STANDARDS-BASED TESTING OUTCOMES IN INSTRUCTIONAL CONSULTATION TEAM CLASSROOMS: AN ANALYSIS OF GROWTH IN READING

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DEDICATION

To my family. –Thank you.

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I would like to thank my committee members who have gone above and beyond to support me throughout the dissertation process.

ABSTRACT

CHAKA COLEMAN: Standards-Based Testing Outcomes in Instructional Consultation Team Classrooms: An Analysis of Growth in Reading
(Under the direction of Rune J. Simeonsson, Ph.D.)

Recent federal education legislation has recognized the over-identification and overrepresentation of students in special education and mandated that schools use evidence-based teaching strategies and instructional interventions within the general education classroom before initiating a special education referral. Legislation also put greater emphasis on state-administered, standards-based tests as a means to improve accountability of student achievement. In response, state education agencies (SEAs) faced the problem of delivering evidence-based teaching strategies/interventions and producing results of student achievement as evidenced by test data. The following research addressed the problem by examining the relationship between student reading growth and teacher involvement with Instructional Consultation (IC), an intervention for students at-risk for academic failure. This study utilized an associational design to examine the relationship between the IC involvement of 40 teachers, as measured by implementation time and involvement group, and the corresponding classroom reading growth score. No significant relationship was found between teacher implementation time and student growth in reading. However, results indicated a significant difference in teacher involvement groups as it pertained to student growth in reading. No interaction effect was found between teacher implementation time and teacher involvement group. The majority of teachers surveyed had minimal IC experience. In consideration of demands on SEAs for accountability, future research on IC should

include longitudinal data, inclusive of teacher characteristics and student indicators to document intervention effects within schools.

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ABBREVIATIONS

AYP	Adequate Yearly Progress
Blueprint	A Blueprint for Reform: The Reauthorization of the Elementary and Secondary Education Act
EOG	End-of-Grade
ESEA	Elementary and Secondary Education Act
FAPE	Free and Appropriate Education
HOUSSE	High, Objective, Uniform State Standard of Evaluation
LEA	Local Education Agency
IC	Instructional Consultation
ICT	Instructional Consultation Team
IDEA	Individual with Disabilities Educations Act
IEP	Individual Education Plan
NCDPI	North Carolina Department of Instruction
NCLB	No Child Left Behind
NRC	National Research Counsel
NRP	National Reading Panel
RTI	Response to Intervention
SEA	State Education Agency

CHAPTER 1

HISTORICAL OVERVIEW

For a decade, the re-authorization of the *Elementary and Secondary Education Act* (ESEA), commonly referred to as the *No Child Left Behind Act*, has significantly impacted schools at the national, state, and local levels. The *No Child Left Behind Act* (No Child Left Behind [NCLB], 2002), passed during the G. W. Bush administration, mandated that all schools report 100% proficiency in student reading and math by 2014 as evidenced by state-administered, standards-based tests. Whether the NCLB was the appropriate approach in addressing the need for increased educational accountability has not been without criticism. However, the need for effective intervention, prevention, and early intervention is widely embraced by educators and politicians have acknowledged that evidence-based practices are essential for prevention of student failure and promotion of student achievement.

The US Department of Education considers an intervention to be "evidence-based" if there is "strong evidence" of the intervention's effectiveness (United States Department of Education Institute for Educational Statistics [USDE IES], 2003). Two dimensions are examined in determining the whether there is "strong" indication of an intervention's effectiveness: "quality" and "quantity" (USDE IES, 2003). An intervention developed in a study that used randomized, controlled trials that are well designed and implemented is considered to be of good "quality" (USDE IES, 2003). Moreover, an intervention based on a study that has been replicated and developed in two or more typical school settings (or a setting similar to a school) demonstrates "quantity" (USDE IES, 2003). If an intervention is

lacking the dimension of quality or quantity (thereby lacking "strong evidence"), "possible" evidence can be demonstrated if a study uses closely matched comparison groups or if the study is randomized/ controlled and falls short in only dimension (quality *or* quantity) (USDE IES, 2003). Though randomized, controlled studies can be difficult to implement in the school setting, the Department of Education rejects pre-post, unmatched comparison group studies, and "lower quality" meta-analysis as providing possible evidence (USDE IES, 2003).

Federal legislation, in recognition the over-identification and overrepresentation of students in special education, has mandated that schools use evidence-based teaching strategies and instructional interventions within the general education classroom before initiating a special education referral (Individual with Disabilities Education Act [IDEA], 2004; NCLB, 2002). Several models have been designed and implemented to ensure the use of evidence-based instruction in order to decrease special education referrals and increase student achievement, including Instructional Consultation Teams; but there is little research available on their impact on state-level assessments. The problem was addressed by analyzing the relationship between reading growth and the Instructional Consultation Team (ICT) model, an intervention for students at-risk for academic failure (Rosenfield & Gravois, 1996). The purpose of this study was to examine the relationship between student academic growth in reading (as measured by the state standardized End-of-Grade test) and teacher involvement with Instructional Consultation (IC). A non-experimental design was used, as schools previously elected to participate in IC. The focus of analysis was to investigate the relationship between Instructional Consultation Team (IC-Team) involvement and student reading growth and the following questions were addressed:

1) Within IC-Team schools, is there a significant relationship between teacher IC implementation time and student growth in reading as measured by End-of-Grade (EOG) tests?
2) Within IC-Team schools, are there significant differences among the teacher IC involvement groups, at it pertains to student growth in reading, as measured by End-of-Grade (EOG) tests?
3) Within IC-Team schools, is there a significant relationship between teacher IC implementation time and student growth in reading, as measured by End-of-Grade (EOG) tests, moderated by teacher IC involvement group?

The need for this study is based on a review of legislative mandates, Department of Education reports, reading research, and faculty behavior that positively impacts student achievement such as engaging in "response to intervention" and teacher collaboration. A review is also made of Instructional Consultation, Instructional Consultation's alignment with legislative mandates and research, and North Carolina's standards-based accountability model. The study did not cover the broad applications of Instructional Consultation for behavioral problems or learning problems in math, but focused on reading.

Review of Related Literature

Legislative Mandates and Department of Education Reports

Elementary and Secondary Education Act. The *Elementary and Secondary Education Act* (ESEA) was first enacted as part of President Johnson's War on Poverty (Jorgensen & Hoffman, 2003). Title I of the ESEA, which provides federal funding for schools with a high number of economically disadvantaged children, has significantly impacted the academic achievement of disadvantaged children since its inception (Jorgeson

& Hoffman, 2003). The 1994 reauthorization, the *Improving America's Schools Act* of 1994, broadened the ESEA by setting high standards for all students, rather than focusing on disadvantaged students (Pearson, 2001). The 2002 reauthorization of ESEA, *No Child Left Behind* (NCLB, 2002), increased the federal government's role in education more than its predecessors. NCLB boldly mandated that 100% of American school children become proficient in reading and math by the 2013-2014 school year as measured by state-administered, standards-based tests. NCLB established accountability standards to ensure all schools were making progress towards proficiency and outlined sanctions for schools that did not make progress (NCLB, 2002; Yell, Shriner, & Katsiyannis, 2006). Additionally, NCLB required that schools employ highly qualified teachers in safe, drug-free environments and ensure all students graduate from high school. The cornerstones of NCLB included doing what works based on scientific research, increased accountability, local control, and parental options (Jorgeson & Hoffman, 2003).

In addition to the evidence-based practice requirement discussed previously, one of the most notable aspects of NCLB was the requirement for all schools to employ highly qualified teachers. According to the legislation, any teacher of a core subject (i.e., English, reading, language arts, math, science, history, civics/government, and foreign language) must be highly qualified (NCLB, 2002). However, highly qualified is not synonymous with certification or licensure. To be considered a highly qualified teacher, one must hold a bachelor's degree, have full state certification/ licensure, and demonstrate subject matter competency in the core academic subjects taught (NCLB, 2002). Acknowledging some schools may have difficulty meeting the highly qualified teacher requirement, flexibility in meeting highly qualified teacher specifications was provided by the US Department of

Education for rural teachers, science teachers, and current multi-subject teachers (Spelling, 2005a). Of note, current teachers may demonstrate competency through a rigorous professional development process developed by the state and referred as "HOUSSE" (High, Objective, Uniform State Standard of Evaluation) (Spelling, 2005a).

Adequate yearly progress. With highly qualified teachers in place, schools were now responsible for ensuring at least 95% of their students make "adequate yearly progress" (AYP) as evidenced by state administered standards-based tests. Schools were required to make 95% AYP for all subgroups (e.g., Asian subgroup, English Language Learners subgroup) and for graduation or attendance (NCLB, 2002; Yell et al., 2006). If schools did not meet these state-determined standards they were subject to sanctions such as replacement of staff or reorganization by the state education agency (NCLB, 2002). AYP was an imperative aspect of NCLB as it directly addressed the problem of the achievement gap, the phenomena of one group significantly outperforming another that has plagued the nation for many years (USDE, 2005b). In the US, minorities, students with lower socioeconomic statuses, and students who speak English as a second language have persistently and significantly had lower achievement than their peers (USDE, 2005b). AYP required schools to disaggregate student test scores and target underperforming groups. Each state was allowed to determine its own definition of AYP, given that the definition met the following requirements:

> Applies the same high standards of academic achievement to all public elementary school and secondary school students in the State; i) is statistically valid and reliable; ii) results in continuous and substantial academic improvement for all students; iii) measures the progress of public elementary schools, secondary schools and local educational agencies and the State based primarily on the academic assessment; iv) includes separate measurable annual objectives for continuous and substantial improvement for each of the following: (I) The achievement of all public elementary school and secondary school students. (II) The achievement of—(aa) economically disadvantaged students; (bb)

> students from major racial and ethnic groups; (cc) students with disabilities; and (dd) students with limited English proficiency. (NCLB, Part A, Subpart 1, § 1111, 2[c], 2002)

As it pertains to this study and this study's data collection year (2010), the North Carolina Department of Instruction (North Carolina Department of Instruction [NCDPI], 2010) considered a school's AYP met if 95% of total students and 95% of each subgroup met proficiency targets. For example, for the 2009-2010 school year, the proficiency target was a 43.2% pass rate for reading and a 77.2% pass rate for math on the state standards-based test for grades 3-8 (NCDPI, 2010). If a subgroup did not meet the specified proficiency target, a school could also meet AYP through safe harbor provisions (NCLB, 2002). A safe harbor provision could be applied if a student subgroup had a 95% participation rate on the state standardized test, had reduced the percent of students not proficient by at least 10% from the previous year for that subject area, and showed progress on other academic indicators (NCLB, 2002).

National Reading Panel. Many aspects of No Child Left Behind were built largely upon the findings of the National Reading Panel. The National Reading Panel (NRP) was created in 1997 at the request of Congress with the purpose of reviewing research about effective ways to teach reading (National Reading Panel [NRP], 2000). Together, the National Institute of Child Health and Human Development (NICHD) and the Secretary of Education selected the NRP, a committee of 14 members consisting of reading teachers, collegiate reading researchers, educational administrators, and parents (NRP, 2000). The NRP built upon the work of the National Research Council (NRC) Committee on Preventing Reading Difficulties in Young Children (NRP, 2000). Using only research studies that met rigorous standards as a basis for findings, the NRC Committee report identified factors that help children learn to read and obstacles children face in learning to read. Whereas the NRC

Committee report discussed the beginning of reading acquisition, the NRP focused on how reading skills are most effectively taught (NRP, 2000).

Reading development. In order to review effective ways to teach reading as identified by the National Reading Panel, it is important to define reading and provide a brief description of reading development. Since a local education agency (LEA) within North Carolina is the focus of this study, definitions developed by the state education agency (SEA) were utilized. The state of North Carolina has defined reading as "the process of decoding print and constructing meaning, based on the reader's prior knowledge" (NCDPI, 2004).

Literacy is a continuous process that occurs throughout life (NCDPI, 2004). Stages of literacy development have been identified as the early emergent stage, emergent literacy stage, the developing literacy stage, the early independent stage, the independent literacy stage, and the expanding literacy stage (NCDPI, 2004). In preschool years, or the early emergent and emergent literacy stages, children discover reading as an engaging activity, develop an interest for print, and learn that the text and pictures covey a meaning (NCDPI, 2004). When children move in to elementary school they reach the developing literacy stage where they develop phonemic awareness, phonics knowledge, sight word recognition and writing basics such as spacing and capitalization (NCDPI, 2004). In the early to mid-elementary years (early independent and independent literacy stages) children move from reading independently and writing to express an understanding of text to reading multiple genres of text and more organized writing (NCDPI, 2004). Finally, in secondary education years, the expanding literacy stage, students develop their ability to read various texts analytically and write in various genres (NCDPI, 2004).

