their questionnaires were female, so I was unable to interview equal numbers of males and females. Instead three males and four females were interviewed. The interviews were semi-structured following a simple protocol (see Appendix D), with the intent of further elaborating on the student perceptions of caring and its impact on their learning of science content. This was especially necessary to address the three open-ended questions in the questionnaire. Students did not write a great deal in responding to open-ended questions and the interviews allowed me an opportunity to better understand their perspective. All interviews were conducted in English. Students were given the option of interviewing before school, during their free time, or after school. Three students were interviewed during their long bus call time after school. The other four were interviewed during their “free time” that the students who earn it are allowed as part of the Positive Behavior Interventions & Support (PBIS) program that has been a part of the school for the last two years. I was hesitant to use this time but the students stated that they weren’t really doing anything anyway.

Although I only interviewed each teacher twice, the interviewing was loosely based on the

three-structure interview process which would help me to better determine if there was internal consistency between the two interviews (Seidman, 2006). The initial interview focused more on the teacher –participants’ life history. For Calla, I reviewed with her what she had initially stated and checked to see if she felt the same way. Since she did, I still considered that the initial interview. The second interview occurred within a week of the completion of the unit and provided the researcher with a better understanding of the teacher’s perspective on caring and its impact or lack thereof on the teaching and learning of science in their classroom.

Methodological triangulation was achieved by obtaining data in multiple forms: interviewing teachers; interviewing a purposive sampling of students; taking field notes from classroom observations and collecting student questionnaires (Yin, 2006). This required that some data analysis was occurring while other data was still being collected. For instance, after analyzing the data from the initial interview, the first observation was made and this allowed me to examine what the teacher said and compare it to what the teacher did in the classroom. This use of multiple data sources did help me to consider different perspectives in the data analysis process.

Table 1.

Matrix of the connection between data sources and research questions.

Data Source	Research question 1	Research question 2	Research question 3	Research question 4
Classroom Observations & Field notes	X	X		
Teacher Interviews	X	X		X
Student interviews (selected)			X	X
Teacher Demographic Information	X	X		
Quantitative student scale (freq)				
Student short answer questions			X	X

* The quantitative student scale did not directly address research questions but was in part used to select student participants for interviews.

1. How do middle school science teachers of EL students define caring? From a virtue ethic perspective? Caring as rule-bound?
2. How do these middle school teachers' definitions of caring vary based on the context from which students and classroom situations arise?
3. How do middle school EL students determine if their science teachers are caring? What actions on the part of their science teachers do students perceive to be indicative of caring?
4. How do both middle school EL students and their science teachers believe caring impacts the learning of science content in the classroom and if so, why?

Data Analysis

After the initial teacher interviews, I began transcribing both interviews in their entirety.

Although direct transcription is time consuming, I recalled that it might help me to truly focus on

and in some respects, internalize the data. I then reviewed both initial interviews looking for passages of interest and began labeling or marking them (Seidman, 2006). I then moved on to the coding process which has been described by Ezzy (2002) as “defining what the data is all about” (p. 86).

During the initial stages of coding one is urged to remain open: stay close to the data; keep codes simple and precise; construct short codes; preserve actions; compare data with data and move quickly through the data (Charmaz, 2006, p.49). I had planned to initially code line by line but instead I found codes over a few lines of transcript. In an effort to remain close to the data, and because I am a novice researcher I leaned heavily on in vivo codes provided by the participants initially. This did help me to preserve the perceptions of the participants but later in analysis these codes were subsumed into new codes or categories. (Charmaz, 2006, p. 55).

In addition to in vivo codes, for interview data, I also used descriptive codes to provide the groundwork to what Saldaña (2009) refers to as “second cycle” coding which precedes further analysis (p.72). The descriptive codes were used for interview data, field notes and the questionnaires.

During the second cycle, I began using focused coding and started subsuming codes into categories. According to Schwandt, there are three “troublesome tendencies” when it comes to coding: Coding at the descriptive level only; thinking of coding as mechanical and outside theoretical understandings; and the tendency to think of codes and categories as fixed (2002, p. 27). I found this to be true in my coding process and in discussing my concerns with my major professor, I began thinking about how these codes and categories related to my research questions. It is at this point that one realizes the need for flexibility because some data may be “left out”. Wolcott describes this process as canning or getting rid of data (Wolcott, 2001, p. 44).

Again, I found this difficult when I realized that some codes did not fit in with any of the categories and later themes that were emerging. I kept a record of these codes in case they “came up later”, but they did not fit with the developing themes.

Memo writing as data analysis. Ideally the researcher would memo write during the data collection. This would then enable them to “crystallize questions and directions to pursue” (2006, p. 72). Saldaña (2009) encourages researchers to use analytic memos as a way to “dump your brain”. In this manner, I expected to use memo writing as a hybrid journal and analytical tool (p. 32). As a novice qualitative researcher, I attempted to use memo writing to help me define codes and categories; identify gaps in the analysis; make comparisons between data; offer conjectures that can be used in further data collection etc. (Charmaz, p. 82). I also recognize that memo writing allowed me to experience some degree of introspective reflexivity while I questioned the developing categories and emerging themes (Creswell, 2003). Another degree of reflexivity was achieved through discussions with my major professor regarding the emerging themes and data that seemed to support or failed to support those themes. Throughout the research process, I kept a composition book which served as a vehicle for memo writing and to record thoughts and concerns that arose during discussions with my major professor. I was often able to reflect back on previous codes and notes. It was also in this composition book that I jotted down comments and questions from my major professor and reflected on earlier guidance from other committee members.

Themes. In generating themes, I initially planned to use a method suggested by Saldaña (2009) in which hard copies of the coded data are spatially arranged in a pattern in order to better understand how the themes work together. I found this difficult, time consuming, and it simply did not work for me in the manner described. I actually used a version of this method suggested

by Mary Atwater in which I used large butcher paper to draw out a graphic organizer to help me see the relationships between codes and categories (Meeting, 8/27/16). As I started “chunking” data into categories and later themes, I tried to stay mindful of any data that contradicted my assertions.

These codes, categories and themes were analyzed by looking at the teacher and student data independently. The teacher interview data and initial questionnaires were used to generate the initial teacher codes. The data for both teachers were examined at the same time but I used different colors in my graphic organizer to represent codes and categories emanating from each teacher’s data. In the initial stages many codes and some categories were identical between the two teachers. However, when the themes were derived I was able to attribute them to each teacher, respectively. Similarly, all of the student data were analyzed at once but the data coming from each teacher’s students were also color-coded. There was some overlap in the students’ perspectives across the two groups when it came to uncaring teachers. So, the teacher and student themes differ somewhat when it comes to the caring teacher. But, one theme concerned with uncaring teachers applied to both groups of students. Finally, classroom observations were used to show support or conflict with the emerging themes.

Table 2.

Description of Categories and Themes.

Codes	Categories	Theme
Being kind Being friendly Being respectful Being excited Explaining clearly Paying attention	Displaying positive emotions	Caring teachers are willing to do what it takes to help students learn.
Helping with personal issues Helping with academics	Helping (different ways)	

Components of both grounded theory as a methodology and the ethic of care inform the conceptual framework of this study. From the influential work of Noddings in which she explicates that ethical caring is not an attribute but something one does (2003) or a “way for teachers to make thoughtful professional choices about their interactions with their students” (Goldstein, 2002 p. 31) and the work of Goldstein in which she reveals pre-service teachers’ naive conceptions of caring guided both the data collection and analysis of this study. The observations involved more than searching for particular behaviors or characteristics but focused on the actions that the teachers take and the outcomes that result (Goldstein, 2002). This required more than my observations given some of the cultural differences between EL students and their teachers. Hence, a more constructionist approach and triangulation of data ensued. I concur with Creswell (2003, p.199) that the “focus of qualitative research is on the

participants' perceptions and experiences"; so I supplemented my observations with interviews from both EL students and their teachers. How the students perceive caring sometimes coincided with the views of the teachers or those of myself as an observer. Therefore, it was very important that through the use of in vivo codes, formations of categories and elucidating themes that both the students' and teachers' perspectives were given voice.

Ethical Issues

Considering that I was in classrooms and interviewing students and teachers, it was important throughout the research process to treat all participants with respect and consideration. I agree with Seidman that the benefit in this study is on the side of the researcher (2006). Because this study would help me to obtain a doctorate which is a clear benefit to me financially and in terms of my profession, it was imperative that I maintained a high degree of ethical behavior in my interactions with the participants. I personally believe that a better understanding of the impact of the ethic of care on the learning science by ELs would be beneficial to both teachers and students. It is especially important that teachers understand what students consider to be evidence of caring. This could inform their pedagogy. Also, regarding the teachers, it was important that I explain the purpose of my study and allow them access to the final results. I tried to minimize the disruption to each class and as qualified teacher I was willing to help as a participant observer if needed. I was able to help in the pilot study but it was unnecessary in the actual study. Pseudonyms were used to provide anonymity for the teachers, school and district. As a token of gratitude, the teachers were given a choice of \$50.00 gift cards from Starbucks, Target, or Barnes and Noble. Perhaps of greater

concern are the students especially young ELs, who represent a vulnerable population. No student names were reported, but pseudonyms were used to protect their anonymity. I minimized interfering with the students learning of science content. The questionnaires and interviews did not interfere with class time. I informed the students that the hope was that their input would help researchers and teachers better understand how to help EL students learn science content. Each of them seemed to take this in thoughtfully. The seven interviewed students were given a choice of \$5.00 gift cards to iTunes or Google Play.

Addressing the Quality Criteria of the Study

In their seminal work on naturalistic inquiry, Lincoln and Guba (1985) provided evaluative criteria for determining the trustworthiness of qualitative research. Whether or not the research could be judged as worthwhile involved establishing four criteria: credibility, transferability, dependability, and confirmability. Lincoln and Guba also provided techniques that qualitative researchers should use to meet each criterion.

