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EXAMINATION OF AIG TEACHERS' COGAT TEST PREPARATION PRACTICES
IN ONE NORTH CAROLINA SCHOOL DISTRICT

By
Charlton Hiatt

A Dissertation Submitted to the
Gardner-Webb University School of Education
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

Gardner-Webb University
2020

Approval Page

This dissertation was submitted by Charlton Hiatt under the direction of the persons listed below. It was submitted to the Gardner-Webb University School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

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Wisdom is rarer than emeralds, yet it is found among those who gather at the grindstones

– Ptah-Hotep

My pursuit of wisdom has inspired me to seek guidance from the wise. I have found this wisdom in every corner of this endeavor. From my professors who have directed me and inspired constant improvement, to the participants who gave me their trust and honesty, to the subjects of this study, students, from whom I learn every day. Thank you, Dr. Putnam, Dr. Brown, and Dr. Donley, for all of your efforts and wisdom.

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Learning and wisdom does not come without sacrifice. *To increase one's knowledge is to increase one's sorrow* - Ecclesiastes 1:18. During this journey, I have been saddened by the time I have missed with my family, but I am grateful for the lessons I have learned. This experience has taught me the value of quality time with friends and family. Going forward, my goal is to live in the moment and to be present for my children.

I would like to extend my deepest gratitude to my wife for all she has done in my absence. Raising our sons and taking them on trips without me so I could work was difficult for her. She has been my rock and my inspiration, and I am forever grateful for her sacrifices. I am grateful for all of the emeralds of wisdom bestowed upon me during this process.

Abstract

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This mixed methods study focused on gifted education screening practices in North Carolina. Specific focus was on the practice of universal screenings using the Cognitive Abilities Test (CogAT) and test preparation measures conducted by one school district. The study collected and analyzed data from regular elementary education and elementary AIG teachers regarding test preparation lessons and materials. The study then narrowed to interview participants to further examine the lessons. This study found that both sets of teachers agreed that test preparation for students was necessary to increase equity and address the persistence of underrepresented subgroups identified as AIG in LEA-1. Findings included a high degree of lesson plan implementation with inconsistent teacher deliveries. Mixed reviews regarding teacher perceptions of the lessons were documented. The need for increased district-initiated communication regarding AIG program goals regarding the pre-CogAT lessons was found. Last, an analysis of the lessons revealed the need for updates and modifications in order to provide equitable CogAT preparation and address underrepresentation problems.

Keywords: equitable, underrepresentation, gifted, CogAT, test preparation, AIG

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Chapter 1: Introduction

Identification and talent development practices could be the solution to problems regarding equity in gifted education. Problematic issues related to equity have persisted for more than a quarter of a century. One of the most prevalent inequities in gifted education is the underrepresentation of minority and low-income populations. According to the National Center for Research on Gifted Education (NCRGE, n.d.), English Learners (EL), students who receive free or reduced lunch, and Black and Latinx who perform academically at the level of other students in gifted programs have a lower probability of being identified. Underrepresentation occurs when the percentage of students in gifted programs is less than their percentage of the total population.

In North Carolina, Black students represent 24.9% of the entire student population, while they represent only 9.65% of the gifted population (North Carolina Department of Public Instruction [NCDPI], 2019). The data expose underrepresentation by revealing a 15.25 percentage point discrepancy between the two representative populations. Similarly, the Hispanic population is 18.6% of the total student population and only 8.5% of the gifted population, revealing an underrepresentation of 10.1 percentage points.

The lack of specific measures used to identify and serve underrepresented populations has resulted in the inadequate recognition and development of their talents. This situation disproportionately affects students with minority demographics and low socioeconomic status (SES; NCRGE, n.d.). This reality is confounding when subscribing to NCDPI's (2019) definition of giftedness: "Outstanding abilities are present in students from all cultural groups, across all economic strata, and in all areas of human endeavor"

(“State Definition of AIG Students” section).

To address the underrepresentation problem, the National Association for Gifted Children (NAGC) identified best practices regarding universal screenings and talent development programs. These standards influenced NDCPI when creating their own gifted standards. One North Carolina local education agency (LEA-1) provides lessons that are geared toward preparing students for the Cognitive Abilities Test (CogAT), the instrument used in their universal screening procedures to identify giftedness. However, neither the current level of implementation nor the effectiveness of these lessons are known; likewise, stakeholder perceptions of the lessons have never been measured.

Purpose of the Study

The aim of this study was to analyze the process of CogAT test preparation in one North Carolina district. LEA-1 instituted a policy of test preparation that used lessons containing learning activities similar to items found on the CogAT test. However, the extent of actual implementation was not known. Data regarding implementation revealed details of current practices that can be employed for future decisions.

Another aim of this study was to glean an understanding of goal alignment between the district and teachers in the field. To implement a comprehensive program, AIG teachers must understand the goals behind directives. Conversely, the district has a responsibility to convey goals in clear terms and take measures to ensure comprehension and compliance.

In 2011, the CogAT was upgraded from Form 6 to Form 7 (Lohman, 2011). The main difference in these two versions is that Form 7 was made with increased accommodations for English Language Learners (ELL; Lohman, 2011). The lessons of

focus were created in 2007 and require updates that could benefit student performance (LEA-1 pre-CogAT lesson plan creator, personal communication, January 29, 2020). A fresh analysis provided suggested adjustments that could result in better teaching and learning. An enhanced educational experience could increase gifted access to underrepresented students and foster equitability.