Emergent literacy is a process that has no specific beginning or ending; "emergent literacy is used to denote the idea that the acquisition of literacy is best conceptualized as a developmental continuum" (Whitehurst & Lonigan, 1998, p. 848). Whitehurst and Lonigan (1998) noted, "emergent literacy consists of the skills, knowledge, and attitudes that are presumed to be developmental precursors to conventional forms of reading and writing" (Whitehurst & Lonigan, 1998, p. 849). An example of emergent literacy, as it pertains to this study, is the NCDPI standard course of study for language arts, which is based on a continuum of learning. For example, according to the North Carolina 3-5 Grade Span continuum students can:

- Apply phonics and structural analysis to develop automatically in word recognition.
- Apply extended knowledge of prefixes, suffixes, and root words to identify unknown words.
- Use fix-up strategies when meaning breaks down (self-question, reread, visualize, read on, retell).
- Apply a variety of reading and thinking strategies according to purpose and text.
- Integrate information and ideas selectively from own experience and text(s).
- Comprehend, respond to, and make connections with fiction, non-fiction, poetry, and drama.
- Assess validity, accuracy, and value of information and ideas.
- Expand literacy through research and inquiry. (NCDPI, 2004)

***Reading instruction*.** Development of strong emergent literacy skills has a high correlation with skills such as print awareness, alphabet knowledge, and phonemic awareness; these skills were identified by the National Reading Panel (NRP) as essential in learning to read (NCDPI, 2004; NRP, 2000; Whitehurst and Lonigan, 1998). Specifically, within the areas of alphabetics, fluency, and comprehension, the NRP identified the best methods for explicit reading instruction as: phonemic awareness; phonics instruction; guided oral reading; independent silent reading; vocabulary instruction; text comprehension instruction; teacher preparation and comprehension strategies instruction.

North Carolina's Teaching Model of Reading is a specific example of how states have adapted NRP findings into their reading instruction practices. Table 1 illustrates the NRP list of skills and North Carolina model for reading instruction.

Table 1

Comparison of NRP and NC Methods for Reading Instruction (NCDPI, 2004; National *Institute of Child Health and Human Development [NICHD], 2010)*

NRP model for reading instruction	NC Teaching Model of Reading	
Alphabetics	Emergent Literacy	Concepts about print Letter knowledge
	Word Recognition	Phonemic awareness Alphabetic principle Phonics and decoding Sight word development Spelling development Appreciation of Morphemes
Fluency	Fluency	Automatic word recognition Good oral reading Good silent reading
Comprehension	Comprehension	Understanding narrative and expository text
	Vocabulary and Concept Development	Dictionary use Inferring meanings from context Proper usage Shades of meaning General knowledge
(no equivalent)	Engagement and motivation	Reason for and appreciation of reading
(no equivalent)	Strategies used by good readers	Developing a system for learning

A New Era: Revitalizing Special Education for Children and Their Families.

After NRP findings were published and before the reauthorization of the Individuals with

Disabilities Education Act, President G. W. Bush created the President's Commission on Excellence in Special Education to investigate the current condition of special education. The Commission's report, *A New Era: Revitalizing Special Education for Child and Their Families* (United States Department of Education Office of Special Education and Rehabilitative Services [USDE OSERS], 2002), provided findings and recommendations for policies pertaining to students with disabilities in light of NCLB and the reauthorization of IDEA. The Commission's report found that special education had become an end-point rather than a gateway to more effective, evidence-based instruction and intervention (USDE OSERS, 2002). It was recommended that the current wait-to-fail model (waiting until students have demonstrated academic failure before introducing an academic intervention) be replaced with a prevention model and special education be reserved for children who do not respond to appropriate instruction in general education. *A New Era* asserted that focus should be on results, rather than a process; meaning the focus should be on prevention, intervention, and evidence-based practices rather than regulation and paperwork (USDE OSERS, 2002; Yell et al., 2006). Furthermore, the Commission recommended children in special education be considered general education children first and that general and special education share responsibilities for children with disabilities (USDE OSERS, 2002). The Commission recommended the themes of NCLB extend to those in special education by incorporating them in the reauthorization of IDEA (USDE OSERS, 2002).

The Thomas B. Fordham Institute concurrently issued a series of reports echoing the recommendations of the Commission. The reports, *Rethinking Special Education for a New Century* also provided findings and recommendations in regards to special education.

Similar to *A New Era*, this report emphasized a prevention model and evidenced-based practices (Yell et al., 2006).

Individuals with Disabilities Education Improvement Act. The Individual with Disabilities Education Improvement Act (IDEA, 2004) provided federal guidelines regarding the education of students with disabilities. IDEA mandated students with disabilities be provided equitable, free and appropriate education in the least restrictive environment. According to IDEA § 300.17 (2004), free appropriate public education or FAPE refers to special education and related services which are:

> a) are provided at public expense, under public supervision and direction, and without charge; b) meet the standards of the SEA [state education agency], including the requirements of this part; c) include appropriate preschool, elementary school, or secondary education in the State involved, and d) are provided in conformity with an individualized education plan (IEP) that meets the requirements of Sec. 300.320 through 300.324.

Free Appropriate Public Education (FAPE), first introduced in IDEA's predecessor, the *Education for All Handicapped Children Act* (Public Law 94-142), did not define "appropriate education." Thus, "appropriate education" was defined as a "basic floor of opportunity" in the Supreme Court case *Board of Education of the Hendrick Hudson Central School District v. Rowley* (1982) (Jacob & Hawthorne, 2003). The significance of this case meant that schools did not have to maximize the potential of students with disabilities, but rather provide a basic floor of opportunity, which meant that education was *equally accessible* to students with disabilities via specialized instruction and related services that are designed to provide an educational benefit. The inclusion movement was influential in the evolution of FAPE and by 1997 the least restrictive environment was translated to mean it was preferable for students with disabilities to receive an education in the general education classroom with the proper modification whenever possible, given that the child could still

have an educational benefit (Huefner, 2008). Huefner (2008) noted that the 1997 IDEA reauthorization extended FAPE beyond a "basic floor of opportunity" by mandating that special education students make meaningful progress toward specific educational goals described in their Individual Education Plan. Further raising the bar, IDEA (2004) added (see italicized) that FAPE and special education services should meet students' unique needs and prepare them for *further education*, employment and independent living (IDEA, 2004; LD Online, 2010). In addition to IDEA, students with disabilities can also be serviced through Section 504 of the Rehabilitation Act, which describes what is appropriate for placement of students with disabilities. Violations of Section 504 are investigated through the Department of Civil Rights.

IDEA (2004) is aligned with NCLB in numerous ways. As it pertains to this study, IDEA and NCLB are aligned in regards to the requirement of highly qualified teachers and the requirement that students with disabilities participate in standards-based tests (particularly tests required by NCLB). The NCLB definition of highly qualified teacher applied for IDEA with the additional provisions, including specific requirements for special education teachers who teach a core academic subject, teach multiple subjects, or teach to alternate achievement standards. Additionally, IDEA included descriptions on how to achieve the highly qualified teacher status through professional development (United States Department of Education Office of Special Education Programs [USDE OSEP], 2006). In conformity with NCLB, IDEA (2004) required that students with disabilities be included in all district and statewide assessments with accommodations outlined in their Individualized Education Plan (if applicable), with an exception of up to one percent of students with disabilities allowed to be assessed using alternate achievement standards.

Apart from alignment with the pre-existent NCLB Act, the 2004 reauthorization of IDEA presented a new standpoint on special education, in comparison to the previous IDEA authorization. The most significant differences between IDEA 1997 and IDEA 2004 were the prohibition of using any one assessment as the basis of determining special education eligibility, the elimination of the discrepancy (between intellectual ability and achievement) requirement in determining special education eligibility, and the requirement that special education services be evidence-based. IDEA (2004) stipulated that students receive meaningful educational benefit from special education programming, which included the following:

- relevant assessments,
- development of meaningful goals and programs based on the assessment results and peer-reviewed literature,
- routine monitoring of educational progress,
- and adjustment of instruction when student progress is insufficient. (Yell et al., 2005)

Furthermore, IDEA recommended that states use a responsiveness to intervention model in lieu of a wait-to-fail model in working with struggling students. Traditionally, in regards to students who struggle academically, schools operated using a "wait-to-fail" model, meaning schools wait until students have demonstrated academic failure before introducing an academic intervention. Before the reauthorization of IDEA, struggling students were often referred for testing, after which an IQ/achievement discrepancy model was used to determine student eligibility for special education under the specific learning disability categorization. With the discrepancy model, students required severe IQ/achievement discrepancies to qualify for additional instructional services through special education. The 2004

reauthorization of IDEA was reactive to the wait-to-fail trend and has changed the way general and special education services are delivered in every school across the nation.

The re-authorization of IDEA (2004) revolutionized general and special education by stating students are no longer required to exhibit an extreme discrepancy between intellectual ability and academic achievement to qualify for special education and related services. Now, schools may use a process that determines whether a child responds to scientific, evidence-based interventions. This process, most often referred to as Response to Intervention (RTI), differs from the traditional wait-to-fail model in that it involves using evidence-based interventions to prevent students from developing academic difficulties, reduce the number of students who are referred to special education, and identify children who need highly specialized instruction (Lembke, McMaster & Stecker, 2009).

Response to intervention. The term Response to Intervention (RTI) refers to how well a student responds to an evidence-based academic or behavioral intervention within the general education classroom. RTI can be structured in a protocol (tiered) or a problem solving model and the process usually involves utilizing assessment, evidence-based interventions, and progress monitoring within the general education classroom (Tilly, 2008) (see Figure 1). Teachers that use the RTI protocol model group students based on their area and type of need (in tiers), and use an evidence-based protocol for intervention based on the type of need. This approach is efficient in that it increases the intensity of interventions based on the level of need, but oftentimes it is not individualized and/or does not utilize the school curriculum, which may make it difficult for students to generalize skills learned though the RTI process (Virginia Department of Education [VDE], 2008). Teachers that use the problem solving RTI model provide individualization of the intervention, utilize the

school curriculum, and match instruction according to student need; however, it is sometimes difficult to track the integrity of implementation using this model (VDE, 2008). Whether a protocol or problem solving model is used, the RTI process is endorsed by IDEA because it successfully combines evidence-based interventions with progress monitoring, which ultimately provides information needed to shape or match instruction according to student need.

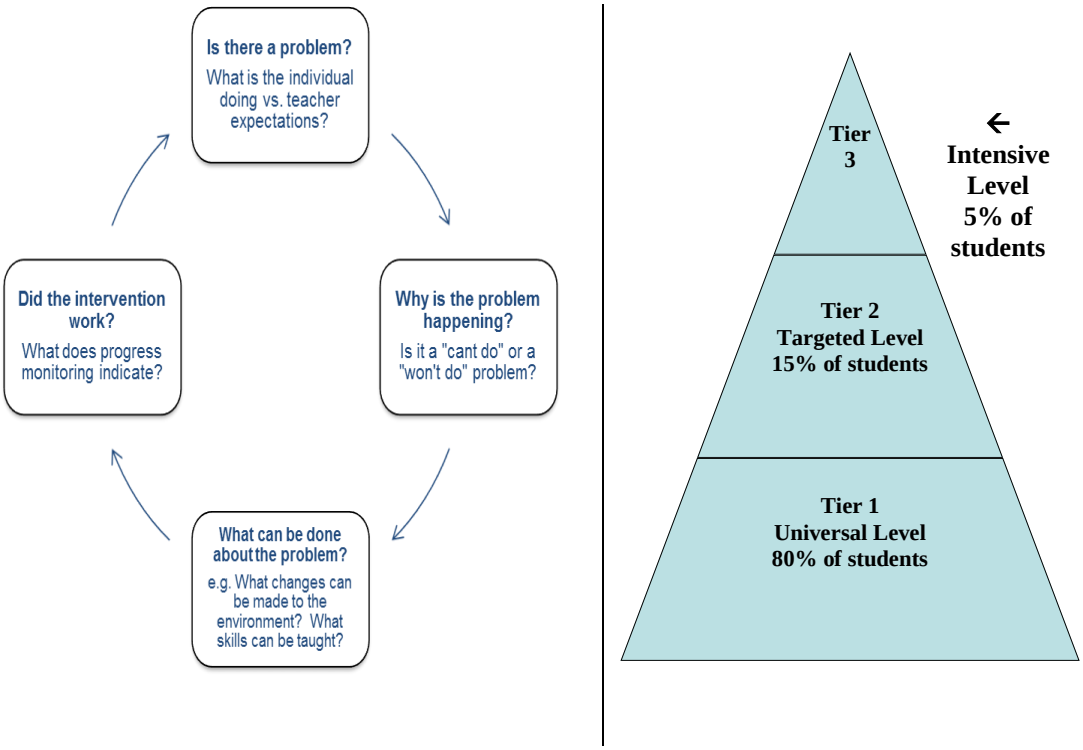

Figure 1. A comparison of the two RTI models, the problem solving model and the tiered model, adapted from Tilly (2008).