Credibility. Credibility is used to determine if the study measures or tests what is actually intended (Shenton, 2004). Among the techniques that help to establish credibility are the following: prolonged engagement, persistent observation, triangulation, peer debriefing, negative case analysis, referential adequacy and member checking (Lincoln & Guba, 1985). In an effort to impart credibility in this study, I endeavored to use multiple data sets: students, teachers and classroom observations. The intent here was to provide methodological triangulation in the use of interviews, observations and a student questionnaire so that the reader would be

better able to trust the results of the study.

Transferability. Whether or not the results of a study can be transferred to different settings or contexts is transferability (Shenton, 2004). Although the transferability of the study is determined by the reader and not the writer (Shenton, 2004), I endeavored to help the reader determine whether or not this study's results are transferable. The technique provided to establish transferability of a study's results to other contexts is thick description (Lincoln & Guba, 1985). I addressed transferability by using "thick" descriptions and the voices of the participants throughout the data analysis. The voices of the teachers and students are used throughout the findings of this study.

Dependability. Dependability concerns the likelihood that other researchers looking over your data would arrive at similar findings, interpretations, and conclusions (Shenton, 2004). The technique provided for establishing dependability or showing that the results are consistent and can be repeated is an inquiry audit (Lincoln & Guba, 1985). Throughout the data collection and analysis stages of this research study, I kept a composition book which I used for both analytic journaling and memo writing. After interviews, during initial coding, and later analyses; I reflected on my thoughts regarding the teachers and students' perspectives. This book was used as an audit trail prior to my finalizing the themes and findings of the study.

Confirmability. Confirmability is the extent to which the study's findings reflect the respondents' perspectives and not the researcher's bias or interests (Shenton, 2004). Techniques for establishing confirmability include the following:

confirmability audit, audit trail, triangulation and reflexivity (Lincoln & Guba, 1985).

The reflexivity inherent in my audit trail throughout the study process helped me to remain aware of my own subjectivities while trying to appropriately value the perspectives of both teachers and students.

Assumptions and Limitations of the Study

One assumption that I made concerned my acceptance that administrators, lead teachers, and district level ESOL coordinators could identify middle school science teachers who worked well with the EL populations. I also assumed that when I asked them whether they considered the teachers to be caring that they had a similar understanding of that term as I had. These assumptions are partly due to my knowing these administrators, lead teachers and coordinators professionally through my years of working in the district. I also assumed that each of the teachers in the study were aware of their own caring and could articulate their classroom practices that were indicative of caring.

A limitation of the study was conducting the interviews of the EL students in English instead of Spanish or Haitian Creole. Early in the research design, in discussions with my major professor, I realized that having a second adult stranger present in the interviews might be overwhelming to the students. I'm not certain what effect, if any, it would have had on the IRB approval or parent permissions. It would have required that transcripts be translated into English prior to any data analysis. Although the students may have been able to say more in their native language, it might also have required more time than was available for the interviews. Furthermore, it was challenging to find times that participants and I were each available to meet

together and this would have increased the difficulty in scheduling interviews by adding a third person.

When I decided to frame this study as a multiple case study of just two teachers and some of their EL students, I recognized the inherent limitations. I chose to focus on a small sample size and desired to produce thick descriptions that would take into account the voices of ELs and their teachers and increase the transferability of the study's findings. The teachers are both middle school science teachers but they are quite different in their years of experience, ages, race, science content taught and in their general personalities. Still, the results do provide some insight into two middle school science classrooms in a southern, urban school district. How these students and teachers perceive caring on the part of the teachers and the impact of the ethic of care on the teaching and learning of science represents a starting point.

Significance of the Study

Teachers have the greatest impact on student learning in the classroom (Menken & Antunez, 2001). Given the changes that have occurred in the population of students in the United States over the last few decades, it is even more important that the different dimensions of effective teaching are better understood. Although natural caring as an attribute or personality trait is important in human relations, an ethic of care can be a powerful pedagogical tool in effective teaching (Alder, 2002, Ferreira & Bosworth, 2001). But, do teachers and students define caring relations in the same way?

According to Noddings, if the "cared-for" does not acknowledge the caring then there is no caring relation (2003). It is possible that teachers and students have their

“wires crossed” when it comes to building caring relations. The purpose of this research study was to shed some understanding on both EL students and their teachers’ conceptions of caring. Furthermore, if teachers have a better understanding of students’ views and if they act from an ethic of care, they are likely to be more effective and less likely to ‘burn out’ (Goldstein, 2002).

Summary

This chapter discussed the particular research methodology that was used in this qualitative case study. The purpose of this study was to determine how middle school science teachers and their EL students define caring, what actions they considered to demonstrate caring and what impact if any the ethic of care had on the teaching and learning of science. Two middle school science teachers in a large urban school district in the Southeastern United States and twelve of their students participated in this study. The research design, data collection methods, procedures, data analysis and context are provided in detail. Finally, the underlying assumptions of the researcher, ethical concerns and rationale for executing this study as a multiple case study were presented.

CHAPTER 4

CASE STUDY ONE

Iris

Teacher Participant Background Information

This study is organized as a multiple case study of two middle school science teachers. The purpose of this chapter is to introduce the first teacher's case study, Iris. Pseudonyms are provided for the teacher and student participants, the school, and the school district in order to protect the privacy of the participants.

Iris is an African American woman in her mid-30s. She is a graduate of a small Historically Black institution (HBI) with a B.S. in chemistry and she has earned her Masters and Specialist degrees in Science Education from a nearby large state university. Iris teaches in the county professional development program to help content teachers better help the EL students in their classes. She has taught all of her 10 years in middle school sixth and eighth grade classes at Blossom Middle. Although Iris is certified to teach middle school mathematics and science, she has only taught science. Iris was also chosen as her school's "Teacher of the Year" a few years ago. Most of her EL students have been Latino. In her teaching, Iris emphasizes making physical science comprehensible for her EL students so that they can build on and apply their understandings later in their educational careers. Prior to teaching she spent a few years working in the corporate arena. During her interview, she shared that she is single and

she “pours her heart” into her students (Interview 2, 3/30/16). She loves working and stated that she has to work during the summer or she would “go crazy” from boredom (Interview 1, 2/29/16). She has sponsored the school’s dance team for several years and is always willing to participate in school pep rallies even if it requires her to be dunked, have pies thrown at her, or have to dance in front of middle schoolers.

Iris’ classroom is well-managed and she looks for novel ways of explaining concepts to her students. Although she does not smile a lot, she is very energetic and has a dramatic flair in the inflection of her voice and gestures. During the days that I observed her classes, I saw her lecture, review content, act out science processes, and engage the entire class in acting out scientific processes. In particular, Iris added a kinesthetic element to her unit on electricity by having students line up on either side in the hallway as if they were the wire/conductor, she chose a few students to act as electrons and finally a few to act as resistors. The students laughed and bumped into each other. Throughout the demonstration, she asked students relevant questions about Ohm’s Law, conductors vs. insulators, and voltage. Her lessons seemed to be well planned to go from bell to bell and she tended to change instructional methods a few times in each class period, ostensibly to differentiate her instruction. On my first day of observation, I did notice her willingness to address a student’s concern for a few minutes after the bell while the rest of the class worked on a bell ringer exercise. She is very quick to respond to student questions and comments. She is particularly adept at using students’ comment that were off topic and tying it to concepts learned in the past or currently being studied. One example would be one student stating that another had an attitude and she quickly related it to the topic of resistance and its relationship to

current and voltage which was in the current unit. Much of the class laughed or smiled at her juxtaposition of the two issues. This is consistent with her teaching philosophy which she described as “All students are capable of learning, especially in the right environment. They may not be as motivated but if you can get them motivated, even a little bit.... That’s going to help them to succeed” (Interview 2, 3/30/16).

In Blossom Middle, Iris is considered a leader or mentor to other teachers when it comes to preparing lessons, modifying assessments and working with EL students in general. She regularly communicates with the ESOL teacher about her EL students to better insure that the needs of the EL students are being met. They share updates about the students’ social and academic progress. While acknowledging the challenges inherent in teaching this population of students, she stated that she loved working with them (Interview 1, 2/29/16). Because she is so willing and able to work with this group of students, she asked to work with the group that other teachers find so challenging—the level ones. In her eighth grade physical science classes, Iris teaches the EL students who are still unable to speak English or those who may have been speaking English for less than a year.

This case study employed the following sources of data: two teacher interviews, student questionnaires, student interviews, and classroom observations. An analysis of these data sources from Iris revealed two themes. From the first interview, it was clear that Iris believes that a very important part of her job especially, as it related to her EL students, was to get them to focus on their futures. The following themes emerged from the data analysis of this case study.

Getting EL students involved in science class is preparing them and their families for a better future

It was important to Iris that “I emphasize to my EL students like you have extra.... You can go there and get a particular job because you are bilingual... and I can’t... that makes it better for you”. Prior to this statement in the interview process, Iris seemed tired and a little distracted, but at this point her face lit up and she became passionate. After 10 years in the classroom and working with the EL population she wanted to “... make sure that they know that their success in the classroom can lead to success outside the classroom”. She has heard stories of family difficulties as well as students who were not motivated to study (Interview 1, 2/29/16). But she wants to be the teacher that she did not have. She wants her students to know that they can help “... their parents and whatever their status... get educated and get a better job and help your family.” She has said that she gives her all to help them and to try to motivate them, “I try to teach everything in the classroom as if this is life period... the science I’m teaching... they encounter everyday whether they think about it or not...”