Increasing equity and extending opportunity in the AIG program was the number one reason behind the inception and implementation of the pre-CogAT lessons (LEA-1 pre-CogAT lesson plan creator, personal communication, January 29, 2020). Therefore, ensuring that the lessons are modernized and implemented with fidelity is paramount when considering inequities present, specifically in LEA-1 and in North Carolina.

Essentially, the basis of this study was predicated on the predominance of testing as the identification tool of preference and the need to prepare students to perform their best. The intended result was the attainment of the most accurate student score for use in Academically or Intellectually Gifted (AIG) identification. Naglieri and Ford (2005) predicted that if current identification practices are perpetuated, continued underrepresentation is expected.

Research Questions

The questions of this study were aimed to collect data regarding LEA-1's pre-CogAT lessons specifically. However, the data collected provide valuable information that informs the district's identification policies and curriculum.

This study examined four research questions.

1. To what extent do teachers in the district implement CogAT preparation?
2. How can the perceptions teachers hold on test preparation lessons be

described?

3. How does teacher understanding of CogAT preparation goals align with the AIG program goals?
4. To what extent does teacher feedback suggest necessary change to CogAT preparation?

Various teacher surveys were distributed to answer Research Questions 1-4. In addition, five volunteers were interviewed virtually and were given the opportunity to expound on survey results and other issues related to the research questions. Analyzing qualitative data on teacher lessons served to clarify survey results and provided a critical analysis of current practices.

Statement of the Problem

Some proponents of alleviating the inequities present in gifted education suggest a greater emphasis on identification practices and talent development programs (Ford et al., 2019). NAGC (n.d.b) supported the implementation of a 3-phase identification process. In this model, the nomination or identification phase is first. Second is screening, followed by the placement phase. According to NAGC (n.d.b), a combination of objective and subjective methods should be employed. Objective measures such as tests can circumvent biases, while subjective measures such as teacher and parent nominations can provide stakeholders with tools to identify hidden talents that may not manifest themselves through traditional testing methods. LEAs with underrepresentation problems must look at their practices critically to determine if they are impediments to gifted access. Gifted programs are fashioned around their definition of giftedness. However, these definitions are not universal and can vary greatly, leading to inequity across school

districts.

Defining Giftedness

The task of defining giftedness proves difficult when attempting to craft an all-inclusive definition. Kennedy (2012) stated, “There are many definitions of giftedness. None are universally agreed upon, but many share certain defining characteristics” (p. 1). The absence of unification, regarding what giftedness is, creates a challenge for LEAs. The federal government does provide its own definition of giftedness:

Students, children, or youth who give evidence of high achievement capability in areas such as intellectual creative, artistic, or leadership capacity, or in specific academic fields, and who need services and activities not ordinarily provided by the school in order to fully develop those capabilities. (U.S. Department of Education, 2005, Title IX “Gifted and Talented” section)

However, the federal government does not mandate gifted identification or services. Therefore, state education agencies (SEAs) are left with the decision of whether or not to implement AIG programs. If they choose to implement a gifted program, they usually craft their own definition of giftedness, service guidelines, and state standards (Kennedy, 2012).

This discontinuity of definitions and services leads to inequities in programs among LEAs and SEAs across the country (NCRGE, n.d.). According to the Davidson Institute (2019) 13 states currently do not mandate gifted programs. Further, funding varies greatly for gifted programs. Four states in the U.S. fully fund gifted programs and 18 (including the District of Columbia) provide no funding at all (Davidson Institute, 2019). Consequently, the array of funding levels and definitions effectively create

inequitable services for students across the U.S. Table 1 summarizes these data.

Table 1

State Supported Gifted Funding

Full funding	No funding
Florida, Georgia, Iowa, Oklahoma	Alaska, Rhode Island, Connecticut, District of Columbia, Massachusetts, Michigan, New Hampshire, New York, South Dakota, Vermont, Arizona, Delaware, Illinois, Maryland, Montana, New Jersey, Oregon, Pennsylvania

The remaining 29 states not shown in Table 1 provide partial funding for AIG programs (Davidson Institute, 2019). According to the Davidson Institute (2019), North Carolina mandates gifted programs and provides partial funding of approximately \$77.9 million.

In the absence of national guidance, organizations and individual states define and frame their programs. NAGC, a leader in the field, crafted standards and best practices to which many educators refer. NCRGE also provides current and relevant information regarding the topic. Some states refer to these organizations when creating gifted policies for best practices. NCDPI (n.d.) adheres to its own definition of giftedness:

Academically or intellectually gifted students perform or show the potential to perform at substantially high levels of accomplishment when compared with others of their age, experience, or environment. Academically or intellectually gifted students exhibit high performance capability in intellectual areas, specific academic fields, or in both the intellectual areas and specific academic fields.

Academically or intellectually gifted students require differentiated educational services beyond those ordinarily provided by the regular educational program.

Outstanding abilities are present in students from all cultural groups, across all economic strata, and in all areas of human endeavor. (“State Definition of AIG Students” section)

This definition serves as the statewide vision that helps LEAs conduct AIG programs with some commonality. However, North Carolina defers to LEAs on how they respond to each AIG standard.