Raising Achievement: A new path for No Child Left Behind. As a result of NCLB, schools have seen an increase in overall student achievement; however, the discrepancy in achievement between students of different ethnic or socioeconomic groups remains (Lee, 2006; Porter, 2005; USDE OPEP, 2010). In 2006 the former Secretary of

Education, Margaret Spelling, announced a new approach to NCLB in her address, *Raising Achievement: A new path for No Child Left Behind.* This address was the Department of Education response to states' concern about meeting NCLB standards. *Raising Achievement* conceded that states needed greater flexibility in ways to demonstrate achievement (Spelling, 2006a). Spelling's address announced that states had the option of using modified alternative standards for assessing up to two percent of students with special needs, in addition to the one percent of students with severe disabilities who may be assessed using alternative achievement standards (Spellings 2006a; USDE, 2005a).

Additionally, the address announced researchers were examining how states could use a growth model (comparison of current and previous test scores) rather than the AYP model, to determine whether students were making progress (Spellings, 2006a). Of note, North Carolina was selected as one the first two pilot states to participate in a growth-based accountability model revealed in a subsequent address (Spellings, 2006b). The growth-model methodology seemed promising and many more states have begun to use the model (NCDPI, 2009a).

A Blueprint for Reform: The Reauthorization of the Elementary and Secondary Education Act. More recently, the Obama administration released *A Blueprint for Reform: The Reauthorization of the Elementary and Secondary Education Act*, previewing the upcoming reauthorization of the ESEA. This document focuses on college and career readiness, teacher and principal effectiveness, equity and opportunity for all students, raising the bar and rewarding excellence, and promoting innovation and continuous improvement (USDE OPEP, 2010). Blueprint is similar to NCLB in most ways; however, there are some differences. Rather than schools demonstrating 100% proficiency in reading and math on

standards-based tests by 2014, it is proposed schools ensure all students are college and career ready by the year 2020 (NCLB, 2002; USDE OPEP, 2010). Nevertheless, the document does not eliminate the use of testing-- only modifies it; the difference being instead of each student achieving a particular passing score, each student must demonstrate academic growth as evidenced by a state-administered assessment (USDE OPEP, 2010).

Similar to the current NCLB Act and IDEA, Blueprint maintains teachers must be highly qualified. Blueprint increases the focus on teacher (and principal) effectiveness and proposes a requirement for states to define and evaluate teacher and principal effectiveness using student growth, student outcomes, and teacher/principal observations as indicators (USDE OSEP, 2010). This document states that the focus on teacher effectiveness is based on research that indicates high-performing teachers make a difference in the achievement of students and can significantly help narrow the achievement gap and overall student outcomes (Sanders and Rivers, 2006; USDE OPEP, 2010). Recognizing the challenging task teachers face Blueprint states, "every teacher and leader [should have] access to the preparation, on-going support, recognition, and collaboration opportunities he or she needs to succeed" and states/districts that will receive the most support are those "willing to take bold action to increase the number of effective teachers and leaders where they are needed most" (USDE OPEP, 2010, p. 13). Of note, until states transition to the new accountability requirements (when ESEA is reauthorized by Congress) they continue to practice using the current definition of "highly qualified teacher" (USDE, 2012).

ESEA flexibility. In September of 2011, President Obama held a press conference announcing states could apply for flexibility in meeting ESEA mandates (USDE, 2011). Given comprehensive plans were developed by the state, each state that submitted an

application and was approved could be given flexibility in three areas: college/career standards and assessment, accountability systems, and teacher/principal evaluation. ESEA flexibility provided states reprieve from the mandate of 100% proficiency by 2014; instead states could set alternative, achievable goals (USDE, 2011). Additionally, states had more flexibility in defining what constitutes a "failing" or "achieving" schools, as well flexibility in allotment of federal funds. To receive these provisions states were required to apply for the waivers and continuously renew them with the Department of Education (USDE, 2012).

Standards-Based Testing Impact on Special Education Referrals

In response to the pressure of high-stakes testing, accountability standards, and sanctions some schools increase the number of students identified as needing special education supports (National Association of School Psychologists [NASP], 2003). The number of students identified as needing special education supports has increased and NCLB mandates may have exacerbated the trend (Fielding, 2004). Mentioned previously, though students with disabilities must be included in accountability calculations, up to three percent of students with disabilities may be excluded from those calculations (NCLB 2002; USDE, 2006). Excluding the three percent of exempt students, students identified as receiving special education supports may still be eligible for accommodations during the state administered, standards-based test (USDE, 2006). It is suspected some schools identify struggling students as needing special education supports so that they may either be excluded from assessments or receive accommodations during assessments (Fielding, 2004; Jacob-Timm, 1999).

A survey of Texas school diagnosticians revealed that most school diagnosticians felt the majority of initial special education referrals were driven by performance on the state

standards-based test (Fielding, 2004). In the same survey diagnosticians disclosed they routinely feel pressured by administrators to recommend special education services for students who score poorly on state tests (Fielding, 2004). A survey of school psychologists had similar findings. A survey of school psychologists revealed school psychologists' most cited ethical dilemma is administrative pressure to act unethically (Jacob-Timm, 1999). The most cited pressure by school psychologist/ administrators was "regarding special education eligibility, placement and services" (Jacob-Timm, 1999, p. 208). School psychologists reported eligibility conflicts, which included pressure to "make pupils eligible," "pressure to give a specific diagnosis," "pressure to certify students as eligible for special education so that their test scores would not be included with district scores on state-mandated tests," and "pressure to limit school obligations to students with special needs" (Jacob-Timm, 1999, p. 209).

The American Educational Research Association (AERA, 2000) and the National Association of School Psychologists (NASP, 2003) have stated that neither organization endorses the use of high-stakes testing as the sole determinant in making critical decisions, such as decisions to promote or retain students. NASP cautioned against using large-scale assessments for high-stakes decision making at all levels, school, district, and state; NASP also recommended moving away from standards-based tests as the main measure of student achievement in the reauthorization of ESEA (NASP, 2003; NASP, 2010). NASP further asserted that the current trend to inflate standards-based test scores through over-identification of students as needing special education should be replaced by widespread use of evidence-based interventions (NASP, 2003; NASP, 2010).

Teacher Impact on Student Achievement

Schools striving to meet educational goals as measured by state-administered, standards-based tests would likely benefit from an investment in highly qualified teachers, not only because it is mandated by NCLB (2002) and IDEA (2004) but because teacher experience, teacher test scores, and licensure have been found to have positive effects on student achievement (Clotfelter, Ladd, & Vigdor, 2007). As evidenced by the 50-state study conducted by the Center for the Study of Teaching and Policy: A National Research Consortium (1999), teacher quality is linked to student achievement. In examining teacher quality, Clotfelter et al. (2007) noted that teachers with weaker credentials often teach disadvantaged children and recent legislation has taken steps to address issues such as these that tend to widen existing achievement gaps. In recognition of the relationship between teacher quality and special education referrals, IDEA (2004) stated a child must be afforded effective instruction (by effective teachers) prior to being considered for special education. Furthermore, research has suggested teacher belief that they can positively impact student achievement contributes to student achievement (Bandura, 1993; Goddard, Hoy & Hoy, 2000; Rosenfield, 1995).

Teacher efficacy. Self-efficacy, or the belief that one can achieve a goal, greatly contributes to the level and quality of human functioning (Bandura, 1993). Poodell and Soodak (1993) found that teachers with low personal self-efficacy were less likely to consider regular education appropriate for students with mild learning problems and low socio-economic status in comparison with teachers with high self-efficacy. Additionally, teachers with high self-efficacy were found to be less likely to refer students with mild learning and behavioral problems for special education regardless of socioeconomic status (Poodell & Soodak, 1993). Traditionally, social-cognitive theory is applied when examining

how students learn; however, the self-efficacy of teachers may influence their motivation and behavior and merits examination.

On the basis of research, social cognitive theorist Albert Bandura posited that teacher efficacy perceptions are predictive of student achievement (Bandura, 1993). Bandura found that teacher belief in individual efficacy (ability to motivate and promote student learning) as well as belief in the collective instructional efficacy of faculty (teacher belief about the faculty's ability to successfully teach students) significantly contributed to student academic achievement (Bandura, 1993). When there is collective instructional efficacy the school-wide norm influences action (e.g., the teacher becomes more persistent, plans more) and ultimately the achievement of school increases (Bandura, 1993; Goddard et al., 2000).

Collective teacher efficacy. Building on the work of Bandura, Goddard et al. (2000) found collective teacher efficacy had a positive effect on students. An empirical study examined the construct of collective teacher efficacy at various levels (Goddard et al., 2000). The study included development of a valid and reliable measure of teacher efficacy and a subsequent analysis of the effects of teacher efficacy on student achievement at the individual, classroom, and organizational level (Goddard et al., 2000). Data analysis indicated collective teacher efficacy was positively associated with differences between schools in student-level achievement in both reading and mathematics (Goddard et al., 2000). The study also found that collective teacher efficacy affected student achievement more than any demographic control (Goddard et al., 2000).

Goddard's et al. (2000) findings were consistent with those of Bandura (1993) who found teachers that teach at-risk students or students from a low socioeconomic group have higher achievement levels based on national norms when teachers have collective

instructional efficacy. It can be concluded teachers must not only be "highly qualified" to close the achievement gap; teachers must also create a school-wide culture that facilitates the belief that all students are learners. Belief that all students are learners and the development of a collective, or collaborative, community are basic assumptions in the Instructional Consultation Team model (Rosenfield & Gravois, 1995).

Instructional Consultation Team Model

In order to create an optimal learning community for students, teacher professional development must include creating a learning environment for teachers (Rosenfield, 2008). An effective RTI problem-solving model, Instructional Consultation (IC), creates a collaborative learning environment for teachers. Whereas in the typical (protocol) RTI model students are identified/ receive services based on a tiered approach and receive pullout services, in Instructional Consultation (a problem-solving RTI model) the IC case manager collaborates with the teacher in data collection and matching of instruction within the general education classroom. The focus on "supporting teachers' professional capacity to develop and deliver effective instruction in the general education classroom… distinguishes instructional consultation from other forms of consultation and teaming" (Gravois & Rosenfield, 2006, p. 45).

Instructional Consultation is a consultee-centered problem-solving process that emphasizes matching teacher instruction/student skill level and empowers teachers to implement evidenced-based interventions and use data-based decision making (Rosenfield, 2008). The goal of an IC-Team (ICT) is to enhance, improve, and increase student and staff performance (Gravois, Gickling, & Rosenfield, 2007). Instructional Consultation was

originally constructed for use with individual consultations but has evolved into a collaborative problem-solving process used with school teams (Rosenfield & Gravois, 1996).

IC is built on the assumptions that early intervention is preferable to waiting for failure and that the best place for intervention is within general education classroom, the arena in which there is an instructional mismatch (Gravois et al., 2007). During the initial and continuous training, IC team members focus on building three skills areas (Gravois et al., 2007): 1) Building professional, collaborative relationships; 2) enhancing systematic problem-solving; 3) increasing effectiveness in instructional and behavioral assessment. The systematic problem-solving and instructional/behavioral assessment is the RTI component of IC, but what enhances IC's effectiveness and sets it apart from other problem-solving RTI models is the focus on building professional, collaborative relationships.