Even though Iris thinks of herself as shy, she will not allow her EL students or any of them to remain “outside”. Much of her class was about participation. She wanted her students to get involved in the learning of physical science. She managed this in different ways with different students. She found that the “purple marker day” worked for many students when the physical science content involved solving mathematics problems. Students would receive purple checks when they solved the problem correctly. In her experience, Iris believes that “They want to do more and try harder” (Interview 1, 2/29/16). At the heart of her teaching is looking beyond their classroom experience with

her but also, “Making sure that they understand the content on their level so they can apply it later in their schooling” (Interview2, 3/30/16).

Upon first meeting Iris and observing her interactions with students, I found her to be very professional and seemingly reserved. It was only after I observed her on one of their PBIS “free Fridays” that I saw a whole other side of her personality and interactions with students. She had half of the students of the team in one large room with Wii dancing going on and PlayStation and Xbox games being played. What initially looked and sounded like chaos to me became organized chaos as I entered the room and got swept up into what was happening (Classroom Observation, 3/25/16). Iris was dancing along with the figure on screen to Michael Jackson’s Thriller and most of her EL students were right there with her along with other students. She encouraged the nearby stragglers to join in and they seemed to have a great deal of fun. At one point, she had one of her EL students leading the dancing while she and I chatted and she checked on the gamers on the other side of the room. She checked in with that group of mostly males and joked about beating all of them. They laughed and dared her to come back after dancing.

I was mesmerized by the change in her demeanor and affect. The students were not. They saw her transition from serious teacher to adult competitor as the norm. It was at this point that she shared her willingness to have pies thrown in her face and to dance in front of hundreds of middle schoolers at the school pep rallies (Classroom Observation, 3/25/16). As important as Iris believed it to be to teach students and motivate them, she also wanted them to know she cared about each of them.

Caring for students means “having their backs” and letting them know that you care

In the initial interview, Iris shared, “My thing is... I don’t have kids... but I’m like a parent you always just want your children to do better than you did... I feel that I didn’t have that growing up”. When I asked her how she knew that her students felt she cared for them, she replied, “they can tell by the things I do for them... sticking up for them and having their backs...”. Iris is known among her coworkers as someone who will advocate for her students and because they sometimes need more help – especially for her ELs (Interview 2, 3/30/16). She says that other teachers have made comments such as “You just act like you love them so much.” to which she responds that she does love them. I asked her why she cares for them or where the caring comes from. Iris responded, “I wanted to be the caring teacher that I didn’t get”. She went on to tell me that her teachers did not seem to notice her in school perhaps because “I got good grades... I cried all the time and had certain issues... I didn’t feel that they (her teachers) were caring enough to understand or even to ask me” (Interview 1,2/29/16).

She went on to explain how she tries to show her students she cares by, “It’s a big thing with hugging kids so... a slight hug, the high fives, some of the music they listen to and TV shows... just understanding it and bringing it into the classroom and just using it”. She also believed that she demonstrated caring by just “Pulling them aside and asking... are you okay?”

When I asked her about how she shows caring to her EL students in particular, she replied, “So ...um when it comes to their speaking...Just making them feel

comfortable...”. It was also important that the EL students not feel isolated. “I use them with participating in things... so calling them up like in step up, step back ... just doing little things... most of the time they don’t get called on for anything. To Iris it was important that in her class that her EL students not fall through the cracks. One student that she used in a demonstration of force and the concepts of push and pull was so excited that “He told the ESOL LA teacher and he was just so happy about it... so I really try to include them...”

I mentioned to Iris my surprise at seeing her leading the dancing on that previous Friday. She then began to recount how different her experiences are when she encounters her students outside of class compared to her days in school when she avoided her teachers in public. According to Iris “When you’re outside of school... you get mobbed by students”. She further stated, “They are quick to hug me...” (Interview 2, 3/30/16).

Student Participants’ Demographic Information

Each of Iris’ EL students from her third academic returned permission slips and questionnaires fairly quickly. The four students who participated in this study from Iris’ class included three females and one male. Two of the girls are Latina, Rosa and Dahlia. One girl is Haitian, Fleur. The one male participant from Iris’ class is Florian and he is Latino. All of the students are eighth graders and 13 or 14 years of age. Iris’ students are considered to be “lower” level in terms of their mastery of the English language. Although they sometimes struggled to find the “right” words, I found them very engaging and committed to explaining themselves.

The following statements encapsulate the students’ perspectives and were obtained

during interviews on March 23, 2016 and March 25, 2016.

Rosa. “I think that if nobody learn nothing then the teacher no care” In her interview Rosa struggled more than any other students with English and yet she was very expressive and truly wanted to share her thoughts. Although she was the same age as her classmates, Rosa seemed more mature.

Dahlia. Of all the students that I interviewed, I found it most difficult to communicate with Dahlia. I sometimes had to ask her to repeat herself because she was more reserved than the others and spoke very softly. Perhaps because she struggled with English, she made a point of explaining the need for modified tests. Dahlia also seemed to really appreciate the personal touch from teachers

Fleur. She is originally from Haiti. She speaks French and Creole and although she had not been in the United States for a year, yet she was able to speak English well. She smiled a lot and was very friendly. She sometimes struggled to express herself because she had so much to say.

Florian. He was the only male in this group. He was polite but not very open. It was difficult in the interview to get him to elaborate. I initially believed that perhaps he found me intimidating but Iris explained that he typically responds in a similar manner.

As shown in Table 3, Iris’ EL students who participated in the study indicated that having a teacher who cares for them was either very important or important. All seven students also indicated that they learned more in classes in which the teacher was caring. They also believed that their science teacher cared about them and strongly agreed that she cared about their learning. Rosa was the only student who diverged from the very

important and important categories on the scale. Rosa responded that she was neutral when it came to a teacher understanding her.

Table 3

The responses of Iris' students to the questionnaire.

Questions	5	4	3	2	1
	Very Important		Neutral		Not Important
1. It is important to me that a teacher "cares" about me.	4	3			
2. It's important to me that a teacher tries to understand me.	5	1			
Questions	Strongly Agree		Neutral		Strongly Disagree
3. I learn more in a class in which a teacher cares about students.	4	3			
4. My science teacher "cares" about me.	5	2			
5. My science teacher "cares" about my learning.	7				

The themes derived from the four interviewees and the additional three students who completed the questionnaire included two themes on caring teachers. In her second interview, March 30, 2016, Iris acknowledged her love for chemistry and the difficulty but need to be excited about the physics unit. She expressed that she was always "Trying so hard to put the enthusiasm there' and "It's just finding different ways with certain units that I don't really care for... I have to push myself more". Perhaps she worked harder on this electricity and magnetism unit because it was not her favorite, but she acknowledged that her students performed well. It is interesting to note that during this

unit she provided many kinesthetic learning opportunities for the students. In her first interview, Iris discussed the importance of insuring that all her students feel welcome in her class and that they fit in her class. She stated, “So I really try to include them” and if I know something about their country just making sure that they feel welcome”.

Caring teachers are willing to do what it takes to help students learn

From the perspective of Iris’ EL students, she demonstrated caring in large part by asking them if they understood the science material being covered and following up by finding other ways to help them understand if they didn’t. The following statements from students support this theme:

1-P “Teachers should pay more attention to students and make them understand”

2-P “She does everything she can for us”.

6-P “By asking the students if they understood and if they didn’t the teacher would explain again, until you get it”.

Dahlia had the least command of English of all of Iris’ students but she stated on her questionnaire that Iris demonstrated that she cared by talking to her. In the interview, Dahlia said that Iris “makes it all good” (Student Interview, 3/23/16). To Dahlia, Iris worked hard to help Dahlia learn the science content while she was learning English. Dahlia recognized that teachers had to focus on other students too, but believed that Iris really listened to her and helped her. Rosa believed that Iris demonstrated she cared by “doing everything she can for us”. Rosa expressed that Iris demonstrated caring by providing school supplies if needed and “explain(ed) more fair” (Student Interview, 3/25/16).

During the interviews, students acknowledged that not all teachers pay attention to

them or listen to them. So, the need to dialogue with teachers was indicative of caring to these EL students. Since they all believed that Iris met these criteria, they deemed her a caring teacher.

Caring teachers respond to the individual students' needs

Each of Iris' interviewed students conveyed in their own ways that Iris cared for each of them. Much of the caring that they describe focused on academic needs but some students acknowledged she cared about their personal needs too. The following statements support this theme:

2- P "When I don't get something she try to teach me again".

4-P "They ask students and explain to them the lesson if students don't understand"

5-P "Ask students if they are understanding all, and if they don't he/she review the topic to all students to understand"

7-P "When they listen to the student and push student to study"

7-P "If you doesn't listen to the students ... how can you know which level she or he had..."

5-P "Like they make the test more order for people who don't speak English".

Fleur felt special. She believed that Iris cared for her because she challenged her to be a better student in science and in all of her classes. This was important to Fleur who thought that her past teachers in her native Haiti were harsher in their attempts to get her to learn. Whereas Iris was a "teacher um... ummm ...ummm listen to students and then know what they think, yeah "and "a teacher who wants you to be a..a. really good student, the best student..." and "She gives me hard work because she wants me to be better. There are so many ways that she wants me to be better in my language, in English and science". Fleur also explained that she didn't like science class prior to having Iris as a teacher and she further explained that even though it was her first time having math

in science that she was doing well. (Student Interview, 3/23/16).

According to Florian, Iris is a caring teacher because she helped students learn the science, pass tests and cared about their lives outside of school. In his interview, Florian stated “Like she cares about if you are happy or sad.... How you feel.” She also demonstrated caring because she “make the test more order for people who don’t speak English.... So, they can do their best and pass the test”.