Program Standards

North Carolina also has AIG standards that correlate to the definition and require districts to formulate local plans. Local plans consist of explanations of how each district responds to and implements each standard. Table 2 organizes the standards.

Table 2*North Carolina AIG Program Standards*

Standard	Description
Student identification	The LEA's student identification procedures for AIG are clear, equitable, and comprehensive and lead towards appropriate educational services.
Comprehensive programming within a total school community	The LEA provides an array of K-12 programs and services by the total school community to meet the diverse academic, intellectual, social, and emotional needs of gifted learners.
Differentiated curriculum and instruction	The LEA employs challenging, rigorous, and relevant curriculum and instruction K-12 to accommodate a range of academic, intellectual, social, and emotional needs of gifted learners.
Personnel and professional development	The LEA recruits and retains highly qualified professionals and provides relevant and effective professional development concerning the needs of gifted learners that is ongoing and comprehensive.
Partnerships	The LEA ensures ongoing and meaningful participation of stakeholders in the planning and implementation of the local AIG program to develop strong partnerships.
Program accountability	The LEA implements, monitors, and evaluates the local AIG program and plan to ensure that all programs and services are effective in meeting the academic, intellectual, social, and emotional needs of gifted learners.

This study focused on Standard 1: Identification, with specific emphasis on equitable practices and how the focus district responds to this standard.

LEA-1 employs the CogAT in a universal screening format to all third-grade students to initially assess students for AIG potential. Students who score at the 70th

percentile or greater are eligible for further screening. The Iowa Test of Basic Skills (ITBS) is used next to assess student achievement. Students who score in the 85th percentile on ITBS are eligible for further screening using the Naglieri Nonverbal Abilities Test (NNAT), aptitude or achievement performance tasks, or the Otis-Lennon School Ability Test. If students score at the 90th percentile on aptitude and achievement tests, they qualify for identification. Table 3 summarizes LEA-1's qualifications for gifted identifications.

Table 3

Criteria for Eligibility (Grades 3-5)

Identification	Qualifications
Intellectually gifted	98th percentile aptitude
Academically gifted	98th percentile achievement in reading and/or math
Academically and intellectually gifted	Aptitude 90 percentile or higher and achievement 90 percentile or higher in reading and/or math OR aptitude 85-89 percentile; achievement 90 percentile or higher in reading and/or math; and accepted Reasoning Performance Task score OR aptitude 90 percentile or higher; and achievement 85-89 percentile in reading and/or math; and accepted math and/or Reading Performance Task score

The performance tasks given to students are assessments created and scored by the AIG department. These assessments are given to students who scored between the 85th and 89th percentile and serve as another opportunity for students to show their talents. If their performance is deemed acceptable by the department, they are then eligible for admittance to the AIG program pending parental/guardian approval. Acceptable performances on performance tasks are based on correct answers to items as well as proof of the correct thought process applied to problem-solving. A more in-depth

overview of the program is included subsequently in the form of a logic model.

States have the autonomy to create their own programs in the absence of federal leadership. However, McIntyre (2016) stated that in the absence of a unified definition, states have difficulty grappling with how to best serve gifted students. One of the main issues of gifted programs is how to properly and equitably identify gifted students (NCRGE, n.d.).

Underrepresentation

Each subgroup of students in gifted programs has a representative population relative to the general population. Underrepresentation occurs when a subgroup's representative index (RI) is less than 1.0. An RI of 1.0 indicates perfect representation.

$$RI = \frac{\% \text{ Gifted}}{\% \text{ General}}$$

Underrepresentation of minority groups plagues LEAs across the U.S. and in North Carolina. North Carolina's definition of giftedness states that talent exists in all subgroups of students (NCDPI, n.d.). Subscribing to the claim that people of all backgrounds and ethnicities are intellectually equal means that in LEA-1, some students are not being identified due to circumstances beyond their control. Therefore, some potential AIG students are not appropriately identified due to the absence of equitable identification procedures. This lack of talent recognition is a problem for the country as a whole:

A nation's prosperity can be charted to a large extent by the contributions of its most gifted and talented citizens. When a nation fails to recognize and develop the talents of a large percentage of its population, it limits its ability to compete in the future. (NCRGE, n.d., p. 2)

When talent goes unidentified or unnurtured, society may pay for it in terms of the reduction of innovation and productive citizens (Wai & Worrell, 2016).

North Carolina is a contributor to the problem of underrepresentation. To understand the significance of the problem in North Carolina, a specific RI calculation is required. NCDPI (2019) reported inequity and underrepresentation among minority groups as an increasing problem: Black student identification decreased from 4.94% in 2017 to 4.83% in 2019. Further, Native Americans and Multiracial students also showed decreases from 6.86% to 6.85% and 11.85% to 11.47% respectively. These reductions are problematic due to the relatively low numbers of existing identification. Contrastingly, 18.43% of White students were identified in 2017. This number increased to 18.49% in 2019 (NCDPI, 2019).

According to data from LEA-1, two subgroups are currently underrepresented, while three are overrepresented. Table 4 illustrates the data.