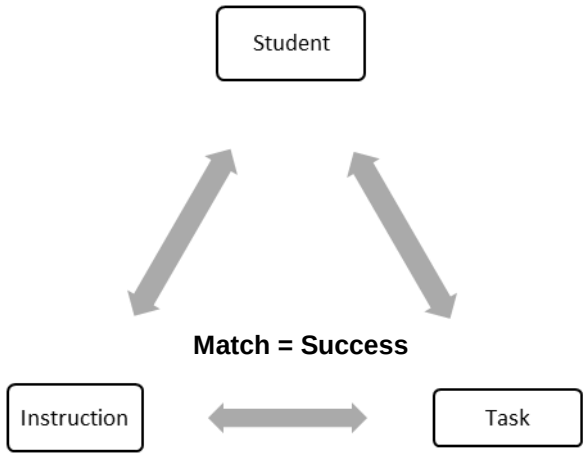

Figure 2. Instructional Consultation View of Learning, adapted from Gickling et al. (2007).

During the IC process teachers collaborate within a problem-solving community to determine where there is a mismatch between classroom instruction and the student's current skill level (see Figure2). The objective of the IC Team is to develop a systematic support network within the school, enhance teacher skills in instructional assessment and delivery,

develop a school-wide culture of problem-solving and collaboration, and utilize data for classroom and school decisions (Gravois et al., 2007).

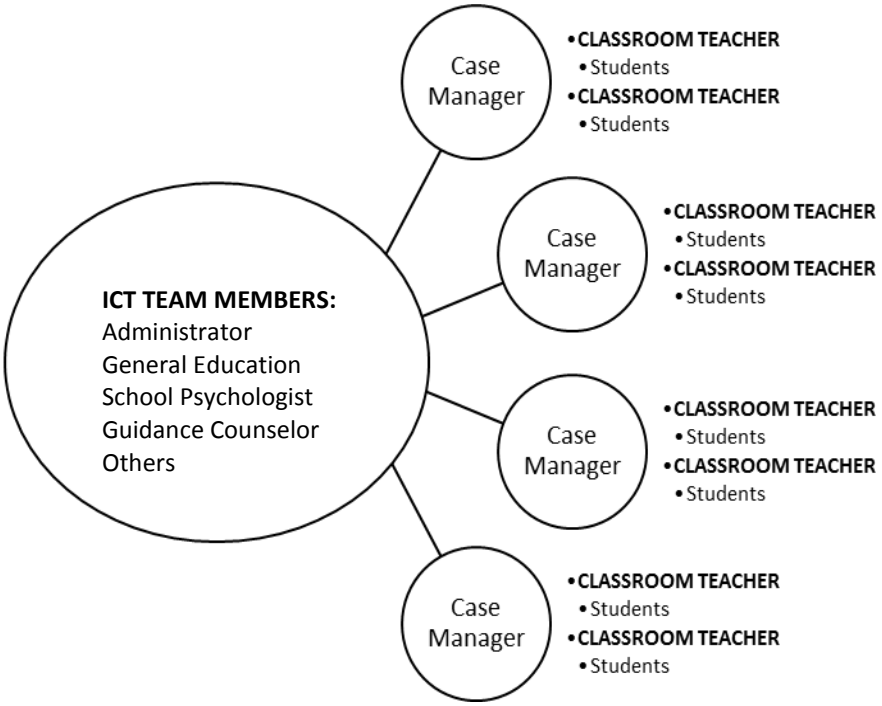

Figure 3. Instructional Consultation Team Model, adapted from Rosenfield & Gravois (1996).

When a teacher needs assistance with a student with an academic or behavioral problem, the teacher is assigned a trained case manager from the IC Team (see Figure 3). Together, the teacher and case manager use a problem-solving process and make decisions based on data collected. Based on Vygotsky's social constructivist theory, knowledge is co-constructed through language when persons work together within structured problem-solving situations such as IC Teams (Knotek et al., 2003). IC Teams are structured in that members approach and perceive problems within the context of a problem-solving stage (Rosenfield & Gravois, 1996). The IC process includes the following stages (Rosenfield, 1995; Rosenfield, 2008):

1) Contracting -	the case manager negotiates the contract with the teacher
2) Problem identification and analysis-	teacher identifies concerns in observable, measurable terms; data collection terms, goals determined
3) Intervention design-	based on the problem, targeted, evidence-based interventions are selected to implement
4) Intervention implementation-	data is collected by teacher, case manager assists if problem arises
5) Evaluation of intervention effectiveness-	evaluation toward goals monitored; lack of treatment integrity addressed; intervention altered, if needed
6) Closure-	case is closed if goals reached; if progress not made, stage 1 begins again

The relationship between the case manager and teacher during the problem-solving process is essentially a consultee-centered consultation relationship originally described by Caplan (1970).

Collaboration impact on teacher performance. Consultee-centered consultation helps improve consultee competence so that they can more effectively deal with problems in the future (Knotek & Sandoval, 2003). Consultee-centered consultation requires collaboration between the consultant (case manager) and consultee (teacher) and focuses on teacher skill development, rather than the student. When instructional consultation is utilized in a team model, it merges into instructional collaboration (Rosenfield, 1995). Collaborative relationships have been found to enhance the competence of all persons involved (Coloney & Coloney, 2010). Thus, a successful consultative relationship within a collaborative team

model allows teachers to broaden and build their own skills (and self-efficacy) in addition to enhancing student performance (Fredrickson & Branigan, 2005; Gravois & Rosenfield, 2002).

Collaborative professional development, such as IC training and participation, is likely to improve teacher performance and student outcome (Waldron & McLeskey, 2010). Collaborative professional development must be coherent and focused, address instructional practices, collaboratively built on practices, school based and long-term, provide extensive follow-up and be actively supported by school administration (Waldron & McLeskey, 2010). Though the IC-Team Facilitator leads the team, the school principal is always a member of the IC-Team and participates in training and case managing (Gravois et al., 2007; Rosenfield & Gravois, 2006). Waldron & McLeskey (2010) found school principal support of distribution of leadership among staff members for processes (such as the use of evidence-based practices, curriculum and instruction development, and classroom management) empowers staff members, increases teacher buy-in, and ultimately increases student achievement.

Schools not only have to restructure, but they also have to "reculture" their beliefs about struggling learners (e.g., adopt IC assumption that all students are learners) and engage in a collaborative process to bring about change (Fullan, 2001; McLeskey & Waldron, 2000; Rosenfield, 1995). Instructional Consultation components of joint problem-solving, data analysis, shared decision making, and distributed leadership are all ways that schools can demonstrate their reformed culture (Joyce & Showers, 2002; Waldron & McLeskey, 2010). Schools with a collaborative culture not only improve respect and trust amongst colleagues, they also have increased instructional practices, better student outcomes and tend to maintain

changed for longer (Joyce & Showers, 2002). Schools also bring about change by reculturing their beliefs about learning problems. The new belief being that learning problems are the result of a mismatch rather than an internal deficit.

Instructional Consultation Impact on Special Education and Student Achievement

It is has been found that African-American children are twice as likely as Caucasian children to be labeled as children with intellectual disabilities and placed in special education (USDE OSERS, 2002). Instructional Consultation Team schools have been found to positively impact the performance of African-American students and students who are English Language Learners (Gravois & Rosenfield, 2002; Gravois & Rosenfield, 2006). A Gravois and Rosenfield (2002) study found significantly fewer African-American students were referred for special education or placed in special education when supported by IC-Teams. This study of 20 schools indicated IC-Team schools had significantly fewer African-American special education referrals and placements compared to schools that use pre-existing, traditional pre-referral practices (Gravois & Rosenfield, 2002). A follow-up study of 22 schools found after two years of IC implementation IC-Team schools had significantly fewer special education referrals and placements; additionally, the odds of minority students being placed in special education were decreased by half (Gravois & Rosenfield, 2006). The study also indicted that the odds of minority students supported by IC-Teams being placed in special education were reduced by half when compared to students in schools in the same district not supported by IC-Teams. Furthermore, for more than 10 years the IC-Team model consistently resulted in a reduction of minority students for special education (Gravois & Rosenfield, 2006; Levinsohn, 2000). Research supports the notion that IC-Team schools have a positive impact on the achievement of minority students, narrowing the achievement gap.

Instructional Consultation Team Alignment with Legislative Mandates, National Reading Panel, and North Carolina Teaching Model of Reading

IC and the highly qualified teacher. Key components of Instructional Consultation are aligned with the mandate of both NCLB and IDEA that all teachers are highly qualified. As previously discussed, it is often difficult for rural districts to meet the requirements of the highly qualified teacher mandate because teachers in rural locations often teach multiple core subjects. Thus, a provision was established that allows teachers to meet the highly qualified status through professional development (HOUSEE) activities (USDE OSEP, 2006). On-going professional development, such as Instructional Consultation professional development, is a means by which teachers can learn and improve recommended skills in problem-solving, effective communication, data-based decision making, and curriculum-based assessment (Spelling, 2007a).

IC and prevention of over-identification. Children identified as having specific learning disabilities have increased 300 percent over the last 30 years and the majority of the students were identified as such because they lack reading skills (USDE OSERS, 2002). IC-Teams are an effective means of decreasing special education referrals and overall placement of students in special education (Gravois & Rosenfield, 2002). IDEA stipulates that states must have policies in place to prevent over-identification and overrepresentation of any race or ethnic group as students with disabilities (IDEA, 2004). Though minorities continue to be over-represented in special education, schools with IC-Teams have been found to have fewer minority referrals and placements in special education (Gravois & Rosenfield, 2006; USDE OSERS, 2002).

IC and evidence-based decision making. The US Department of Education supports evidence-based instructional programs and initiatives that strengthen teacher skills in

effective instructional techniques (USDE, 2003). Response to Intervention (RTI) is a technique described and endorsed in IDEA (2004). RTI was also endorsed in a letter from the National Association of School Psychologists (NASP) to the U.S. Congress, encouraging Congress to include essential components of RTI and infuse an evidence-based intervention model in the reauthorization of the ESEA process (NASP, 2010). As previously described, IC combines the RTI problem-solving model with consultation to provide improvement in both teacher and student performance.

IC, the National Reading Panel, and the North Carolina teaching models for reading. Alphabetics, fluency, and comprehension, areas the NRP deem necessary for learning to read, are directly assessed in the IC process (NRP, 2000). These major areas of reading instruction identified by the NRP are acknowledged and incorporated into the instructional assessment process within IC (Gravois et al., 2007). Dimensions of reading identified by IC pioneers include overarching dimensions of comprehension and metacognition and sub-dimensions (language and prior knowledge, word recognition and meaning, responding, word study, and fluency). These dimensions of reading are commensurate with the dimensions of reading instruction identified by the NRP and the North Carolina curriculum developers identified in Figure 1.

North Carolina End-of-Grade Test

North Carolina's state-administered, standards-based test is referred to as the End-of-Grade or EOG test. For grades three through eight, all students are assessed in reading comprehension and math. The EOG tests are developed based on the North Carolina Standard Course of Study objectives (NCDPI, 2009a). The reading comprehension test for grades 3-8 consists of a reading selection followed by questions about the selection and

multiple choice answers (NCDPI, 2007). Grade 3-5 Competency Goals and Objectives are centered on word recognition strategies, skills, and vocabulary; strategic comprehension; effective communication; grammar and language conventions; and literature (see Appendix D for complete NC Standard Course of Study). Based on the Standard course of study, items were developed and written to measure a single concept or principle (NCDPI, 2009a). To ensure proper psychometric properties (that the test accurately assesses achievement) both classical measurement analysis and item response theory analyses were used (NCDPI, 2009a).

North Carolina Participation in Growth Model Pilot and North Carolina Instructional Consultation Team Pilot

NCLB (2002) originally required schools to record student academic achievement, as measured by standards-based tests, using adequately yearly progress. As previously discussed, adequately yearly progress (AYP) measures the number of students in each subgroup (e.g., Asian, Hispanic) meeting a specific target. NCLB requires AYP of each subgroup toward the goal of reaching 100% proficiency in reading, math, and science by 2014 on state-issued standards-based tests (Goldschmidt & Choi, 2006; NCLB, 2002). However, many schools had difficulty meeting AYP and an increasing amount of schools were entering NCLB's "needs improvement" category (Goldschmidt & Choi, 2006).