Both Rosa and Dahlia saw the nature of Iris’ caring as centering around teachers being attentive to the needs of the individual student. Rosa stated, “Because, um sometimes people feel bad and the teacher helps.... Try to help so that you feel happy and.... student feel good.... then they study for the class”. She also believed it important that the teacher pay attention to the individual student “sometimes.... Some people do not understand the teacher what he says and if the teacher sees him ... she knows he doesn’t understand” (Student Interview, 3/25/16). In her survey response, Rosa also responded to the question about how her science teacher shows she cares by stating “she gives us attention” (Appendix C). Dahlia added “she explain to me better when I no understand... only me”, however she acknowledged that “Yes, but sometimes she have more students that attended so sometimes she can’t answer all my questions”. Dahlia really stressed that Iris would sometimes take the time to explain to just her and this special attention was a major part of what she believed conveyed caring on Iris’ part.

When it came to describing an uncaring teacher, the students focused on various characteristics and behaviors. Among Iris’ students a couple of themes did emerge but they only emerged across two or three of the interviewed and surveyed students. The

first theme concerned who uncaring teachers actually teach.

Un-caring teachers only teach the class not individual students (with different levels of need)

During the student interviews, students described uncaring teachers in a number of ways. Perhaps the major characteristic of uncaring teachers was that they only taught the whole class and did not take into account the individual students. The following statements support this theme:

5-P “Like if you don’t understand... you would have to study alone or ask other people”

5-P “Like you know they don’t explain you again and you don’t understand”.

1-P “Some teachers should pay more attention to students and make them understand

The EL students expressed aspects of uncaring as including not modifying the test or giving them the individual help that they may need. In their questionnaires and interviews they expressed the need to be retaught and to have their questions answered. Rosa described this as teachers who need to “explain more” or “give more information” (Student Interview, 3/23/16). Florian stressed that uncaring teachers “don’t explain you again.” Fleur believed that uncaring teachers don’t “remind students or give them a second chance” on missed assignments (Student Interview, 3/23/16). Teachers who were unwilling to reteach or answer individual student questions were considered uncaring by Iris’ interviewed EL students.

Un-caring teachers do not enhance student learning.

Students were very expressive in describing the actions of un-caring teachers and how it impacted their learning. The following statements encapsulate this theme:

2-P “If nobody learn nothing then the teacher no care”

3-P “When she start to scream when explain... Yes, it keeps me from learning... I’m try to focus my work but...”

When it comes to the impact of uncaring teachers on student learning, Helen kept it simple with, “If nobody learn nothing then the teacher no care” and she further explained that uncaring teachers “Not help people.... No explain something that the teacher do.... Not care about your feeling... good or bad...” To Florian, uncaring teachers didn’t care about students learning or their grades. He stated that uncaring teachers forced students “to study alone or ask other people...”. Dahlia seemed especially unnerved by this question when she responded, “In my 2nd academic, “When she start to scream when explain.... Yes, it keeps me from learning ...I’m trying to focus my work but...”. She then looked around somewhat nervously. Fleur described a former science teacher as harsh and stated “When I want to learn about science...But when I had a teacher and she really didn’t care about me... I didn’t like that teacher and didn’t learn science” (Student Interview, 3/23/16).

This idea of learning the science content and earning good grades was a recurring theme among all the students interviewed or those who completed the questionnaire. They desperately wanted to do well in school and they believed caring teachers could help them achieve this goal. I wasn’t certain if this was something that came from home or if the students picked it up from school, but they desperately wanted to do well academically.

Teacher Interview Data supporting Student Theme

Much of what Iris mentioned in her second interview was aligned with her students

first theme “Caring teachers respond to the individual students’ needs” Iris mentioned in the second interview, March 30, 2016, that “I still try to have relationships with students.... Because “Just knowing them helps you to teach them differently”.

Regarding assessing her EL students she stated that she had to modify their last test but the EL students were still able to demonstrate mastery. “Of course, I had to modify for them...but like they still got it... and they did circuits and so their constructed response was to create... the first part was to draw a series circuit with so many parts and label it.... And draw parallel circuits and label it and we had one like that in class so they were at least able to do that...she further stated that her students with the least command of English had more multiple choice but still were required to draw a circuit in a series. To ensure that all of her students mastered circuits, she stated “...we did like 10 of them! So, by the time we finished up they were just happy and excited... yeah! Yeah! I got it!... like they’re cheering... that’s the biggest thing ...because for them sometimes in the beginning they’re not getting it so they get frustrated... so that’s why I try to do a nice amount of them.” So, as her students expressed in their own ways caring teachers help individual students based on their needs

Classroom Observations that Support Themes

I struggled in my classroom observations and later in analysis in delineating “good teaching” from “caring teaching”. I saw Iris actively engage her students in learning and go out of her way to interact with EL students and perhaps other marginalized students in class discussions and activities. So, in regards to the ethic of care, Iris definitely demonstrated dialogue with her students. Also, although Iris is a very organized teacher,

she delayed the start of class for several minutes to quietly help a concerned student on the first day of observation. During that time, she appeared to demonstrate engrossment with the student and to demonstrate some degree of motivational displacement, since her prior actions seemed directed towards beginning class immediately.

Her interactions with gregarious students seemed designed to bring them back into active learning while encouraging the quieter students to ask questions by rephrasing and rewording questions. One African American male was picking his hair at the beginning of class and not actually paying attention. Iris made a comment about friction as it related to his Afro which caused him to laugh and pick up his pencil and begin to fill in his notes like his classmates. Later, Iris patted this same young man on the back and they smiled at each other as if they were on the verge of laughing. It appeared to me as an observer that they had established a relationship in which this was a sign of affection.

For her new EL student, Iris prepared keywords for him to review at the beginning of the unit by providing the term in English, Spanish and with definitions in Spanish. Although learning the content in English was still going to be a challenge for him, she provided him with context rooted to his first language. Although much of what Iris did was good teaching, her interactions with her students showed that she was a caring teacher who responded to the individual needs of her students.

Virtue Ethics or Ethic of Care?

Iris was able to show that she operated from an ethic of care in a number of ways. Iris demonstrates engrossment, motivational displacement and dialogue in her interactions with her students. Furthermore, she is successful at establishing caring relations with

students from different backgrounds and in different classroom situations. She does not point to caring as if it is an attribute, but it is rooted in her empathy and natural caring for her students. Iris appears to use this as a starting point from which she chooses to care by establishing relationships with her students and making decisions on what to do on a personal and professional level by choosing to maintain these relationships with her students and endeavoring to help them learn the physical science content.

Summary

Iris is a respected veteran teacher who considers herself to be shy but her interactions with her students are worthy of note. When one considers Iris in the classroom and her interactions with her students in extracurricular events, she is a cheerleader and also affirms her students when they show improvement in academics. She seems to believe in her students and to genuinely want the best for them. Her role in helping them to be successful is to insure they learn the physical science content of her class. She is convinced that if she can help them now that they will be better prepared to face future science coursework. The EL students interviewed believe that she cares for them each as individuals and responds to their different needs. According to these students, she reteaches until they understand and Iris herself stated that she reviewed circuits for as many times as it took for all students to master the content. Iris admitted that this year has been a struggle to help her ELs in particular to meet district and state guidelines but they showed significant progress over the course of the year. Last year, Iris' El students passed the science portion of the district high stakes test even though they did not pass the English language portion (Interview 2, 3/30/16).

CHAPTER 5

CASE STUDY TWO

Calla

Teacher Participant Background Information

The second case study involves Calla, a European American teacher in her mid-twenties. She is originally from the Flowers district (pseudonym) and graduated from one of the county's newer high schools. She has a bachelor's degree in biology from a small local public college and a Master's in Education from a small private university. Calla is presently in her second year of teaching. Calla teaches seventh grade life science and coaches the eighth grade girls' soccer team. She is divorced with two small children and comes from a close-knit family.

When I observed her classroom, I found the setting to be very lively and her students are mostly engaged. Her desks are arranged in groups and this is how she likes to work with students. After whole group lecture or discussion, she tends to focus on groups of students. Calla is very friendly to everyone and smiles a lot. Her demeanor when interacting with the students is almost that of an older sibling. The students don't immediately follow her instructions but she is able to coax those resistant to following the rules. She manages this by making her voice a little sterner and explaining why it is important that they follow her instructions. At one point in group work, a young male stood up and kicked his foot and his shoe flew off, she gave him a stern look and he apologized. She then smiled at him and things returned to normalcy.

The students seem to genuinely like her and often share highly personal issues with her. Sometimes during bus call at the end of the day, almost half of the teams' students are in her classroom. She is also very considerate of her fellow teachers and often steps in when a volunteer is needed amongst the faculty. She views Iris as one of her mentors and often asks her for help regarding test modifications and assignments for EL students. She also sometimes needs Iris as "a shoulder to cry on" when she gets frustrated.

The majority of Calla's EL students are Latino and she has reached out to them beyond the confines of the school. Calla's teaching philosophy is to provide a safe place for learning that is student centered. She feels that it is important for students to feel loved. So, she deems it important to be friendly, give her students an opportunity to succeed and to let them know that they are not alone. Calla teaches higher level EL students and those who are in their first or second year of monitoring, after exiting the ESOL program. She actually has fewer ELs in her classes than last year which she admitted was very tough year. Her students were not apt to turn in the required paper work that would allow me to give them the questionnaire or to interview them. It was also difficult to finalize the dates of classroom observations and final interview with Calla. I was not certain if she desired to forego participation so I asked her. She responded that she would still like to participate but had been quite busy and in time we were able to schedule suitable times for both of us. Regarding the two research questions that focused on teachers and caring the following themes were uncovered from the interviews and classroom observations of Calla.