Table 4

LEA-1 Gifted Representation Indexes

Subgroup	Total population	Gifted population	LEA-1 RI	NC RI
Asian	6.7%	9.0%	1.34	2.05
Black	40.7%	22.3%	.54	.36
Hispanic	16.4%	11.1%	.67	.43
White	31.3%	52.4%	1.67	1.48
Others	4.8%	5.1%	1.06	.11

Black and Hispanic subgroups are underrepresented, while White, Asian, and Others are overrepresented in the district. These data represent similar trends in North Carolina. The biggest discrepancy exists between the last two categories. NCDPI categorizes this subgroup as Multiracial, and reports the RI as .11, the lowest

representation of any subgroup. However, LEA-1 reports this subgroup as Others, and the RI as 1.06. These data appear atypical when comparing this overrepresentation with the underrepresentation of North Carolina's Multiracial subgroup.

Underrepresentation is fueled by inequitable practices or the absence of equitable practices. Universal screenings, multiple pathways, and alternative pathways to identification are considered equitable practices by NAGC and, when implemented, have historically shown RI increases in LEAs. In fact, NAGC (n.d.c) reported that "universal screenings have been found to increase the number of low-income and minority students identified as gifted by 180%" (p. 1). Despite data supporting these practices, their implementation is situational, much like AIG programs. This study focused on the CogAT as the universal screening instrument and the preparation students received in LEA-1.

CogAT

The CogAT is a timed, 3-part aptitude test comprised of verbal, nonverbal, and quantitative batteries. Each part consists of approximately 20 items and test takers are allowed 10 minutes per section for completion. The quantitative section assesses mathematical skills. The verbal section assesses reading and reasoning abilities in the form of categorical relationships and analogies. Last, the nonverbal assessment asks students to imagine and predict patterns. These items range from the sequencing of paper folding, to guessing the position of hole punches, to pattern recognition of puzzles.

The CogAT is most commonly used in the third grade (NCRGE, n.d.). Naglieri and Ford (2005) has been critical of the assessment, stating that the test relies too much on crystallized learning and the instrument is laden with vocabulary that puts ELLs at a

disadvantage. Therefore, some research suggests that the CogAT, the most prevalent pathway to gifted education, may actually act as a barrier to accessibility. However, priming students for the assessment could provide a more equitable scenario.

Emphasis on Intelligence Quotient (IQ) and Aptitude

Identification processes enable and aid stakeholders in the recognition of potential giftedness. Various checklists of student characteristics inform educators of gifted evidence and assist in the referral process. However, some equity advocates suggest universal screenings are the gold standard in providing opportunity for students to reveal their capabilities (Fofaria, 2019; NAGC, n.d.c); NCRGE, n.d.). These screenings focus primarily on aptitude or intelligence quotients (IQ). Historically, high student IQ has been synonymous with giftedness. In fact, Redding (2018) explained, “intellectual ability, often measured by IQ tests, has long been the predominant factor in determining placement in gifted and talented programs” (p. 1). Contemporarily, it remains the number one factor in identification and admission into gifted programs. Although according to NAGC (n.d.c), Redding (2018), and NCRGE (n.d.), universal or mass screenings have been reported to improve equitable identification practices, they have not exterminated inequity issues. According to Coleman (2003), inequities persist in gifted education due to the overreliance on standardized tests and a close-minded view of intelligence.

In fact, intelligence is a relative concept open to interpretation. IQ is not the same as intelligence. Instead, IQ is simply the measure of a person’s general aptitude relative to their peers (Merriam-Webster, 2019). A debate exists among experts in the field on whether a person’s IQ is fixed or pliable. Regardless of opinion, IQ is often a factor in the success of students in school and adults in the job market (Marion et al., 2015). Increases

in IQ are often related to increases in academic achievement (Sattler, 1992). Although IQ is not the only factor when predicting success in each category, it can provide an advantage.

The concept of a pliable IQ spurs debate among contemporary experts. Nisbett (as cited in Cox, 2013) supported the idea of a pliable IQ and stated that the average IQ of humanity is increasing. Naglieri (as cited in Cox, 2013) argued that researchers claiming to increase participant IQ only increased their functionality, meaning that people learn enhanced ways to use their faculties but do not, in fact, increase their innate abilities. However, other experts argue that intelligence is also pliable and can increase.

Pliable intelligence is the idea that one's inherent capabilities can increase. Some experts argue that not only can IQ be changed, but one's intelligence can also change (Ceci as cited in Cox, 2013). Further, some scientists proclaim that existential experience can change the brain structurally. A study of London cab drivers revealed an augmentation of the hippocampus after years of experience and learning the thousands of street combinations (Brown, 2011). Researchers cited this case as an example of participants increasing their intelligence synonymous with structural changes in the brain.

Relational Frame Theory (RFT; Hayes, 2001) is based on the idea that people create relationships between stimuli to help explain new ideas. It is this ability to make relationships that might explain increased participant IQ scores. Hayes (2011) asserted that cognition and the acquisition of language are the result of the brain forming relationships to objects and ideas. This theory also suggests that once these relationships are formed, humans can apply them arbitrarily. For instance, once a person has learned various bird identifications, they may be able to classify a species never seen before as a

bird due to its similar qualities.

Cassidy et al. (2010) argued that many intelligence tests are comprised of item relationships. These relationships may be categorized as sameness, oppositional, less, more, or various other examples. For instance, participants might be asked the question, “What is the opposite of night?” Researchers have commonly found that once the relationship is comprehended by participants, they can then apply the relationship to unfamiliar stimuli (Stanley, 2019).