In a 2006 address, former Secretary Spelling introduced the US Department of Education's Growth Model Pilot program, which gave schools the option of using a growth model to measure student progress. A growth model evaluates performance based on previous years' scores; this allows states to measure growth by examination of student projected growth based on state average growth, or by examination of individual student growth (Goldschmidt & Choi, 2006). Growth models are endorsed by NASP for inclusion in

the reauthorization of the ESEA. NASP describes growth models as "relevant and important indicators of the effectiveness of schools" (NASP, 2010).

Though the growth model is a newer concept at the federal level, North Carolina schools have used such models as part of the ABC accountability system since 1996 (NCDPI, 2006). North Carolina was still under AYP mandates the data collection year; that year NC school districts met AYP by meeting AYP goals, through safe harbor provisions, or by demonstrating student growth through a growth model (NCDPI, 2006). Within the NC accountability system, all students had a growth trajectory; however, if a student failed to meet proficiency targets (an Achievement Level score of three or four) under AYP standards, a growth trajectory could track their progress (NCDPI, 2006). Growth trajectory was calculated using students' previous test scores compared to proficiency at a later point in time. The difference between the failing score and the score needed to be proficient within four years was calculated. If the student closed the gap between the failing score and score needed to be proficient in four years by 25% the next year (50% the second year, 75% the third year, 100 % the fourth year), the student was deemed on target until they ultimately meet proficiency by the fourth year (NCDPI, 2006). Underachieving students were thus required to achieve more than a year's growth in a year's time.

In consideration of the NCLB and IDEA mandates, North Carolina's Department of Instruction began to implement two RTI models, the Problem-Solving Model and the Instructional Consultation Team, which is the focus of this study. Local Education Agencies (LEAs) across the state applied to be one of the four LEAs to participate in the IC implementation pilot. Schools under consideration for the pilot program had to commit to the following:

1) Participate in IC for up to three years with fidelity.
2) Gather a team consisting of the superintendent, elementary education director, exceptional children director, principals, teachers, and school psychologists to a one day planning meeting.
3) Designate one teacher to devote at the least half-time as the IC Team Facilitator. Each Facilitator must participate in a four day training seminar and fourteen days of training implementation.
4) Designate a liaison with DPI (who works at the system-level) to attend training.
5) Select staff from the school to be trained as IC Team members. (Locklear, Leake, Watson & Pittman, 2003)

In 2003, the LEA that is the focus of this study applied to participate and was selected as one of the four LEAs to participate in IC training. Drs. Todd Gravois and Ed Gickling led this particular training throughout the 2003-2004 school year. Two schools that were deemed likely to implement change with fidelity were selected and from those schools, principals elected to participate. In 2003 the LEA began pre-implementation training and in the 2004-2005 school year the district/LEA began implementation of IC. Two schools and three additional schools began IC training in 2005 and 2007, respectively. One school trained in 2005 elected not to implement IC. In 2009-2010, the data collection year, IC was implemented in a total of six elementary schools within the LEA.

At the time of data collection, IC-Teams were implemented within 18 schools across 18 districts in the state (NCDPI, 2009b). Data collected within the IC schools across the state suggested schools were able to meet and make progress toward goals and teachers were able to generalize skills intervention strategies learned through IC in their classrooms (NCDPI,

2009b). ICT school data indicated in comparison to schools with traditional pre-referral teams, ICT schools had fewer students referred to the IEP team and students ultimately referred to the IEP team were more likely to qualify for special education (NCDPI, 2009b). Initial research indicated ICTs were a promising approach for developing teacher skills and facilitating student achievement.

Ray (2005) conducted a study examining whether elementary students in schools with IC-Teams showed greater mean gains in reading achievement than elementary schools that did not have IC-Teams. Ray found the differences between schools' reading achievement, as measured by the North Carolina End-of-Grade test to be statistically significant. Limitations identified by Ray (2005) included number of schools utilized for analysis (two IC schools and two non-IC schools) and unidentified variability in teacher participation in IC. Ray (2005) recommended future research on IC and reading achievement include a larger number of schools and consider of teacher variability in IC participation. Utilizing the same LEA, this study expanded upon Ray's (2005) study by:

1) examining reading growth in 40 classrooms within six IC schools (in comparison to two IC and two-non IC schools),
2) examining the length of teacher IC implementation and type of teacher IC involvement to address variability in teacher IC participation, and
3) examining reading growth scores rather than reading developmental scale scores. The growth score is the difference between current and previous year(s) developmental scale score (NCDPI, 2006).

Silva (2007) conducted a study of IC at the school, classroom, and student level. The goal of Silva's study was so examine student reading achievement and special education

placement of the English Language Learner and overall student population. Special education placement data was not available for that study; however, hierarchical linear modeling results of the study indicated significantly higher reading achievement in IC classrooms, after controlling for differences between schools (Silva, 2007). Silva (2007) noted that though results indicated ICTs may have their greatest impact at the classroom level, the study did not identify which teachers requested ICT assistance to implement strategies in the classrooms and which did not. Silva (2007) suggested IC is most effective at the classroom level and teacher effectiveness is linked to student outcomes (Sanders & Rivers, 1996). Sanders and Rivers (1996) found that, controlling for ability and achievement, student outcomes are greatly affected by the teacher to which they are assigned and students with the most effective teachers achieve appropriate to excellent gains.

This study considered Silva's (2007) findings and limitations in that it:

1) examined teacher IC involvement and student outcomes at the classroom level; and
2) identified which teachers requested ICT assistance and which teachers did not request ICT assistance.

The current study examined the number of years of IC involvement at the teacher/classroom level because increased time with IC has been found to increase teacher effectiveness (Gravois & Rosenfield, 2002; Levinsohn, 2000; Ray, 2005; Silva, 2007). This study examined reading growth rather than reading achievement because reading growth has been found to be a better indicator of student progress (NCDPI 2009; Spelling 2006a; Spelling 2006b; USDE OPEP, 2010).

Summary

Educators and society in general are more cognizant of the fact that early intervention for disadvantaged or struggling learners is needed to ensure that all children have an opportunity to succeed. Education legislation is reflective of this trend as evidenced by increased emphasis on reading, early academic intervention, and evidence-based educational practices. The state of North Carolina is a forerunner in educational reform through participation in growth model pilot studies and utilization of RTI models, one of which is Instructional Consultation. IC combines early identification of skill deficits, evidence-based intervention practices, and teacher support. Thus, the purpose of the study was to examine the relationship between reading growth and Instructional Consultation Team involvement as measured by standards-based testing.

Education legislation, such as NCLB and IDEA, has focused on ensuring all students have an opportunity to learn from qualified teachers who use evidence-based instructional and intervention strategies. Under current legislation, schools are responsible for ensuring that general and special education students achieve academically and that their progress is evident through standards-based assessments. Utilization of a RTI model is supported by the Department of Education and organizations such as the National Association of School Psychologists. Instructional Consultation not only utilizes key components of responsiveness to intervention, which ultimately enhances student achievement; it also incorporates teacher skill building and formation of a collaborative school environment built on the belief that all students are learners. Instructional Consultation may be a means for schools' improvement and an avenue for meeting accountability standards. Furthermore, "school-based consultants who are committed to social justice cannot afford to be disengaged from the design,

implementation, and evaluation of standards-based reform and accountability systems" (Roach & Elliot, 2009, p. 63).

Statement of the Problem

In response to the enactment of No Child Left Behind (NCLB, 2002) and the reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA, 2004), schools are more accountable for ensuring student achievement and progress. Standards-based testing continues to be the means by which student academic skills are monitored across the nation. In previewing the reauthorization of the ESEA, Blueprint suggested continuation of NCLB's legacy of standards-based accountability and emphasis on evidence-based decision making; the document also highlighted teacher collaboration. In addition to agreement with the statutes outlined in NCLB, IDEA (2004) included a recommendation for teachers to use a responsiveness to intervention model (which incorporates use of evidence-based interventions). Instructional Consultation combines responsiveness to intervention with a climate of collaboration to promote student progress as emphasized in NCLB, IDEA, and Blueprint. Instructional Consultation has been found to improve academic and behavioral achievement, reduce inappropriate special education referrals, and reduce over-identification/ overrepresentation in special education (Gravois & Rosenfield, 2002; Gravois & Rosenfield, 2006; Levinsohn, 2000; Ray, 2005; Silva, 2007). However, there has not been an extensive investigation on its effect on standards-based tests, the nation's yardstick for measuring student progress. Thus, the problem this study investigated is whether the Instructional Consultation Team model, which combines the building of professional/ collaborative relationships, systematic problem solving, and instructional/behavioral assessment skill, is predictive of student growth in reading.

Significance of Problem

Whereas the number of students referred to special education has increased over the last few decades, it is estimated that learning disabilities account for only two to six percent of all reading failure (Chard et al., 2008). Problems in the learning environment, such as failure to use evidence-based instruction, cause many reading problems that eventually result in a special education referral (Torgesen, 2000). Recent federal legislation recognizes the over-identification and overrepresentation of students in special education and mandates that school uses evidence-based teaching strategies and instructional interventions within the general education classroom before initiating a special education referral (IDEA, 2004; NCLB, 2002). Legislation also mandates that all teachers are well qualified so students are afforded the best educational opportunity (IDEA, 2004; NCLB, 2002). Instructional Consultation is an effective means of combining evidence-based methodologies to decrease special education referrals, improve student achievement, and increase teacher skills in accordance with federal mandates.

Research Questions

The present study built on an earlier investigation conducted by Ray (2005) that evaluated the relationship between Instructional Consultation and student achievement on North Carolina's End-of-Grade test in reading. This study examined the relationship between Instructional Consultation involvement and student reading growth. The research questions regarding the identified problem are:

1) Within ICT schools, is there a significant relationship between teacher IC implementation time and student growth in reading as measured by End-of-Grade (EOG) tests?
2) Within ICT schools, are there significant differences among the types of teacher IC involvement as it pertains to student growth in reading as measured by End-of-Grade (EOG) tests?
3) Within ICT schools, is the relationship between teacher IC implementation time and student growth in reading, as measured by End-of-Grade (EOG) tests, significantly moderated by the type of teacher IC involvement?

CHAPTER II

Methods and Procedures

The purpose of this study was to examine if the utilization of the Instructional Consultation Team model, a responsiveness-to-intervention approach, was associated with student growth in reading as measured by a standards-based test. Specifically, the objective was to examine the relationship between reading growth and the length of teacher IC involvement. The study also compared reading growth across four groups/types of teacher involvement: (Group A) did not participate on ICT and did not request ICT assistance to implement IC in the classroom; (Group B) participated on the ICT; (Group C) requested assistance of the ICT implement IC in the classroom; (Group D) participated on the ICT *and* requested assistance of the ICT. Finally, the interaction between length and type of teacher IC involvement was evaluated. This chapter describes the methodology used to conduct the study.

The problem was addressed by exploring the relationships between reading growth and the Instructional Consultation Team model, an intervention for students at-risk for academic failure. Reading growth was defined as the average classroom reading growth score and Instructional Consultation involvement was measured by surveying each classroom teacher's IC implementation time and IC involvement type. Teachers within each school had varying lengths and types of IC involvement.

Hypotheses

Based on the presented research questions, hypotheses were develop

1) Within ICT schools, there is a significant relationship between teacher IC implementation time and student growth in reading as measured by End-of-Grade (EOG) tests.
2) Within ICT schools, at least one teacher IC involvement group is significantly different from the reference group in terms of student growth in reading as measured by End-of-Grade (EOG) tests.
3) Within ICT schools, there is a significant interaction effect between teacher IC implementation time and teacher IC involvement group, as measured by End-of Grade (EOG) tests.

Data Collection and Analysis

Participants. The state education agency (North Carolina Department of Instruction) invited all districts to attend presentations about the IC-Team model and apply for participation in the new Instructional Consultation training. The LEA that is the focus of this study was one of the four school districts selected from the 28 districts that applied. (See Tables E1 and E2 for the State, LEA, and school demographics.) Four selected school districts committed to appropriate training and staffing (as described in the literature review) and began the initial implementation phase in two schools within the 2004-05 school year. The LEA decided to expand IC; new teams that met aforementioned standards elected to participate and were subsequently trained in the implementation of IC. One school and three additional schools began IC implementing/training in 2005 and 2007, respectively.