EL students are especially in need of caring teachers

Calla shared with me in her first interview that she was very close to her family and felt lucky to have the family that she has. She is very concerned that all her students especially the ELs know that she loves and cares for them (Interview 1, 10/8/ 2015). During our first interview, she cried at times when she described the difficulty that some of her students went through. She stated that she believed that part of her job was “Making sure that they do not feel alone or unloved/unwanted”. Here she discussed her concerns about this generation of students whom she did not see so far removed from her in age, but in life experiences. She grew up in a home in which both parents were available to her but “... these parents are not home... they are in jail or they are working all the time... So, they don’t have the 100% family support that I grew up with...” In our much later second interview, she revisited this in the statement “They spend so much time with us here at school and when they go home their parents may not be there... or they’re working... I mean the majority of our ESOL kids... their parents are at work.” (Interview 2, 5/16/2016). She also explained that although other teachers were effective but stern, that she wasn’t. She wanted her students to know that they could come to her if they needed to.... She wanted to be a good teacher “...but really someone that they are not intimidated by...makes the learning environment more enjoyable” (Interview 1, 10/8/2015).

Caring teachers interact with the student as a whole person

Throughout the interview and classroom observations of Calla, a continuing theme was how she saw her students as individuals. She understood that they were more than

her students. During both interviews, she often smiled when she discussed interactions with students. She stated that she starts the day in this manner: “I ask my students how their day was... the bus ride.... I just want to make sure that they know I care...”.

(Interview 1, 10/8/2015). When they respond with details she remembers and keeps that in mind when she considers their actions throughout the day. Again, it is important to her that her students understand that “If you’re going through something let me know about it... I’m here to obviously teach you science but if you need... Not really advice but maybe a shoulder to cry on... I’m here”. Although she is willing to help them and make some allowances for family concerns by allowing extra time on assignments and advocating with other teachers on their behalf, she acknowledges “...But my students know that they can talk to me.... Sometimes I have to say... that’s one for the counselor but they know that they can talk to me”. She then shared a very difficult situation that one student’s family went through that was quite devastating for the student in particular. The student had become withdrawn and her grades were slipping, but Calla intervened by reaching out to her “I was the only one that she would talk to about it..... And by her knowing that I do care about her outside of these school walls... came back to her wanting to finish her work and not giving up”. Calla asked the student if she could share part of the issue with her other teachers so that they would also understand the issue better and the student allowed her to do so. Calla really showed her willingness to care beyond the norm by reaching out to all of her students by phone the previous year, “...but last year when we had the snow storm... we have over 120 students on our team... I called every single one of them to make sure that they had food... and that their house was warm”. She did not stop there but actually ended up taking warm food to two

families that were without power and sufficient food. When I asked her if she has ever been uncaring to a student, she replied yes and then lowered her head to her outstretched palm. Then smiling she said “a couple of kids drive me up the wall...I will go back and apologize after I have yelled at them and made them feel small.... making them feel like they are nothing when I want them to feel like they are everything...(crying)” (Interview 1, 10/8/2015). She also expressed that they accepted her apology and promised to do better in regards to their behavior. I did not ask Calla about the ethnicity of the students, but during my classroom observations and our interviews, I did notice that she struggles with some of her African American students. Calla seemed hesitant to discipline students when needed and expressed in our initial interview that the African American parents had not been supportive like the Latino and Asian parents. She did not mention the European American parents as being either supportive or unsupportive.

Like many of the classrooms at Blossom middle, Calla’s classroom is vibrant and full of funny and interesting posters. Their laboratory tables can be organized in different ways but hers are typically in groups. Although she sometimes uses the board in the front of the classroom, much of her teaching occurs in groups. Her classroom is vibrant and students are active.

Being a caring teacher means interacting with the individual in a student-centered classroom

In our first interview, Calla proclaimed, “My philosophy of teaching um is student-centered... I believe that in my classroom the purpose of teaching is for the student to not only come to school... to feel... to learn science essentially, but to also feel loved...”. Of

course, this is also aligned with her wanting student to not be intimidated. When I asked her about, how this student-centered classroom works with her EL population, she stated “I came into it thinking that these students are just going to get it right off the bat... “She goes on to say that she learned that it was quite different from her expectations but that she learned that “with my ESOL students I try to include lots of pictures with single words.” It was an eye-opener for Calla last year when she realized that some of her EL’s really knew no English. Although she has EL students with higher English skills this year, she said that “I try to make sure that they are involved in the conversation... just so they feel included...” This is significant since much of her classroom experiences involve collaboration. She still uses the white board in her teaching, “We do notes on the board but we also do groups...”, but again groups are an essential component of her teaching style. In the classification unit, in which students learn to use dichotomous keys, Calla used the groups for essential instruction, “They did struggle... I sat down with half the class one by one to make sure that they could do it...” (Interview 2, 5/16/2016). She expressed that she was worn out over the experience but that it was the only way that she could be sure that everyone could correctly use the keys. Calla understood that the dichotomous keys were easier to grasp for some students but in her whole class instruction it was clear that many students did not understand. She knew that using dichotomous keys was a skill that students would also need to know for high school biology, so it was very important that they mastered it. When I asked her how that relates to assessing EL students she responded, “As far as assessments go we differentiate.... I don’t yell ‘Hey this is the test for the EL students’ but it gives them a chance to boost their confidence... they feel they can do this...” (Interview 2,5/16/2016).

Student Participants

It was especially difficult to begin gathering data from Calla's students because, they took a long time to turn in the permission forms required by the IRB. Eventually all five of Calla's EL or formerly EL students turned in the initial required paper work for the questionnaire but only three turned in the permission slips for interviewing. This comprised three males and one female all of whom are Latino. All of the students who completed the questionnaire strongly agreed that Calla was a caring teacher (See Table 4). All three interviewed students were 12 or 13 and spoke English well. For the purposes of this study, they were given the pseudonyms Liliana, Hollis and Leaf.

All of Calla's students had a good command of the English language, but they also shared a middle-schoolers reserve when speaking to a virtual stranger. Hollis and Leaf, the two boys were more likely to associate a caring teacher with someone who helps you learn the material and is fair. Liliana, like Iris' students also focused on the personal issues.

Liliana. In class Liliana appeared to always be on task. She seemed to like working in her group and really seemed knowledgeable of the content of the unit. When it came to caring teachers and learning, Liliana thought it important that teachers "have activities that help you".

Leaf. While observing the class, I noticed that Leaf was a little rambunctious. He was typically standing and sometimes engaged in work. He readily acquiesced when Calla redirected him to work with his group.

Hollis. In class Hollis appeared reserved but on task. He worked in a group of all boys who seemed similarly inclined to work diligently. According to Calla, Hollis was one of the best students in his class.

Table 4

Calla's students' responses to the questionnaire.

Questions	5	4	3	2	1
	Very Important		Neutral		Not Important
1. It is important to me that a teacher "cares" about me.	2	3			
2. It's important to me that a teacher tries to understand	4	1			
Questions	Strongly Agree		Neutral		Strongly Disagree
3. I learn more in a class in which a teacher cares about students.	4	1			
4. My science teacher "cares" about me.	5				
5. My science teacher "cares" about my learning.	5				

As shown in Table 4, all five of Calla's EL students in the study stated that it was very important or important that a teacher cares about them and understands them. Similarly, they stated that they strongly agreed or agreed that they learned more in classes in which teachers care and they all strongly agreed that Calla cared about them as individuals and about their learning.

The themes generated from Calla's students were aligned with her personal views on how a caring teacher should act. Calla's concern for her students feeling accepted and cared for falls under the definition of caring to her seventh graders. According to Calla's students, the main aspects of caring teachers are their concern for the whole student and their accessibility to all students.

Caring teachers are concerned about the whole student not just their subject

This theme permeates both the interview data and the student questionnaires. Although it was mentioned more often by the female students, even the males thought that it was important as well. Among the statements that students made to this effect are the following:

1-Z: "If they really care, they like need to know what's going on to help you".

4-Z "They get concerned about you and ask what the problem is and they help you".

4-Z "She listens to me when I have a problem and helps me solve it".

2-Z "Showing that they like care about their opinions and don't say anything bad about them"

2-Z "If you are sad they will ask what is wrong"

2-Z "Like if I tell her something, she will be able to give me advice in return".

5-Z "If you are having some type of problem and the teacher cares about you, they might ask about it and that mean that they care about you.

Statements 1-Z and 5-Z were responses made by Leaf and Hollis, respectively, two male students in Calla's class who were interviewed, whereas 4-Z and 2-Z are attributed to her female students Daisy and Liliana. To these young adolescents dealing with personal and academic issues caring teachers did not just care about the subject that she taught. Each of the interviewed students saw a caring teacher as someone who helps you solve your problems personal or academic. All five of Calla's students who returned the questionnaires viewed her as a teacher who cared about both their learning and who cared about them personally.

Caring teachers are approachable to all students

The two students who had the most to say in support of this theme were Liliana and Hollis, although other students also believed that Calla was very approachable. The following statements from students supported this theme:

2-Z "The teacher makes you feel safe and comfortable around her

2-Z "Makes you feel that it is okay to ask questions".

2-Z "Making you feel that you are welcome there" 5-Z "Not just helping one student"

5-Z "Helps the whole class"

2-Z "Cause like there was a time when I was crying cause of family and she had asked me that

2-Z "If I ever needed anything that I could ask her... and she asked if I was okay and it helped me to know not to be afraid to ask her if I needed help."

Liliana believed that Calla showed that she cared when during Liliana's family difficulties, Calla "asked if I was okay and it helped me to know not to be afraid if I needed help". It was clear that building relationships was important to Liliana because

she also described the importance of a “connection” and how “they’re actually engaged in what you are saying”. Leaf believed that caring teachers had to know “what’s going on in order to help you”. Hollis also explained the need for caring teachers to “keep a good attitude”. These characteristics of having a good attitude and connecting with students were considered caring attributes to these EL students.