Given this knowledge of relational learning, Stanley (2019) argued for the possibility of developing interventions to increase IQ scores. In his 4-week study of nine participants, he conducted a pretest using the Wechsler Intelligence Scale for Children to establish a baseline IQ. Then he developed relational framed interventions based on analytic, metaphorical, hierarchal, categorical, and latency strategies. Stanley reported that on average, participant IQ scores rose 6.6 points.

The concept of a pliable IQ could have profound implications for the field of education due to the emphasis of aptitude or IQ tests and their resulting consequences. Logical reasoning suggests that the augmentation of aptitude and IQ scores could result in increased access to gifted education for students as they are able to meet or surpass traditional cutoff scores. This strategy could alleviate the problem of underrepresentation since most schools use the CogAT as the preferred instrument for gifted screening (NCRGE, n.d.).

Although no studies were found specifically on preparatory courses and CogAT scores, studies regarding aptitude and IQ augmentation were found. Ringer (2014) and Powers (2017) both reported on preparatory courses that positively impacted Scholastic

Aptitude Test (SAT) scores. Ringer studied the effects of The Cambridge Test Preparatory Program on SAT results in a school district in Georgia. The program resulted in the district's highest mean SAT scores within a 7-year time span. The lowest means of that span of time were recorded during years without program implementation. Similarly, Powers reported a study of an SAT preparatory course that produced significant results. This study reported an increase of approximately 16 points on the verbal portion and approximately 25 points on the math portion. Powers concluded that some parts of the SAT are coachable.

Some school districts facilitate mass screenings of student IQ (NCRGE, n.d.). School systems usually conduct these tests on younger students to identify who may possess potential. Early identification of student aptitude is necessary for proper pedagogical accommodations (Hocter, 2013). However, as maturation continues, some students develop talents later than others (NAGC, n.d.b). Students who may develop advanced levels of cognition later than their peers could be at a disadvantage unless alternative identification measures are in place and enacted. Therefore, providing a staggered approach to identification can reveal talents in students who develop giftedness subsequent to mass screenings. Price et al. (2013) documented IQ increases of up to 20 points in 33 adolescents over a 4-year period. Professionals in education are aware of student IQ scores and make decisions based on them. Therefore, educators have an ethical duty to ensure a student's IQ or aptitude score is an accurate representation of their abilities. Failure to accomplish this task could result in a misdiagnosis of learning potential, improper prescription of targeted lessons, and inappropriate identification.

Effects on Education

Students with good grades are less likely to drop out of high school. In general, a positive relationship exists between intelligence and academic performance (Roth et al., 2015). Many students take an IQ test early on in their academic careers, and that score can relegate them to a tracked educational experience. NCRGE (n.d.) stated that most students are assessed for giftedness in the third grade. Many school districts track or cluster students by performance or ability (Research Spotlight on Academic Ability Grouping, 2019). These tracks are difficult to alter as students go through school and can reduce their chances for intellectual growth, can decrease motivation, and can ultimately result in academic capitulation. According to Barrington (2018), the compartmentalization of students by ability level can have negative effects on students relegated to the lower performing tracks. These students sometimes regard themselves as inferior; and this belief can become a self-fulfilling prophecy, leading to a reduction in academic performance.

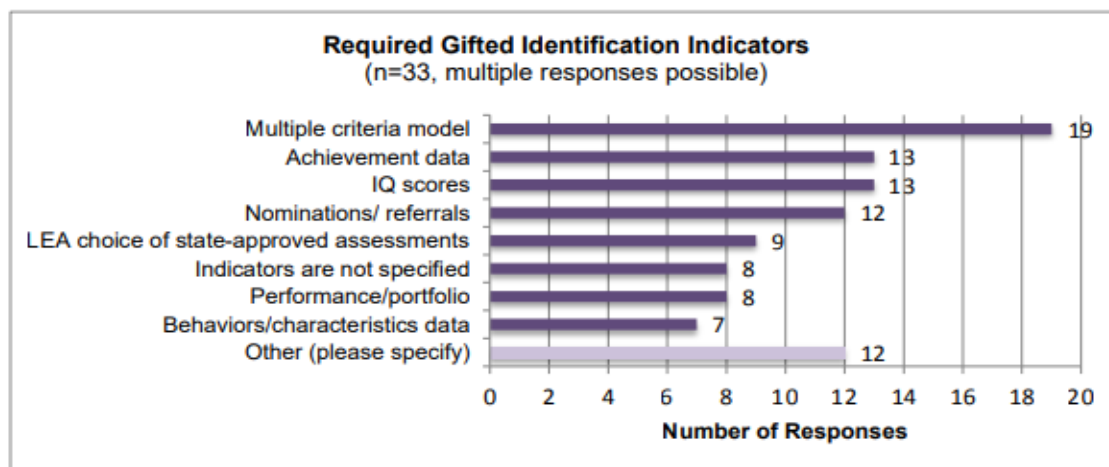
Teacher perception is a factor in nominations or referrals to gifted programs. In a famous experiment by Robert Rosenthal, teachers were told certain students had unusual potential for academic gains. However, the students were selected randomly and not by potential, yet these same students made significant gains on IQ tests, compared to their peers, after 8 months of classroom instruction (Rosenthal & Jacobson, 1966). This is known as the Pygmalion effect. The results of this study underscore the power of teacher perceptions and how those perceptions can manifest in student achievement. Considering the importance the educational system bestows upon aptitude and IQ tests, how agencies account for equity in the preparation process is an area of concern.