In total, six of the LEA's 12 elementary schools that administer EOG tests had implemented IC. At the time of the survey distribution, three schools had implemented the

model for three years, one for four years, and two for six years. Each school had a trained IC facilitator as well as a participating principal and voluntary teachers who served as IC-Team members. All IC-Team members received thorough IC training and IC quality was maintained through fidelity measures. Within each school, any teacher could request assistance from the IC-Team and be assigned a case manager. The teacher and the case-manager worked together using the problem-solving process previously described.

Procedures. An experimental research a study is defined by experimental control of the independent variable. This study used an associational design to evaluate the relationships between independent and dependent variables. A benefit of an associational research design is that data are collected in a natural environment, which strengthens external validity. The main disadvantage of associational research is correlational studies lack internal validity; as such, inferences about causality cannot be made. Hence, in this study, participants in the IC and non-IC groups may have been dissimilar in ways that are not a direct result of the independent variables. Additionally, external validity was threatened due to nonrandom sampling (in this instance, sampling of convenience). Sampling of convenience may increase the chance of systematic bias and creates difficulty in generalizing in most cases; however, random sampling is not a requirement for external validity. Shadish, Cook, and Campbell (2002) noted that though random sampling can sometimes facilitate external validity, the external validity of samples may be considered on a case by case basis.

There is evidence that the EOG reading comprehension test has acceptable reliability and validity as the measure of reading growth (NCDPI, 2009a). The North Carolina Department of Instruction uses the coefficient alpha procedure to determine the internal consistency of the Reading EOG tests and maintains a reliability of at least .85 for all genders

and ethnicities on all EOG tests (NCDPI, 2009a). Additionally, a process was created to ensure curricular validity (content of the test forms reflect the goals and objectives of the NC Standard Course of Study in reading) and instructional validity (content of test forms reflect the goals and objectives taught in reading) of the EOG test (NCDPI, 2009a). (See Appendix D for NC Standard Course of Study in Language Arts for grades 3-5.)

The independent variables in this study are the amount of time teachers have participated in IC (implementation time) and the extent of the teachers' involvement in IC (involvement group). The dependent variable is the classroom average Academic Change (AC) score on the EOG reading comprehension test. The dependent variable, the AC score, takes into account previous assessments in the calculation of growth in reading (See Appendix C). The EOG test is administered to all third through fifth graders each year. Fourth and fifth grade EOG AC scores from the 2009-2010 school year served as the dependent variable. Complete data are not available for third graders as third grade pretests were eliminated effective the 2009-2010 school year; therefore, third grade data were excluded from the study (NCDPI, 2010).

In this sample teachers were nested within schools. Commonly, a multilevel model, such as a hierarchical linear model (HLM), is used to analyze nested data. HLM allows for examination of how characteristics of higher levels (e.g., schools) can affect characteristics of a lower level (e.g., classrooms) and can be advantageous when examining nested data. However, in order to demonstrate statistical power using HLM, the first and second level should have 30 observations in each group (Mathieu et al., 2012). This study included 40 classrooms on the first level and six schools on the second level; as such, the data did not

lend itself to HLM. The "clustered" nature of the data was explored in the analysis using *Stata* (2011).

Measures. The schools' state education agency (NCDPI) has emphasized growth in the accountability system since 1996; however, NCLB brought about major changes to the system. NCLB required state education agencies to report AYP to ensure that states were making an effort to close achievement gaps (by reporting on different AYP groups) and achieve 100% proficiency by 2013-14 (NCDPI, 2006). As such, all students in grades 3-8 participated in EOG tests in reading and math and their progress was measured by growth and performance. Students with disabilities may take alternative assessments such as NCEXTEND or receive appropriate accommodations. At the time of data collection, the local education agency had three measures of accountability: AYP status, a performance composite, and growth. The focus of this study was the growth accountability measure, which continues to be a relevant measure of accountability (NCDPI, 2012).

The growth-based accountability model allows schools to track student achievement from year to year and gives schools credit for student growth or *change* (USDE, 2008). The North Carolina growth model utilizes a time-locked, modified z-scale called a change scale, or a c-scale, which standardizes student developmental scores according to grade level in a standard setting year (NCDPI, 2009a). After student EOG scores are placed on a c-scale, their growth (AC) is calculated by looking at change between the current score and the average of the previous years' score (NCDPI, 2009a). Of note, if only one year of previous test scores is available, the AC score is calculated with only one previous assessment (NCDPI, 2006). The c-scale adapts well to changes in curriculum and test editions; it also adjusts for regression to the mean (NCDPI, 2009a). Thus, the dependent variable is not a

reflection of student raw scores, rather a reflection of student growth on a standardized scale, yielding scores similar to z-scores. (See Appendix C for c-scale calculation.)

Also of note, average student growth (AC scores) were evaluated at the classroom level only, as preliminary research suggested the classroom level is where IC is the most effective (Silva, 2007). Evaluating student growth at the classroom level may control for confounding variables due to systematic differences between schools, which was notably problematic in previous research (Ray, 2005).

The length of teacher IC involvement served as an independent variable, with values ranging from 0 years to 6 years in half-year increments of time. Length of involvement was measured in half-year increments because each IC case typically takes one-half year to complete (P. L. Vail, personal communication, September 4, 2012). For example, a teacher who had any IC involvement for two and a half years was coded as having 2.5 years of IC involvement. The second independent variable, type of involvement, had four groups: Group A, Group B, Group C, and Group D. On the survey, teachers first indicated their type of involvement group, and if appropriate, indicated their implementation time. Involvement group was examined due to the possibility that teachers who are team members may differ in their fidelity in intervention implementation or because there may be inherent differences in teachers who request team assistance and those who do not; failure to look at the variability in teacher participation was a noted limitation in Ray's (2005) and Silva's (2007) studies. Teachers were involved with IC in two ways: through IC-Team participation or by requesting IC-Team assistance for classroom implementation. Thus, there were four mutually exclusive groups/types of teacher IC involvement: never worked with the IC-Team (Group A); participated on the IC-Team as an active team member, attending meetings and managing IC

cases (Group B); requested assistance of the IC Team (Group C); requested assistance of IC Team *and* participated on the IC Team as an active team member, attending meetings and managing IC cases (Group D). The relationship between of implementation time and type was explored in the analysis.

Specifically, this correlational design was implemented by collecting data for 40 fourth and fifth grade teachers within six IC schools via teacher survey (See Appendix B); resulting data for the independent variables indicated the length and type of IC involvement for each fourth and fifth grade teacher. The data for the dependent variable was acquired from a database containing each teacher's classroom average AC reading score. For analysis, the classrooms' average AC reading score was examined, with respect to IC implementation time and type of teacher IC involvement, to identify relationships and interactions.

Research design. Inferential statistics involves making inferences about a certain characteristic of the population based on a characteristic of a sample (Howell, 2002). In order to infer the relationship between IC involvement and EOG scores, an associational design was used. Descriptive information about the data was explored at the beginning of the data analysis; specifically, information about sample size, mean, standard deviation, skewness, and kurtosis of the variables. To answer the first research question, regression analysis was used to determine whether teacher IC implementation time was predictive of average classroom reading growth score. Specifically, the Pearson product moment correlation indicates the magnitude of the linear relationship between teacher IC time and their average classroom reading growth score. A significant linear relationship between teacher IC involvement length and the teacher's average classroom growth score would

indicate support of the hypothesis. To address the second research question, teacher IC type (a categorical variable), was dummy coded for use in the linear regression model. Beta coefficients indicated whether any of the teacher groups differed from the reference group in regards to growth score. If any of the teacher groups' mean growth scores significantly differed from the reference group, the hypothesis that there are no differences among the types of teacher involvement could be supported.

Previous research noted the limitation of not identifying the range of teacher IC participation (Ray, 2005). This suggested a need to address possible interactions, such as interaction between IC implementation time and type of IC participation. In addressing the third question, hierarchical multiple regression analysis was used to: 1) determine whether there was a relationship between classroom average AC scores and two variables: the amount of time teachers have implemented IC and the type/group of IC involvement; and 2) determine whether the effect of teacher implementation time varied due to teacher involvement group (i.e., whether there was an interaction). First, the predictor variables (IC group and IC time), which represented the main effects, were added to the model. The R^2 value indicated what proportion of the variance in the average classroom reading growth score would be accounted for by the teacher IC implementation time and involvement group, through analysis of the linear relationship between the independent and dependent variables. In the second step, the product term (implementation time and IC Group C) was added to the model. Examination of R^2 after adding the interaction term was the basis for determining the effect size of the interaction. A p-value less than or equal to the alpha (of .05), indicated the significance of the effect. The contribution of the independent variables (IC time and IC group), bivariate ccorrelations, and standardized regression coefficients were reported. If the

beta coefficient was statistically significant, it would indicate that the relationship of teacher IC implementation time and student growth in reading was moderated by the interaction of teacher IC involvement group and implementation time. If the addition of an interaction term significantly improved the fit of the regression model, the hypothesis that there was an interaction effect would be supported.

Summary

Instructional Consultation has been found to be an effective intervention that helps match students to an appropriate instructional level and reduces inappropriate special education referrals (Gravois & Rosenfield, 2006; Silva, 2007). The purpose of the study was to determine whether there was a relationship between IC implementation time, type/group of teacher IC involvement, and student growth in reading as measured by EOG tests. Earlier research suggested that IC has a positive impact on student EOG performance in reading; this study was an extension of that research (Ray, 2005). For the current study, it was anticipated that the relationship between IC involvement and reading growth scores would be positive, i.e., teachers with greater IC involvement would have higher average classroom reading growth scores than teachers with less IC involvement. Findings from this study could provide the LEA valuable information about a potential relationship between pilot IC programs and student growth on the EOG test; such information may be useful in evaluating intervention effectiveness and in systemic intervention planning.

CHAPTER THREE

Results

Descriptive Statistics

All statistical analyses were conducted using *Stata Statistical Software: Release 12* (2011). Data included survey responses from 40 fourth and fifth grade teachers, nested within six schools. The survey consisted of two questions, which indicated the IC implementation time and involvement type/group for each teacher (the two independent variables). The data for the dependent variable, academic change (AC) score, was acquired from a database containing each teacher's corresponding classroom average AC reading score for students on the EOG reading test. For analysis, the relationships between classroom average AC reading score, IC implementation time, and IC involvement type were examined.

Due the clustered nature of the data (i.e., classrooms nested within schools), the intraclass correlation coefficient (ICC) was calculated. The ICC was calculated to determine whether hierarchical multiple linear regression was appropriate for statistical analysis, or whether a multilevel model was needed. The ICC for this study indicated that there was no significant between cluster variance (ICC= -.001). Given this finding, hierarchical regression analyses were employed in a non-clustered format.

Prior to conducting the regression analysis to test the hypotheses, descriptive statistics were derived for the variables in the study (see Table 2). For teachers in classrooms with an average AC score of zero, students performed equally as well as they did in previous years. For teachers in classrooms with a positive average AC reading score, students had a gain in

academic achievement. For teachers in classrooms with a negative average AC score, students had an average loss in student academic achievement. The average AC reading scores and teacher implementation time were normally distributed.

Table 2

Descriptive Statistics

N = 40	Teacher IC Implementation Time (years)	Classroom AC Score
Mean	0.81	0.00
SD	1.15	0.18
Range	0.5-5.0	-0.44-0.26
Skewness	0.76	0.03
Kurtosis	0.00	0.65

The second independent variable, type of involvement, was based on teachers' survey response: Group A, never worked with the IC-Team; Group B, participated on the IC-Team as an active team member, attending meetings and managing IC cases; Group C, requested assistance of the IC-Team; and Group D, requested assistance of IC-Team *and* participated on the IC-Team as an active team member, attending meetings and managing IC cases. Teachers that responded Group A or Group B had a corresponding IC implementation time of "0." Only three teachers responded Group B, as such, that group was too small for analysis (see Table 3). Since all Group A and Group B teachers had a corresponding time of "0" for IC implementation, Groups A and B were combined to form Group A/B. Subsequently, analyses of the categorical variable "IC group" included three groups: Group A/B, C, and D.