Student views of uncaring teachers were more disparate. Of the interviewed and surveyed students, there was less convergence in their descriptions of uncaring teachers. The one theme that was agreed upon however was the impact of uncaring teachers on student learning. Students were also more animated when describing uncaring teachers.

Un-caring teachers do not enhance student learning.

The students were very expressive in their faces and voices when they described uncaring teachers. It was clear that they saw this as unfair and recognized that it would interfere with their ability to learn. The statements below encapsulate aspects of this theme:

5-Z “Not teaching the subject”

2-Z “Like doesn’t engage to it or have activities to help you”.

1-Z “Well, if we don’t really understand and they don’t help you. We won’t understand and will probably get like a bad grade.

Hollis stressed that uncaring teachers were “strict but like not in a good way” and that “they don’t pay attention to you” But to Hollis a student who strove to do better, the hallmark of an uncaring teacher was “Not teaching the subject”. Similarly, Liliana was concerned about uncaring teachers preparing lessons that “doesn’t engage” students or

“have activities to help”. Lilitiana recognized that she is more likely to learn the science content when she has activities and not just worksheets. Whereas Leaf considered the ramifications of uncaring teachers on the bottom line “We won’t understand and probably get like a bad grade”. This concern for caring teachers helping students to learn and earn good grades in the science was echoed across the interviewed students and those who completed the questionnaire. These students wanted to do well and they recognized that they needed caring teachers to achieve this.

Teacher Interview Data that Support Student Themes

Calla had made it clear that she did not want to be intimidating to her students. It was especially important to her that her students felt welcomed and loved in her classroom (Interview 1, 10/8/15). It would appear that her EL students who were interviewed believe this to be an important aspect of a caring teacher.

Like her students, Calla took the view that in order for her students to learn any science from her, they needed to feel safe in her classroom. It was important to Calla that students felt free to ask her questions in seventh grade life science. She mentioned their desire to truly understand sex cells and their willingness to ask her questions when other teachers did not find this to be true. In Calla’s discussions with other seventh grade life science teachers at Blossom Middle School, she found her students including ELs were more likely to ask the embarrassing questions about reproduction and anatomy. In her classroom, Calla wanted to tie in real world questions related to life science because she recognized that students would take biology in ninth grade and they could build on their understandings. She also believed it to be important that students received sound, scientific explanations for their questions (2nd Interview, 5/16/16).

Calla did acknowledge in the second interview that grades on the unit were not stellar. She was concerned that some of her EL students were not showing mastery of the content. She was disappointed and I understood that since she taught the higher level EL students that this was unexpected.

Classroom Observations that Support Themes

Calla's classroom is vibrant and active with students often working in groups or on projects. Calla walks around to groups interacting with the group and individual students, as needed. She smiles often and engages in short conversations with students throughout the period. Calla appears to be approachable to all of her students. Students are talking to their table groups, calling Calla over for questions and the classroom is literally humming with student-student and student-teacher conversations. This is not a surprise because it is one of her major aims as a teacher of ELs. She wants her students to feel welcome and she does not want to be perceived as intimidating. She clearly demonstrates motivational displacement and engrossment when interacting with any one student. While listening and responding to that student, they have her whole attention. This might be a problem but she seems to be learning in her second year of teaching that she must sometimes break away her attention to bring the rest of the class back on task, if needed. She is quick to apologize to the student she was previously engaged with and getting back to their discussion though. Based on my observations of Calla teaching and interacting with her students she demonstrates that she interacts with the individual in a student-centered classroom. Although she works with groups, she also takes the time for the individual. While students were working on review projects, Calla stopped at

Liliana's table to address a question about food webs vs. food chains. She congratulated the group on the whole regarding their progress and specifically pointed out that Liliana should provide decomposers in her food web. She stressed that things had to be broken down or decompose to provide nutrients for producers. When Liliana queried "like bacteria?", Calla responded "Yes... and what else could you add?" Liliana thought for a moment and then said "fungi?" to which Calla smiled and said yes! Good job! The other group members listened and then began looking for a picture of a mushroom to include in their food web. In Hollis' group of very motivated boys, Calla asked them about their progress and commended them on their work thus far. They seemed to have a sound understanding of the six kingdoms of living things but struggled with a few word pronunciations such as archaeobacteria and phylum. The students tried pronouncing the terms one after another and Calla slowly enunciated each term to help them. Calla shows a great deal of compassion and perhaps love for her students. At times her caring seems more aligned with her personality or an actual virtue. She does not believe that she is "burning out" although some of her colleagues have expressed concern. Yet, she is dealing with issues of classroom management and like many teachers she is exhausted at the end of the school day.

Virtue Ethics or Ethic of Care?

Early on in my interactions with Calla and later in data analysis, I wondered if she, in fact, was acting from a care as a virtue perspective or an ethic of care. She was emotional and prone to cry when recounting stories about her students' lives. Although she is kind and caring to all her students, she seems to have a special love for her EL students. Much of her experiences with these students imbues her with a sense of pity for them. She

views their personal lives to be in shambles. She wants her classroom and her person to be a respite from the storms of their lives. In her interactions with her students and their families, Calla has demonstrated a few characteristics which if habitual are actually virtues, such as the following: benevolence, compassion, friendliness, patience and generosity.

Calla revealed that her family members and colleagues express concern that she cares too much or does too much for her students; her reply is “that’s just who I am.... It makes me happy”. It appears that caring for her students and others is a disposition or personality trait. She acts the way that she does because she believes it to be the right thing to do in that moment. This also demonstrates some of the concerns with virtue ethics, however, because what feels right to Calla is kindness and friendliness. Yet, sometimes her students need sternness or to be pushed to better themselves, but it is difficult for Calla to see that as caring about them. Of course, this may be due to her lack of experience or her need to build competence as a teacher operating from an ethic of care.

Summary

From interviews, classroom observations and the student surveys, Calla presents as a very caring teacher. She recognizes her emotional involvement with her students and she wants it that way. She has stated “I want them to know that I take the time... that they matter” (Interview 2, 5/16/16). Her students point to her smiles and willingness to help all students as an indicator of her caring. Calla stated “I think that I’m more friendly caring” as opposed to the “motherly caring” students attribute to other teachers. Calla

struggles with some aspects of classroom management. She does have some male students who may spend a fair amount of time off task before she notices it and then she almost cajoles them into “behaving”. As a second-year teacher, Calla acknowledges that she has learned a great deal over the last couple of years and perhaps this is also true when it comes to some aspects of her caring. Although Calla teaches the requisite life science curriculum and skills mandated by her district and state, her emphasis is certainly on the students first and the content second. She acknowledged this in our first interview, when she recognized that she feels that she has to build the relationships before any learning of science can occur but this might put some of her more advanced students at a disadvantage (Interview 1, 10/8/15).

CHAPTER 6

CONCLUSIONS AND IMPLICATIONS

The purpose of this study focused on ascertaining if teachers who are perceived as caring are operating from an ethic of care or from another ethic such as virtue ethics. The following research questions guided the study:

1. How do middle school science teachers of EL students define caring? As a virtue, or Rule-bound perspective?
2. How do these middle school teachers' definitions of caring vary based on the context from which students and classroom situations arise?
3. How do middle school EL students determine if their science teachers are caring? What actions on the part of their science teachers do students perceive to be indicative of caring?
4. How do both middle school EL students and their science teachers believe caring impacts the learning of science content in the classroom and if so, why?

So, how the caring was demonstrated in the classroom and perceived by the students was a major concern. The initial difficulty with determining whether or not a teacher is operating from an ethic of care is differentiating between the virtue of care from an ethic of care. Teaching has been numbered among the caring professions such as nursing and social work (Hargreaves & Goodson as cited in O'Connor, 2008; Webb & Blond, 1995). But, this is often interpreted as people acting out of a virtuous character. So how do we

recognize or distinguish those teachers acting out of an ethic? An ethic of care is not dependent on how one feels in the moment and so is less likely to lead to “burn out” but it is a way of life in which one chooses to care despite circumstances. A teacher acting out of an ethic of care is not necessarily acting on an instinct or a natural sense of caring but is choosing from a moral perspective to “do the right thing” for their students on a daily basis.

The Case of Calla

For many people caring is an attribute of their personality and this may be the case for Calla. She is often smiling as she communicates with her students and she is very warm and affectionate. She stated that she often goes out of her way to help others when she is called upon for help. This includes her students, colleagues, friends and family. In our first interview, she mentioned with tears in her eyes that she couldn't help it. “It is what makes me happy”. Calla showed this by calling every student on her team on an unexpected snow day in order to check to ensure that they all had electricity and something to eat at home. When one family indicated that they did not, she went to get food and provided enough for the whole family. She loves her students and they know it. At the end of the school day, like many teachers, she is exhausted. Calla builds relationships with her students, she listens to them and tries to help each one of them but her actions are not varied. She helps all of them in similar ways when it comes to learning and their personal lives. Perhaps this is due to what she mentioned in her first interview as a sense of empathy in that she remembers the difficulty of being in seventh grade and her sympathy for the plight of her EL students' and their families.