Professional Significance of the Problem

Most school systems rely only on assessments like the CogAT to identify students as gifted. The State of the States (SOS; NAGC, 2015) revealed the most frequently required criteria for gifted identification include IQ and aptitude scores (13), achievement data (13), nominations (12), a range of state-approved assessments (nine), and portfolios (eight). As the data in Figure 1 illustrate, multiple pathways to identification are common. However, the same data reveal that alternative identification methods to testing, such as portfolios, exist but are not as frequently implemented. Therefore, if most identification pathways funnel through the employment of various tests, educators have a responsibility to ensure those pathways are fair and equitable.

Figure 1

SOS Gifted Identification Statistics



Interestingly, nominations and referrals are high on this list regarding identification measures. As a standalone practice, this method has been documented as a biased way of identification, resulting in the perpetuation of the status quo of gifted populations (Olszewski-Kubilius & Steenbergen-Hu, 2017). Lakin (2018) stated that the

status quo regarding identification practices in North Carolina are only perpetuating current inequities.

Given the reality of test reliance, it is imperative that students are prepared for these tests in order to ethically provide them with the best probability for success. Hence, providing test preparatory lessons to students who have not encountered them before is an equitable practice. However, the practices of some schools in the nation are not in accordance with this stance. Literature from one school in Colorado stated, “it is not possible to study for this type of test. Parent(s)/Guardian(s), however, can help their child come to school prepared by assuring a good night’s sleep and adequate breakfast” (Canon City Schools, 2020, “Universal Screening for Gifted Potential” section). Another school system in North Carolina advised, “there is no way to prepare for these tests. The best thing for a parent to do is to ensure that your child is well rested and fed during the testing period” (Lewisville Elementary School, n.d., “AIG Frequently Asked Questions” section). These directions given to parents regarding the CogAT test clearly articulate a nonpreparatory position. This stance runs contrary to research conducted by Nijenhuis et al. (2001) who found practice and preparation produced positive results on aptitude tests. The Institute of Psychometric Coaching (IPC, 2019) stated that practice for aptitude tests is beneficial if it is conducted in the same test format. NCRGE (n.d.) reported that universal screenings when paired with modifications showed potential regarding improving underrepresentation rates.

Test Preparation

According to the most recent NAGC (2015) report, most students who attend LEAs with AIG programs take aptitude and IQ tests early on in elementary school. Like

any test students take, preparation for these assessments may provide them with the scaffolding they need to perform their best. In fact, some argue that educators have an obligation to provide consistent preparation for high stakes tests. Proper assessment preparation is consistent with National Board Teaching Standard 3, “Teachers are responsible for managing and monitoring student learning” (National Board for Professional Teaching Standards, n.d., “Proposition 3” section). Further, the CogAT website provides testimonials advocating the benefits of test preparatory materials. More information on the CogAT is discussed later in this chapter.

Frischmann (2016) noted that learning a new skill takes anywhere from 20 to 10,000 hours. Therefore, considering that it takes practice and exposure for the brain to process new information and skills, it stands to reason that full comprehension of test items is not simply attained by looking at a sample item on test day or hearing the directions for the first time. This lack of exposure and practice by some students creates an inequitable testing scenario possibly contributing to the problem of underrepresentation.

A study focused on Head Start programs revealed that “children who participate gain as much as 15 IQ points compared to control groups of similar children not in the program” (IQ Test Experts, n.d., “Education and its Effect on IQ” section). This example represents another successful instance of improved participant performance generated by the implementation of a specifically designed program. No evidence was found in the literature of studies of specific programs designed to systematically target the general population of students for the specific goal of increasing aptitude scores prior to universal CogAT screenings.

If systems do not implement test preparatory programs, families are left with the prospect of independent preparation. Test preparatory materials often come with monetary requirements and are for sale online or in bookstores. However, monetary restrictions create a barrier for low socioeconomic students, categorically the most underrepresented population in gifted identification (Naglieri & Ford, 2005). Fofaria (2019) expounded on the underrepresentation problem in North Carolina:

The likelihood that state schools will label White or Asian students as gifted is eight times higher than for Black students and more than five times higher than for Hispanic students. The likelihood that a child who lives in poverty will be labeled as gifted is even lower. (p. 2)

Therefore, defining identification standards that foster equity is a crucial element in the effort of making progress regarding the issue of underrepresentation in gifted programs.

Theoretical Framework

The current practices of gifted education programs are culpable in the underrepresentation of minority students. However, the resolution may also lie within the confines of current practices. As Figure 1 illustrates, testing is the most prevalent method for determining gifted identification. Knowing this fact provides opportunity for educators to use the system advantageously by taking measures to improve student test performance. The concept of neuroplasticity provides a theoretical construct for the exploration of this study (Brown, 2014).

Neuroplasticity is the idea that the brain is malleable and can be trained to perform or function better when interacting with stimuli (Brown, 2014). Elasticity of the brain is related to the nature versus nurture debate first coined by Francis Galton in 1869.

This discussion required psychologists to weigh in on the subject in favor of nature being the greatest factor of influence regarding the human condition or nurture being predominant. The nature theory relied on genetics as the determining factor, whereas nurture attributed environmental factors as the most influential. Today, most experts agree that it is a combination of both. Ergo, scientists today have rephrased the adage to nature and nurture (Cherry, 2019).