Table 3

IC Group Descriptive Statistics

N	Teacher Involvement Group	Classroom Mean AC Score	*SD*
14	A	-.11	.18
3	B	.09	.09
15	C	.07	.13
8	D	.01	.18

Groups A/B ($N = 17$), C ($N = 15$), and D ($N = 8$) were dummy coded within *Stata* to enable multiple regression analysis. The teachers who did not request ICT assistance to implement IC in the classroom (Group A/B) served as the reference variable in the subsequent analysis.

Statistical Analysis

To test the first research hypothesis, bivariate regression analysis was used to determine whether there was a relationship between classroom average AC scores and the amount of time teachers were involved with IC. A *p*-value less than or equal to the alpha (of .05), indicated a significant effect. The bivariate regression yielded an equation that indicated whether teacher IC implementation time was predictive of classroom reading growth scores. Specifically, the bivariate regression analysis indicated that 8% of the variance in the classroom reading AC score was associated with teacher IC implementation time, $r(38) = .29$, $p = .07$. Thus, no statistically significant linear relationship between teacher IC time and classroom AC score was found.

To address the second research question, teacher IC group (a categorical variable), was entered as dummy code in the linear regression model. Beta coefficients were examined to determine if at least one teacher group mean was significantly different from the reference group, i.e., if the mean scores for Group C and Group D were significantly different from

mean score of Group A/B. The analysis indicated that one of the means was statistically significantly different from the reference group, $F(2, 37) = 3.17$, $p = .05$. Group D was not statistically significant from Group A/B, $\beta = .19$, $t(37) = 1.18$, $p = .25$ whereas, Group C was statistically significant from Group A/B, $\beta = .41$, $t(37) = 2.51$, $p = .01$.

Hierarchical multiple linear regression analysis was used to test the third hypothesis regarding possible interactions. In this analysis, the predictor variables of IC time and IC group, representing main effects, were entered in the first step of the model. The regression analysis indicated that IC time and IC group did not account for significant variability in AC scores, $R^2 = .18$, $F(3, 36) = 2.61$, $p = .07$. Only 18% of the variability of AC scores was accounted for by its linear relation with IC time and IC group.

In the second step, the interaction term was added to the model. In this step, one interaction term was automatically omitted from the analysis due to collinearity. As all cases in Group A/B had a corresponding implementation time of "0," there was no variance for this variable. The new model with main effects and the remaining interaction term (Group C and time) accounted for 19% of the variability in AC scores, $R^2 = .19$, $\Delta R^2 = .01$, $F(4, 35) = 2.09$, $p = .10$. There was thus only a 1% increase in the amount of variance explained by adding the remaining interaction term in the model (see Table 4 for summary table). These results did not support the third hypothesis that the relationship between teacher IC implementation time and classroom reading growth was significantly moderated by teacher IC involvement group.

Table 4

Summary Table for Research Question Three

	SS	*df*	*MS*	*F*	*p*
Step 1					
Model	.218	3	.078	2.61	.07
Residual	1.003	36	.028		
Step 2					
Model	.235	4	.059	2.09	.10
Residual	.986	35	.028		

A post hoc power analysis was conducted to determine if the sample size (N = 40) was large enough to detect an interaction effect in the hierarchical multiple linear regression. The post hoc power analysis indicated that the statistical power was .39 for detecting a moderate effect (f^2= .15) in the second step of the model. Thus, there may not have been enough statistical power to detect a moderate effect as the result of the addition of the interaction term.

CHAPTER FOUR

Discussion

The purpose of the current study was to examine the impact of teacher IC-Team involvement on average reading growth of students in their classrooms, as measured by a standards-based test. This chapter discusses the results, limitations, and implications for future research of the study.

Summary of Findings

IC implementation time and reading growth. The first hypothesis stated that within ICT schools, there would be a significant relationship between teacher IC implementation time and student growth in reading as measured by End-of-Grade (EOG) tests. The regression analysis did not indicate a significant relationship between classroom reading growth scores and the amount of time teachers implemented IC-Team strategies in the classroom. This result may be due to the limited amount of time teachers implemented IC. Only two teachers in the sample had more than three years of IC experience. A significant relationship between IC implementation time and average reading growth scores may have been found if teachers had implemented IC for a longer period of time, as earlier research has shown that moderate effects of institutional change, such as transitioning to the ICT model, can take three to five years and more prominent change can take five to ten years (Fullan, 1991). In the present study, there may not have been enough teachers with numerous years of experience to test the hypothesis. Previous research (Silva, 2007) has suggested that an increase in reading achievement may not be evident in schools with two to

three years of IC implementation because the schools have not had enough time to institutionalize the intervention.

IC involvement group and reading growth. The second hypothesis stated that within ICT schools, there would be a significant difference in student reading growth, measured by End-of-Grade (EOG) tests, as a function of teacher IC involvement group. The analysis indicated that at least one group's classroom reading growth score was different from the reference group as a function of teacher involvement group. Specifically, teachers with Group C involvement had classrooms with significantly different scores from teachers in Group A/B; whereas, teachers in Group D did not have classrooms with significantly different scores from teachers in Group A/B. Teachers who requested ICT assistance to implement strategies in the classroom (Group C) had significantly higher classroom average reading growth scores than teachers who did not request ICT assistance to implement IC strategies in the classroom (Group A/B). This finding was expected as students within ICT schools have been found to have higher reading achievement at the classroom level (Silva, 2007) and the school level (Ray, 2005).

Some reasons why teachers that requested ICT assistance experienced the largest classroom reading gains compared to teachers that did not request ICT assistance may be: a) teachers that request assistance are more instructionally efficacious (Goddard et al., 2000); b) the collaborative dyad of case manager and teacher effectively brought evidence-based interventions into practice within the general education classroom (Rosenfield, 2008); and c) the teachers not only changed their actions with the particular students, but also "recultured" their beliefs and generalized the strategies in their classrooms (Rosenfield & Gravois, 1996).

The lack of a statistically significant difference between Group A/B (no IC implementation) classroom growth scores and Group D (on ICT and implemented IC) classroom growth scores was not expected. The mean growth score of Group B was much higher than the mean growth score of Group A; thus, the combining of Groups A and B may have masked differences. The use of Group A as a reference group may have resulted in significant difference between Group D and the reference group. As noted previously, neither Group A nor Group B teachers requested ICT assistance to implement IC in the classroom; however, Group B had participated on the IC-Team. In investigating teachers that did not request ICT assistance to implement IC in the classroom, it would have been beneficial to separate ICT members (Group B) and non-ICT members (Group A). Inability to examine Group B independently from Group A due to sample size was a limitation of the present study.

Another possible reason for the lack of difference between group growth scores is that teachers who are ICT members and request assistance from the ICT (Group D teachers) may be teachers who tend to have more students who are years behind on the growth trajectory (e.g., students that meet AYP through safe harbor provisions) or need to be retested. Consideration of Group D growth scores in light of additional indicators would have been beneficial for analysis.

IC implementation time and group interaction. The third hypothesis stated that within IC-Team schools, there would be a significant interaction effect between teacher IC implementation time and IC involvement group. Hierarchical multiple linear regression analysis indicated there were no main effects or an interaction effect for the remaining interaction term (Group C and implementation time). The lack of significance in the first

step of the model was possibly due collinearity or the loss in degrees of freedom. The results for the second step indicated that teacher involvement group did not moderate the relationship between teacher IC implementation time and student growth in reading, as measured by EOG tests. IC implementation time and Group C involvement did not interact in a way to account for the variance in classroom growth score. This finding may be due lack of statistical power due to sample size. This finding may also be due to lack of institutionalization of the IC-Teams (implementation time $M = 0.81$ years), thus had not reached a point where IC implementation time was moderated by type of IC involvement.

Limitations

There are a number of limitations related to this study. This study used a sample of convenience and it was difficult to isolate the effects of IC within the school setting, as other factors may have also influenced student growth scores in reading. The sample was limited to only one local education agency in North Carolina and it was unclear whether institutional or regional factors contributed to classroom reading growth of students in unforeseen ways. Additionally, a larger sample size would have allowed analysis of data for Group B, which based on descriptive statistics, had an increase in growth. Another limitation is that retest data used for AYP reporting, was not used for growth calculations by the SEA due to the lack of archival retest data (NCDPI, 2010). Collinearity of the predictor variables was also a limitation.

The lack of data consisting of classroom indicators and teacher characteristics that may have influenced reading growth scores was a major limitation in the study. Classroom indicators such as percentage of the classroom that fell under safe harbor provisions or outcomes on other measures of achievement used by the SEA would have been useful for

analysis. Data consisting of teacher characteristics, such as years of teaching experience, may have aided analysis as these characteristics have been found to have positive effects on student achievement (Clotfelter et al., 2007). In examining the relationship between IC and good teaching practices, Kaiser (2007) found that certain teacher characteristics (e.g., more than six years of teacher experience) were associated with utilization of good teaching practices. Availability of additional data regarding fidelity of teacher IC implementation for this analysis may have provided evidence of a stronger relationship between degree of implementation and classroom reading outcomes**.**

Implications for Future Research

This study examined the relationships between IC implementation time, IC involvement group, and classroom reading growth scores. IC implementation time was not significantly related to classroom growth scores. Group C teachers (teachers that requested ICT assistance and collaborated with an IC case manager to implement classroom strategies) had significantly different classroom average growth scores from the reference Group A/B (teachers that did not that did not request ICT assistance and collaborate with an IC case manager to implement classroom strategies). There was no significant interaction effect between IC implementation time and IC Group C on reading growth scores; however, the sample size may have been too small to yield interactions.

Consideration of federal mandates. In its outline of ESEA reauthorization goals, the Blueprint document defined accountability systems that focus on student growth, rather than an absolute score, as an important factor in the ESEA reauthorization (USDE OPEP, 2010). NASP also considers growth models as important indicators in identifying effective schools and recommended their inclusion in the reauthorization of the ESEA (NASP, 2010).

Many states, such as North Carolina, have already incorporated growth models into the SEA accountability system. Another goal for ESEA reauthorization, according to Blueprint, is to increase teacher collaboration time and allot funding for professional development (USDE OPEP, 2010). Another possible revision to the ESEA is the explicit inclusion of RTI; NASP recommended the inclusion of RTI in the ESEA reauthorization in a letter to Congress (NASP, 2010). Thus, the ESEA reauthorization will likely include growth-based accountability, emphasis on teacher collaboration, professional development and RTI. In the future, IC which combines teacher collaboration, ongoing professional development, and RTI will continue to be relevant approach in helping struggling learners. A consideration of future directions of federal policy and findings of this study suggest future longitudinal research on growth, IC effectiveness, and dimensions of change.

Longitudinal study of growth. As discussed in the literature review, calculation of reading growth score for underachieving students was the difference between the failing score and the score needed to be proficient within four years. Underachieving students were required to achieve more than a year's growth in a year's time. Additionally, for students without scores for third grade (e.g., transfer students), the student's score was a reflection of one year of growth, but calculated as two. In this study, the growth of underachieving or at-risk students, which may take years to be demonstrated on a standardized test, may not have been evident at the time of the EOG test; this may have deflated growth estimates. Perhaps a better method of tracking student growth on standardized tests, in light of teacher implementation of IC strategies, would be to track the growth score longitudinally, as the state of North Carolina does, over several years.

A longitudinal study that examines IC implementation and tracks trajectory of student growth could: a) give a more reliable estimate of student growth (NCDPI, 2009; Spelling 2006a; Spelling 2006b; USDE OPEP, 2010); b) track teacher effectiveness, which has been found to impact student achievement and narrow the achievement gap (Sanders & Rivers, 1996); c) provide valuable data about interventions and teacher effectiveness, in line with federal mandates (ESEA, 2002) and future federal mandates (Blueprint, 2010); and d) help teachers avoid penalization for factors such as teaching at a high-need school, transient students, or the need for some students to make more than one year's progress to reflect growth (Jones, Brett & Jones et al., 1999; NCDPI, 2006).

Longitudinal study to track exposure to IC. Future IC-Team research should consider tracking which students and teachers are exposed to IC. In this study, the aggregate nature of the data may have obscured IC-Team classroom group effects, which was a limitation. Ecological bias, or possible differences between individual and aggregate data when estimating associations, may have been present (Wakefield & Lyons, 2010, p.541). Wakefield and Lyons (2010) note, "ecological bias occurs due to within-area variability in exposures and confounders" (p.545). Possible ecological bias, as it pertains to this study, is that growth was calculated at the classroom aggregate level, but the scores were compared to teacher IC experience with individual students from the current or past years. Teachers can use strategies they have learned and generalize them in teaching the whole class; however, it may be difficult to partial out whether classroom reading growth or one student's reading growth on the EOG test was impacted by teacher IC involvement.