Although she could and did show motivational displacement and engrossment when interacting with individual students, her tendency is to essentially treat them the same. One example of this is Florian. When asked about how caring teachers could help him learn, Florian indicated that a teacher did not always have to be nice and smiling, but that she should challenge you and make you work harder. Florian was a more advanced student whose needs were not being met because many of the lessons and activities were geared to average and struggling students. Calla was aware of Florian's intelligence, but did not seem aware that he needed to be challenged more. Despite Calla's obvious concern for her students' well-being, it is important that she not fall into the trap of neglecting the academic needs of her students or true caring is not occurring (Noddings, 2003; Ben-Peretz, Mendelson & Kron, 2003). Calla, as a second-year teacher struggled with the "gentle smiles and warm hugs" view of caring described by Rogers (as cited in Goldstein, 2002, p.76). She acknowledged a struggle with disciplining students. Calla desired a "friendly caring" with her students rather than the "motherly caring" that she associated with the somewhat stricter veteran teachers (Interview 1, 10/8/15). Perhaps like Goldstein's preservice teachers, Calla saw caring and authority as a simple dichotomy (2002). It was clear that she found it difficult to address these issues and when she did she believed that it was not a "caring" act. A chief concern for any teacher acting from the virtue of care or care as a personality trait is the level of stress and exhaustion often associated with it (Goldstein, 2002). Calla mentioned in her first interview that some of her colleagues believe that she cares too much because she feels so strongly (Interview 1, 10/8/15). Another view of Calla's interactions with her students is empathetic concern. According to Batson, Calla's emotional response to her students

may be “elicited by and congruent with the perceived welfare of someone in need. It includes feeling for the other – having sympathy, compassion, and tenderness, and feeling moved, soft-hearted, and warm” (as cited in Mayseless, 2016 p. 36).

Much of Calla’s interaction with her students is based in a compassion and sympathy that she has for their “difficult” lives. She recognizes the benefits from having her family and middle class upbringing to her life and she is concerned that EL students do not have the same. She believes that most of the parents are always at work and it is important that the students feel loved at school (Interview 1, 10/8/15). This does not preclude Calla from moving towards an ethic of care and it does indicate a foundation for her motivation to care (Mayseless, 2016). But, since operating from an ethic of care means wanting what is best for the student, Calla would have to truly embrace the notion that discipline can also indicate caring if it helps students to grow and improve as individuals. This lack of discipline might, in part, explain the lower than average scores of some of Calla’s EL students. This is most of concern because Calla’s students have a firmer grasp of English than most ELs at Blossom Middle School. Even her students acknowledge that a caring teacher can be stern at times.

According to Noddings, (ed. Virginia Richardson) “A carer, faithfully receiving the cared-for over time, will necessarily want the best for that person; that is part of what it means to care” (2001, p. 31). Since correction is sometimes what is best for her students, Calla is missing opportunities to show other aspects of caring.

Although both Calla and Iris care about their students, they do so from different underpinnings. Calla’s care is founded in her character and personality. She is a kind and compassionate teacher who cares about her students. She expends a great deal of

time and energy helping her students and colleagues and she recognizes that “that’s just who she is...” (Interview 1, 10/8/15). Her students love being around her and benefit from her affectionate nature. She loves teaching her students life science and hopes to engender an appreciation of nature in them. However, because she operates from a virtue of care she shows the exhaustion associated with operating solely from one’s emotions.

The Case of Iris

In many ways, Iris is the epitome of the “good” teacher. Her lessons are carefully planned and well executed. Two years ago she was her school’s Teacher of the Year and she appeals to the visual, auditory, and kinesthetic learners in her classroom. Iris finds multiple ways to teach physical science concepts and is a good classroom manager. In our initial interview, Iris was somewhat reserved. She later acknowledged that she is shy and that impacts how she relates to people.

Iris shared that she never bonded with any of her teachers while in school. In fact, she does not believe that any of her teachers cared about her as an individual. When she became a teacher, it was important to her that she build relationships with her students. Based on her own experiences, Iris believes that teachers often focus solely on those who cause trouble and the struggling learners but don’t notice the students who earn good grades and are quiet.

Iris does not display the “gentle smiles and warm hugs” variety of teaching. Like most character traits the intensity and expressiveness of caring are thought to be influenced by genetics and environmental influences (Mayseless, 2016). In addition to

Iris mentioning her shyness, she also indicated that her family is not very close. She is somewhat reserved but opens up to students on a one on one basis. Like Calla, Iris chooses to care and she aligns this choice initially with her own experiences in school. It is important to Iris that she listens to her students and does what she can to help them (Interview 1, 2/29/16). To Iris, caring may take the form of modifying tests to better evaluate the knowledge and skills of certain EL students; engaging quiet students in activities that help them to coalesce with the class; dancing with EL students to help them to have fun or “tough talking” with gamers in a manner that brings grins to each of their faces.

Iris’ caring lines up with the caring that middle school students recognize as reported by Wentzel, she understands the uniqueness of each learner and does whatever she can to ensure that all of her students learn the physical science content (1998). Her use of props, kinesthetic activities, lectures and laboratories are all based in her mindset of insuring that all of her students, including ELs, learn the physical science content.

Although Iris teaches the EL students with the least command of English, her students’ averages are only five or six points below the averages for those students fluent in English. Like most teachers with 30 to 35 students in a class, Iris may not always demonstrate optimal caring given the constraints of time inherent in teaching. Still, she builds strong relationships with her students and from the perspectives of the EL students in this study, she is a caring teacher.

Perspectives on Caring in the Middle School Science Classroom

Iris and Calla both teach middle school science classes with EL students. Their years of experience and expertise vary but they both point to their own life experiences as

influencing their willingness to care. Both Iris and Calla can remember being middle school students and the difficulty of those years. They both empathize with their EL students and try to consider things from the students' perspectives. The other perspective that both Iris and Calla share as it relates to their students is that they see the whole person for each of their students. This perspective is echoed in student responses about their teachers caring about and showing interest in their lives outside of the classroom.

As an observer in the classroom, I noticed that both Iris and Calla "see the individual student". Iris interacted well with each group represented in her classes including ELs, African Americans, European Americans and her one Asian student in that class. Calla interacted especially well with her ELs in particular and her Latino students in general. Calla seemed to have some difficulty interacting with a couple of her African American male students. She was kind to them but somewhat reserved when compared to her interactions with the only other males in the class who were Latino males. Each of the two teachers in the study, interacted with students in a caring manner. Although Calla is often smiling and very warm-hearted, Iris also demonstrates caring. Iris is not the "warm hugs and gentle smiles" variety of caring and yet her students view her as caring.

Both teachers on occasion demonstrated that in their dialogue with students they could be engrossed and show motivational displacement. Although, I did observe some cooperative group work, I could not ascribe the term practice in the way that Noddings uses the term. In other words, the teachers did not seem to use the cooperative group as an opportunity to enhance the student's ethical ideals. But some insight was gained from this study as it related to the original research questions.

How do middle school science teachers of EL students define caring? As a virtue, or Rule-bound perspective?

Both Iris and Calla view their caring as rooted in their own experiences and their empathy with their students. For Iris, this caring begins with her feelings for her students but it is tied to do what is best for her students. This includes their expressed and inferred needs. Much of what I saw in the study involved her meeting their inferred needs because although Iris saw her students as whole people, she also focused a great deal on their academic growth. This has some similarities with the rule-bound perspective of caring, more associated with Kantian ethics, in that Iris did demonstrate that one aspect of caring was ensuring some measure of academic success. I did not see her use this to the detriment of the students expressed needs but she truly believed that by encouraging her ELs to succeed that their lives and their families' lives would be better. This might just be one aspect of good teaching but it was tied to Iris' understanding of caring as well.

Calla is a compassionate teacher who cares about her students, in part because it is a personality trait. She is willing to expend a great deal of time and energy on her students and she is emotionally tied to them. Yet, she sees her caring as just "who she is". As such, Calla's caring takes on the attribute of a virtue.

How do these middle school teachers' definitions of caring vary based on the context from which students and classroom situations arise?

For Iris, whose colleagues view her as an advocate for her students, she agrees that she "has their backs". She states that this is especially true for her EL students whose actions may be misunderstood by other teachers. Iris believes that her EL students and more quiet students can't be allowed to "fall through the cracks". She

purposefully integrates them into fun classroom activities. For more gregarious students who might distract others from learning and disengage from the learning process itself, Iris may joke to bring them back on board and to refocus everyone's learning. This was the case with the African American male who was picking out his Afro in class whom Iris later patted on the back on their way to the hallway field trip on conduction.

The lack of variance in Calla's caring for her students is the greatest indicator that she may be acting from a virtue ethic and not an ethic of care. Calla is kind to all of her students. With the exception of perhaps having a difficulty with a couple of African American males, Calla treats her students the same. She loves all of them. She does have more sympathy for the plight of her ELs but she treats her students the same.

When the snow storm occurred, she called all of her team's student's homes to determine if they had electricity and food. She is willing to help all of her students in the same way with one exception. She will modify her assessments for her EL students. Although Calla cares about each of her students as individuals, her caring takes the same form.

**How do middle school EL students determine if their science teachers are caring?
What actions on the part of their science teachers do students perceive to be
indicative of caring?**

To the EL students who participated in this study, caring teachers are friendly and concerned about the whole student. These students wanted teachers who asked about their lives outside of school. They desired teachers who were willing to ask "How are you doing?". From the perspective of these students caring teachers care about them as individuals and demonstrate it by interacting with them and building relationships.

In some respects, the students were stating that they wanted teachers who demonstrated motivational displacement. They recognized caring teachers who were willing to truly pay attention to them. They also described caring teachers as those who were really willing to help them learn. Teachers who would reteach content or find new activities or ways to help students understand. Caring teachers would also modify tests to the appropriate level of the EL student. They saw teachers who used a “one- size” fits all approach to assessments as uncaring. Caring teachers paid attention to them not just when a student asked a question but when a student looked sad.

How do both middle school EL students and their science teachers believe caring impacts the learning of science content in the classroom and if so, why?

In multiple ways both Iris’ and Calla’s EL students who participated in this study indicated two major perspectives as it relates to caring science teachers. They all believed that caring teachers help students to be successful in class. Some students such as Fleur, in Iris’ physical science class, believes very strongly that Iris helps her to excel in science. Fleur even stated that she did not like science before, in part, because the teacher was mean. Other students such as Rosa feels that if a teacher cares then students will learn. Also, although the students believe that most caring teachers are often nice, they recognize that there is a place for sternness. They believe this to be acceptable because when used properly it could encourage students to do their best in science class.