Neuroplasticity is rooted in the contemporary theory of a responsive brain that behaves with dynamic intellect. Brown (2014) suggested that in order to take full advantage of the brain's neuroplasticity, learners should be exposed to the practice of interleaved learning, meaning that new material is introduced and then enough time is subsequently given to forget the new learning. Later retrieval of this learning builds a stronger pathway to that information, thereby increasing indelibility (Brown, 2014).

This study operated under the concept of RFT. RFT is the fuel that propels neuroplasticity. As previously mentioned, RFT proposes the idea that as the human brain establishes foundational learning, it then makes connections to new information, thereby expanding knowledge and skills. RFT states that in general, humans can go beyond concrete learning to the abstract by assigning societal, symbolic, and contextual values to novel stimuli (Stanley, 2019). Further, once humans grasp a concept, they are able to generalize the concept to unfamiliar situations. While neuroplasticity and RFT served as the intellectual philosophy that guided this study, the study itself was structured using a deductive reasoning model.

AIG Program Overview

LEA-1's AIG program consists of various factors that contribute to its

functionality. Conceptually, the program subscribes to state standards that influence the crafting of local standards. From there, the detailed elements are created and implemented, resulting in their version of gifted programming. Figure 2 illustrates the program in the form of a logic model.

Figure 2

LEA-1 Gifted Program Logic Model

LEA-1's District AIG Program Logic Model					
Inputs →	Outputs Activities → Participants		Outcomes		
NC AIG Program Standards	Screening Procedures	AIG Students	Student Identification	Professional Development	Provides Comprehensive Programming
NC Gifted Education Legislation Article 9B	Identification Procedures	AIG Teachers	Talent Development Programs	Program Accountability Procedures	
District's Vision and AIG Plan	Referral Procedures	AIG Coordinators	Provide Modified Curriculum and Instruction	Form Partnerships with Parents and Community	
	Talent Development Procedures	Team For AIG			
	Outreach Programs	AIG Department			
Assumptions:			External Factors:		
<ul style="list-style-type: none"> • Parental consent for program inclusion • Personnel implement program with fidelity 			<ul style="list-style-type: none"> • Program exist within parameters of the larger district that influences policy • PAGE (Parent Group) 		

Inputs

A few factors serve as the basis of the district's AIG plan and create the underlying philosophy of the program. These factors are the inputs of the program that define its identity. The first input is the North Carolina AIG Program Standards (NCAIGPS). In all, six standards make up the principles of the district's document: student identification, differentiated curriculum instruction, personnel and professional

development, comprehensive programming within a total school community, partnerships, and program accountability. These standards are the desired outcomes and are discussed in detail later in this chapter.

The next input that influences the program is the district's vision. The vision statement is, "The LEA-1's Academically Gifted Department is committed to providing rigorous, challenging, and differentiated instruction to students who demonstrate a need for services beyond the regular education setting." The vision is implemented and advanced by the adoption of the enrichment model of service delivery. This model is based on content that is supplemental to standard curriculum or unique comparatively. An alternative model is the accelerated model, where curriculum is based on advancement. Hence, students in the third grade receive instruction on the fourth-grade level.

Outputs: Activities

The program inputs serve as the catalyst for outputs. The outputs segment is in two categories, activities and participants. The first activity in the model is screening procedures. The district's plan calls for the implementation of universal screenings for every third grader using the CogAT and then the ITBS achievement assessment.

The second activity listed in the logic model is the identification process. If a student meets the criteria for identification, the student's data are then reviewed by the Team for the Academically Gifted (TAG), which has the final determination on the candidate. If the TAG agrees on identification, they sign a Service Eligibility Report. This report explains the student's qualifying data and services to be employed. Next, the report is sent to the AIG department for review. If accepted, two personnel will add their

signatures and send it back to the AIG teacher. The teacher will then send home a copy of the report, accompanied with a consent form. If parental consent is obtained, the student is added to the AIG database and services began at their school.

The next action is the referral process, considered part of the larger identification process. It involves acting based on certain criteria. Beyond the third grade, appropriate personnel refer students for testing if they begin to develop and show achievement that warrants further testing, have high scores on end of grade results, or if a new student enters the district from another district. Allowances exist for various stakeholders to submit referrals on a student's behalf. The district's plan states that referrals from parents, teachers, and other staff members are accepted. However, forms are evaluated by the TAG team first. If the team deems the applicant viable, the referral moves to the district level for final approval. The identification process is what places students in the program. Several different pathways exist to attain identification or partial identification as described earlier, but they all ultimately derive from aptitude or achievement-based testing.

The next activity in the district model is Talent Development. Talent Development consists of students who exhibit potential or who are performing at a high level relative to their peers. In LEA-1, Talent Development occurs in the second through the fifth grade. The decision to place students in Talent Development programs is also one for the TAG team. If approved and parental consent is obtained, Talent Development services can begin.

Outreach programs are implemented to increase awareness, increase identification rates, inform stakeholders on pertinent issues regarding the population, and provide

enrichment opportunities. Duke TIP, Partners for the Advancement of Gifted Education, North Carolina Association for the Gifted and Talented (NCAGT), and the Davidson Institute are examples. These associations are advocated by LEA-1, which connects to the standard of partnerships.