Possible ecological bias may have accounted for differences in Ray's (2005) study and the present study in that significantly higher reading achievement scores within ICT

schools were observed at the *student* level in Ray's (2005) study; however, significantly higher reading growth scores at the *classroom* level were not consistently found within the same ICT schools. A goal of IC is that teachers generalize the IC strategies in their classrooms. However, the assumption that IC is generalized by teachers who request ICT assistance may not be valid for teachers for teachers in this study who have not institutionalized IC in the school. For schools where IC has been established less than five years, a longitudinal study that tracks teacher and student IC exposure may facilitate data-based decision making, in determining the success of a program (Datnow & Park, 2009).

Longitudinal study across dimensions of change

Datnow and Park (2009) suggest that longitudinal studies of interventions at the system level provide useful information when attempting large-scale change driven by data-based decision making. Datnow and Park (2009, p. 213) also state, "implementation is a system-wide activity, even when the desired change is mainly at the school level." As it pertains to this study, most of the schools were in the "implementation" stage of change. Change is noted to have three stages: initiation, implementation, and institutionalization (Fullan, 2001). As previously noted, institutionalization generally takes three to five years and during that time it is imperative that a "critical mass" of teachers at the school is committed to change (Fullan, 2001). In the schools that were the focus of this study, implementation time of the majority of surveyed teachers ranged from zero to one-half year, as such, it is possible there was no "critical mass" of involvement or progression toward institutionalization in some of the schools.

The year following the data collection, the three schools with the least amount of IC experience (schools with three years of implementation) chose to discontinue IC; however,

the schools with more IC experience (the schools with four or six years of implementation) strove to continue with the ICT model. It is possible that the schools that chose to keep IC began to experience initial change (such as lower referral rates, decreasing achievement gap) as IC progressed from implementation to institutionalization (Fullan, 2001; Gravois & Rosenfield, 2002; Gravois & Rosenfield, 2006; Levinsohn, 2000; Rosenfield, 1995). The choice of more experienced IC schools to implement IC falls into line with Fullan's theory that true change takes at least three to five years to realize (Fullan, 1991). It is also noteworthy that two of the schools that elected not to continue IC had new principals who were not trained in IC. This is consistent with the following: a) principals are important members of the IC-Team (Rosenfield, 1995); b) principals are essential for teacher buy-in of any program or intervention (Waldron & McLeskey, 2010); and c) principals are leaders in a culture of change (Fullan, 2001).

Schools not only have to restructure, they also have to change their beliefs about struggling learners (e.g., implementers of IC adopt assumption that all students are learners) and engage in a collaborative process to bring about change (McLeskey & Waldron, 2000; Rosenfield, 1995). Instructional Consultation incorporates: joint problem-solving, data analysis, shared decision making, and distributed leadership to reform school culture (Joyce & Showers, 2002; Waldron & McLeskey, 2010). Change takes years to accomplish as recognized by researchers (Datnow & Park, 2009; Fullan, 2001) and the SEA that is the focus of this study, which recently expanded the growth trajectory (to become proficient as measured by standards-based tests) from four to six years (NCDPI, 2012).

Conclusion

The present study examined the relationship between a responsiveness to intervention model, Instructional Consultation, and classroom-level reading growth of students as measured by a state-administered, standards-based test. Specifically, classroom reading growth was examined as an outcome of teacher IC implementation time and IC involvement group. There was no significant relationship between the average classroom reading growth score of students and the amount of time a teacher implemented IC strategies in the classroom. However, when compared to the reference group, there was a significant difference in classroom reading growth scores among teacher involvement groups. Interaction analysis indicated the relationship between IC implementation time and reading growth was not moderated by involvement group. Limitations and recommendations, such as longitudinal studies and the importance of institutionalization of IC, were identified for future research.

The need to deliver evidence-based teaching strategies and interventions and produce results of student achievement as evidenced by a standards-based test is a challenge. In light of the schism between research and practice, this study examined whether the effects of evidence-based ICTs carry over to the classroom as documented by standards-based testing outcomes. It is recommended that future studies consider the accountability model of the SEA in documenting the success of ICTs, as standards-based outcomes may be used in determining the effectiveness of an intervention. The ESEA will continue to require schools to demonstrate progress with standards-based tests; therefore, documentation of the contribution of the ICT on positive student testing outcomes is essential.

Appendix A

Secretary of Education's Core Principles for Growth Model Pilot Project,
U.S. Department of Education (USDE, 2006)

1. Ensure that all students are proficient by 2014 and set annual goals to ensure that the achievement gap is closing for all groups of students;
2. Set expectations for annual achievement based on meeting grade-level proficiency, not on student background or school characteristics;
3. Hold schools accountable for student achievement in reading/language arts and mathematics;
4. Ensure that all students in tested grades are included in the assessment and accountability system, holds schools and districts accountable for the performance of each student subgroup, and includes all schools and districts;
5. Include assessments in each of grades 3–8 and in high school for both reading/language arts and mathematics, and ensure that they have been operational for more than one year and receive approval through the NCLB peer review process for the 2005-06 school year. The assessment system must also produce comparable results from grade to grade and year to year;
6. Track student progress as part of the state data system; and
7. Include student participation rates and student achievement on a separate academic indicator in the state accountability system.

Appendix B

Study Survey Distributed to Teachers EOG Special Codes for IC Schools

Use the Special Codes Section on the General Purpose Header Sheet

Column S

Please code as follows:

0 = I have never worked with the IC Team/IC Case Manager
1 = I have participated on the IC Team as an active team member, attending meetings and managing IC cases (at any time in the past 6 years)
2 = I have requested assistance of the IC Team and have collaborated with an IC Case Manager to implement classroom strategies (at any time in the past 6 years)
3 = I have BOTH collaborated with an IC Case Manager to implement classroom strategies AND participated on the IC Team as an active team member (at any time in the last 6 years)

Column T

If you coded 0 or 1 above DO NOT fill in a bubble for this column.

For the purpose of coding, please estimate the length of time you have worked with an IC case manager throughout the time IC has been implemented at your school. In general, you can follow these guidelines:
A case that began in the beginning of the year (Sept-Oct) and finished by winter (Jan-Feb) would be considered a ½ school year.
A case that began in the middle of the year (Dec-Jan) and finished by spring (April-May) would be considered a ½ school year.
A case that began in the beginning of the year (Sept-Oct) and finished in the spring (April-May) would be considered 1 school year.
Note: Cases that occurred simultaneously do not count twice; for example, if you worked with two separate case managers for the same 4-month period that counts as a ½ year involvement. However, cases that occurred consecutively (within the same year or across multiple years) should be added together for your time estimate.

Please code as follows:

0 = I have collaborated with an IC case manager to implement classroom strategies for approximately ½ a school year
1 = I have collaborated with an IC case manager to implement classroom strategies for approximately 1 school year.
2 = I have collaborated with an IC case manager to implement classroom strategies for approximately 1 1/2 school years.
3 = I have collaborated with an IC case manager to implement classroom strategies for approximately 2 school years.
4 = I have collaborated with an IC case manager to implement classroom strategies for approximately 2 1/2 school years.
5 = I have collaborated with an IC case manager to implement classroom strategies for approximately 3 school years.
6 = I have collaborated with an IC case manager to implement classroom strategies for approximately 3 1/2 school years.
7 = I have collaborated with an IC case manager to implement classroom strategies for approximately 4 school years.
8 = I have collaborated with an IC case manager to implement classroom strategies for approximately 4 1/2 school years.
9 = I have collaborated with an IC case manager to implement classroom strategies for approximately 5 or more school years.

Appendix C

Growth as Academic Change (NCDPI, 2009a)

Student scores are standardized and a student's performance is considered as a point on the *c-scale* (change scale) relative to standard performance for that grade level in a standard setting year. When a student's scores are placed on the *c-scale* the individual student is expected to perform at least as well on the end-of-grade (EOG) assessment for the current year as she or he did, on average, during the previous two years. The current accountability model operationalizes "growth" as *academic change.*

Academic change is expressed as the difference between a student's actual *c-scale* score for the current year and the student's average of two (in most cases) previous assessments (EOGs) with a correction for regression toward the mean. A positive academic change indicates a gain in academic achievement, while a negative academic change indicates a loss in academic achievement from the previous two years.

Steps in the Calculation of Academic Change:
1. To convert the developmental scale scores to *c-scale* scores:
a. Subtract the state mean for the standard setting year from the developmental scale score
b. Divide by the standard deviation for the standard setting year.

2. To determine expected score: compute the ATPAs (average of two previous assessment scores on the c-scale) for reading and adjust for regression to the mean.

3. Subtract the expected c-scale score from the actual c-scale score to determine student's academic change.

The simplified formula to determine *academic change* is:
AC = CSc-scale – (0.92 x ATPAc-scale)
Where
AC = academic change
CS = current score
ATPA = average of two previous assessment scores

A modification is made to the formula for determining *academic change* in grade 3 and for any instance when only one previous year's EOG score is available. The formula, adjusted for one previous year's assessment score, is:
AC = CSc-scale – (0.82 x PA c-scale)
Where:
AC = academic change
CS = current score
PA = previous assessment score

Appendix D

North Carolina Standard Course of Study: Language Arts, Grades 3-5

Competency Goals and Objectives:

Word Recognition Strategies and Skills and Vocabulary

- refine and builds upon the foundational skills of decoding
- extend their knowledge of prefixes, suffixes, and root words
- apply phonics knowledge to increase their repertoire of sight words

Strategic Comprehension

- develop an initial understanding in reading text by
- understand text by identifying, collecting, selecting, organizing and using information and ideas
- learn to establish a critical stance to form opinions, make judgments, and evaluate the quality and usefulness of information and ideas
- develop ability to assess validity and accuracy, determine value, and judge relevance and importance of information and ideas.
- Develop metacognitive skills (the awareness of, manipulation of, and control over one's thinking processes including perseverance, attitudes, and attention).

Making Connections

The English language arts program for grades 3-5 is a spiraling program with strong connections among the goals and objectives.

Effective Communication

- Effective oral and written communication requires keen awareness of the purpose, message, audience, and contexts for communication. Students learn to use language clearly, strategically, critically, and creatively.

Grammar and Language Conventions

- Students learn how to use effective standard English for clarity and technical language for specificity, informal usage for effect.
- continue to develop increasing control over grammatical conventions including sentence formation, conventional usage, punctuation, capitalization, and spelling

Literature

- read aloud from a variety of books and genres
- regularly share what think, know, and feel about literature through response logs, dialogue journals, book talks, conferences, role play, artistic extensions of literature, and other mediums.
- read broadly with the benefit of exposure to the defining features of a variety of genres

Appendix E

Table E1

Demographic Data for LEA and State (United States Department of Education Institute of Education Sciences, National Center for Education Statistics [USDE, IES NCES], 2009)

	Enrollment			% Race/Ethnicity						% Free/ Reduced Lunch Eligible	Average Elemen. Class Size	Locale
	N	% Male	% Female	Other/ Biracial	Am. Indian/ Alaskan	Asian/ Pacific Isl.	Bl.	Hisp.	Wht			
LEA	19,714	51	49		>1	1	42	13	44	56	1/14.4	Rural: Fringe
NC	1,483,397	51	49		1	3	31	11	54	63.53	20.8	Various

Table E2

Demographic Data for IC Team LEA Elementary Schools (USDE, IES NCES, 2009)

	Enrollment			Race/Ethnicity					Free/ Reduced Lunch	Teacher/ Student Ratio	Locale
	N	Male	Female	American Indian/ Alaskan	Asian/ Pacific Islander	Black	Hispanic	White			
School 1	758	401	357	2	1	355	253	147	592	1/14.5	Suburb: Small
School 2	731	380	351	2	7	339	84	299	435	1/15.2	Rural: Fringe
School 3	269	138	131	1	1	76	11	180	164	1/11.2	Rural: Distant
School 4	750	399	351	0	16	373	57	304	409	1/14.8	City: Small
School 5	748	398	350	2	1	185	66	494	323	1/16.1	Rural: Fringe
School 6	744	408	336	1	11	116	56	560	307	1/16.0	Rural: Fringe

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