Iris believes that in addition to showing interest in the students’ personal lives and building relationships that caring means getting the students engaged or motivated to learn. In her class students aren’t allowed to “fall through the cracks”. She sees them

and brings them into classroom activities and discussions. To Iris a big part of learning science is doing and she works hard to get her ELs involved in the active learning taking place in her physical science classes.

From Calla's perspective, unless the students know that they are welcomed and belong, no learning will occur. Calla provides a welcoming and hospitable classroom environment for her EL students. To the best of her ability she tries to meet their expressed needs. Only then, in Calla's opinion, will she be able to effectively teach the required life science content. Also, as much as possible she tries to answer the sometimes uncomfortable questions that middle schoolers have about the reproductive system, animal interactions etc. and because her EL students trust her they do not retreat into silence but share their desire to know as well.

Implications for Middle School Teachers of ELs

Middle schools represent a unique time in a child's development. As students traverse the divide between childhood and adolescence they are in need of understanding from both parents and teachers. EL students have this compounded with different aspects of culture shock and varying levels of competency in English literacy. Middle school teachers should know that EL students can participate more in class and learn the content better when they perceive their teachers as caring.

The EL students in this study viewed caring teachers as those who are attentive, interested in their personal lives and are willing to reteach the content if needed. Middle school teachers need to know that their EL students want to learn English and the content coursework in their classes. Although it is perhaps a struggle for both teachers

and students to get this group progressing in both English literacy and content coursework, it can be done.

Implications for Middle School Science Teachers of ELs

Although all teachers and their students can benefit from the ethic of care, younger, caring, middle school science teachers often feel especially overwhelmed with all of their responsibilities to both teach and meet the particular needs of their students.

Students, especially some EL groups, often find science and math classes particularly challenging. And, the increase in standardized testing that includes this population's science scores add to the teachers' stress levels. It is important that these teachers operate from an ethic of care that undergirds their science pedagogy and empowers them to teach, assess and interact with their students from a caring framework.

These caring science teachers are needed to help EL students maximize their potential in U.S. middle schools. EL students want teachers who are willing to reteach the science content if needed. Several of the students expressed concern that in other classes that the teacher would only teach something once. They found Iris and Calla to be caring, in part, because they found multiple ways to reteach the content. These students were very afraid of having to depend solely on themselves or friends to learn the content. Both Iris and Calla gave their students multiple opportunities to engage with the content and to get help from the teacher. Iris in particular would not allow any student to be unengaged in the learning process. She provided students multiple opportunities to be successful before they were formally tested. In addition to this she provided her EL students with modified tests that held them accountable for learning the content but in an appropriate way.

Although her EL students' scores were overall lower than those of students fluent in English, she and they accomplished a great deal.

Calla was disappointed in her students' scores, but she helped her students in many ways. The mere fact that some students would open up to Calla allowed her to inform other teachers and the counselors when needed. Calla is still a novice teacher and will likely grow in her classroom management skills and other attributes which will benefit the teaching and learning of life science in her classroom.

Both Iris and Calla are caring teachers. Iris appears to be operating from an ethic of care, while Calla seems more aligned with care as a virtue. From the vantage point of these two teachers' interviewed EL students, having a caring teacher can be beneficial to learning the science content whether it is a character trait or an ethic.

The concern here, however, is that those teachers who operate from an ethic of care can experience the sense of fulfillment that comes from caring without the burnout which is often associated with the virtue of care or compassion (Maslach, 2003 & Tepper, 2007).

Implications for Future Research

ELs are the fastest growing segment of the student population and "achievement gaps in mathematics and science persist between ELs and their non-EL peers" (Caswell, et al, 2016, p. 2). This is especially of concern when one considers that the Next Generation Science Standards place a greater emphasis on language use in the practices of science and engineering. The goal is to prepare all students, including ELs, for challenging coursework in mathematics and science for future careers or personal interest (Caswell, et al, 2016). If we are to achieve these goals, it will require a great deal of preparation,

study and commitment on the part of teachers. A teacher who is choosing to operate from an ethic of care may have a better attitude and volition to move forward in preparing to meet the needs of this population.

Long-term study. Much could be learned from a long-term study with multiple classroom observations of caring science teachers. It would be very clarifying to see a teacher operating from an ethic of care in action over several months and dozens of observations. It might even be beneficial to observe the teacher over the course of a school day rather than just one class period. Since an ethic of care acknowledges that caring will likely take different forms because of individual student differences this could be seen over different class periods and groups of students. Many teachers will acknowledge that some classes or periods are tougher to deal with than others. How does a teacher operating from an ethic of care handle the diverse situations inherent in an entire school day?

Self-identifying with the ethic of care. Although an ethic of care cannot be summed up in a checklist of specific behaviors, teachers may be able to determine if they are consistently establishing caring relationships with students. So, individual teachers might be able to determine if they are operating from an ethic of care. This would be an interesting area of study from which a study could be launched focusing on teachers who self-identify as working from this ethic of care and their impact on the learning of science by their students. Determining if the individual teacher is operating from an ethic of care would require that they reflect on the following aspects of the ethic: Does the teacher demonstrate attentiveness/engrossment? Does the teacher demonstrate motivational displacement as needed or appropriate? In other words, do they choose to

lay aside their own concerns to fully “receive” the students and their concern for that period of time? Does the teacher truly dialogue with the students, allowing them to speak and truly hear them? Does the teacher model care in her interactions with other adults and students? Are students given opportunities to practice care within the classroom under the teacher’s supervision? Perhaps more importantly, do students confirm the caring in some way? Is there a change in the behavior of the student? Or a willingness to work harder on the part of the student? Any sincere gestures of gratitude? These behavioral interactions would be indicative of caring relationships being successfully established.

On the other hand, a teacher might find that she has compassion for her students, loves them or cares about them but without truly establishing a caring relation. If caring relations, which inform the teachers pedagogy, are not established, then she is likely a caring person who demonstrates care from her disposition or personality only – virtue of care. Of course educating teachers on the ethic of care might also serve to help many caring teachers to choose to move from the virtue of care to an ethic that they may use to more effectively prepare their students. This too could provide valuable information regarding teachers transition from the virtue of care to an ethic and the impact, if any, on the teaching and learning of science.

From virtue of care to an ethic of care. Considering the science teachers who are already motivated to care, some professional development about the ethic of care could be useful and insightful. How can these teachers continue to care in the face of burn out? We know that teachers of EL students are often in schools with large turnover rates (Settlage, 2004). How can we retain these teachers and help them to grow as

professionals? Some professional development for in-service teachers and preparatory coursework for pre-service teachers could be beneficial. These teachers and their EL students would profit from teachers choosing to operate from an ethic care in which their science pedagogy is influenced and undergirded by this ethic.

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APPENDIX A

Interview Protocol 1: Teachers

1. How would you describe your philosophy of teaching?
2. What does that mean in regards to your ESOL students?
3. How would you describe your current views to those which you held prior to teaching and/or before you began teaching ESOL students?
4. Did any other experiences influence your current teaching philosophy? If so, which experiences and why?
5. You have been described by others as a “caring” teacher. Why do you think others attribute this characteristic to you?
6. When you hear that someone is a “caring” teacher how does it make you feel and/or how does it impact your view of that teacher?
7. Where do you think the “caring” comes from? For you or for others of whom you have considered to be caring.
8. How do you demonstrate caring?
9. How should caring be demonstrated to your ELLs?
10. Does this caring impact teaching, learning or assessments in your classroom? How?
11. Do you think that your students perceive you as caring? Why?
Probe: ELL students in particular? Why?

APPENDIX B

Interview Protocol 2: 2nd Teacher interview

1. Why do you think that (or do you think that) “caring” should be manifested in science teaching?
2. How do you think that “caring” should be manifested in science teaching?
3. How do they think this “caring” should be manifested in your science teaching?
4. Could you give me any examples of how being a “caring” teacher has impacted your ESOL students learning of science? How?
5. Do you see “caring” as something to which all science teachers should aspire? Why? or why not?
6. Can you think of any examples in which you did not demonstrate “caring” and you now feel was a mistake? How does that impact you in the class room now?
7. How did the students fare in this past unit? ELL students?
8. What impact, if any, do you think caring had on teaching and learning in this unit? science?

APPENDIX C

Question Number	Question:	Scale:				
1.	It is important to me that a teacher “cares” about me.	Very important	Neutral	Not Important		
		5	4	3	2	1
2.	I learn more in classes in which the teacher cares about students.	Strongly Agree	Neutral	Strongly Disagree		
		5	4	3	2	1
3.	My science teacher “cares” about me.	Strongly Agree	Neutral	Strongly Disagree		
		5	4	3	2	1
4.	My science teacher “cares” about my learning	Strongly Agree	Neutral	Strongly Disagree		
		5	4	3	2	1
5.	Is English your first language?	Circle				
		Yes	No			
6.	Are you currently in the ESL/ELL* program?	Circle				
		Yes	No			
7.	How do teachers demonstrate to students that they care?					
8.	How does your teacher show you he/she cares?					
9.	How do you think teachers should show that they care?					

*The school district is currently changing the terminology from ESOL, ESL to EL but students may not be familiar with the new term.

APPENDIX D

Interview Protocol 3: Students

1. Please describe a caring teacher.

Possible Probe: What do caring teachers do? (How do caring teachers act?)

Possible Probe: Are caring teachers always nice?

Possible Probe: Can caring teachers be strict? Please explain

Possible Probe: Are caring teachers always attentive (Do they always give you their full attention when you ask a question?)

2. Please describe a non-caring teacher.

3. Please give an example of how your science teacher shows that she is caring (Or) non caring.

4. How would/should a caring teacher help you to learn science?

5. How can a non-caring teacher (interfere with; keep you from; stop) you learning science?