Outputs: Participants

The participants are the stakeholders involved in the program.

Students. Of course, the AIG students play a vital role. The goals all center on making the program better for the students. If the program is improved, the students are the beneficiaries, perhaps resulting in a positive effect on society by increasing the number of informed citizens with marketable skills.

Teachers. The teachers are major role players and facilitate the delivery of services. It is vital to have the AIG teacher and regular classroom teacher informed and participating in the program to the best of their ability. The teachers are the ones who facilitate the advanced curriculum appropriate for identified AIG students. Teachers have the unique perspective of implementing the curriculum to gifted students every day, thus they can provide a wealth of practical knowledge and should be consulted when making decisions or planning future goals especially with the referral process.

AIG Coordinators. AIG coordinators are responsible for carrying out many of the paperwork responsibilities. The coordinator submits referrals and distributes testing results. They must attend trainings and be versed on the program intricacies such as identification pathways. Last, they are responsible for professional development and compliance.

Parents. The parents of AIG students are important to the program in several

ways. Any program implementation needs parental approval. Parents can refuse services if they so choose; therefore, it is important for parents to view the program advantageously. Last, it is important to have parents supporting the program from home to encourage students to perform their best and facilitate enfranchisement.

TAG. The purpose of the TAG team is to provide a systematic process for referring students and admitting students into the program or Talent Development. This team should consist of the AIG teacher, an administrator, and grade-level representatives. Other attendees may be required based on the circumstances. By going through a rigorous process of data collection and analysis, the team can make an informed decision on students who are showing high achievement or high potential and want to participate in the AIG program.

Leaders. The last participants are the district leaders of the AIG program. Their responsibilities include compliance and accountability of individual sites, constructing policies, and implementing identification procedures.

Outcomes

The program has several desired outcomes. In the short term, students will be correctly identified. If the district implements procedures with fidelity, students who possess talent and intellectual skills as defined by the district and state benefit from appropriate identification.

The next short-term output is Talent Development participation at each site. These programs aim to increase student achievement and possibly result in gifted identification. Talent Development also serves to increase the footprint of gifted programs that have minimal levels of student identification. This process can have positive outcomes for

individual students but can also be beneficial for the group, as it provides opportunities for increased peer interaction.

The last short-term outcome is the differentiated curriculum and instruction. Procedures require a highly qualified teacher who holds an AIG licensure serve students. Next, that teacher should implement instruction that serves to enrich the current curriculum or provide unique experiences in which students would not otherwise be able to participate. Further, the teacher should be versed in delivering curriculum in diverse ways that appeal to gifted learners.

In the mid-term outcomes, professional development is an ongoing process necessary for good pedagogy. To ensure students are receiving the best instruction, teachers must also engage in learning. LEA-1 requires each AIG teacher to conduct one professional development session a semester to regular education teachers. This policy helps regular classroom teachers deliver rigorous appropriate instruction to gifted learning in the regular classroom setting.

To ensure that site delivery of services implementation is reliable, program accountability is necessary. LEA-1 AIG department is accountable to the superintendent's office and to NCDPI. Every 5 years, the AIG department is required to submit their AIG plan that details how they plan on responding to the North Carolina AIG standards. The AIG department also conducts accountability checks within the department through the form of compliance visits. Every semester, an AIG coordinator meets with each AIG teacher in the field and reviews their evidence of district initiatives.

LEA-1 encourages the membership of the various outreach entities previously discussed. Members from each organization are often brought in during professional

development for presentations and membership drives. Information about these associations are also present on LEA-1's website.

The inputs and outputs of LEA-1's AIG program serve to accomplish the central purpose which is to serve the AIG student population. The long-term outcome of service delivery comprehensive to the needs of all gifted learners is the most desired outcome. If the plan is thorough and procedures are followed and if the participants implement their roles effectively, preferred outcomes should occur.

Definition of Terms

This study contains specific vocabulary required for comprehension.

Aptitude Test

Assesses an individual's innate ability to succeed in a given activity.

Achievement Test

Assesses a developed skill or knowledge.

Gifted

Federal definition: Students, children, or youth who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services and activities not ordinarily provided by the school in order to fully develop those capabilities. (NAGC, n.d.a, "Frequently Asked Questions about Gifted Education" section).

IQ

A number representing a person's reasoning ability (measured using problem-solving tests) as compared to the statistical norm or average for their age.

Neuroplasticity

The idea that the brain's functionality is not fixed, but rather it can be coaxed to function better and grow.

Universal Screening

Procedure used by some school districts that includes all students of a certain level in a form of assessment for giftedness.

Delimitations

This study was purposefully set in the context of one North Carolina school system. One reason is due to the availability of data and potential participants of the study. Further, the LEA-1's AIG department has expressed the desire to conduct the study to inform their practice. The AIG department advocated for this study by publicly encouraging survey participation during professional development sessions.

The study purposely focused on identification procedures because of its direct correlation to the issue of subgroup underrepresentation. The study further focused on CogAT preparation specifically because it is part of the universal screening process at LEA-1 that precedes identification. Research presented in Chapter 2 describes studies that indicate the benefits of test preparation on test results.

Further, the study focused on the pre-CogAT lessons due to lack of available data related to their implementation. One of LEA's sites reported that the lessons were not implemented last year (Anonymous, personal conversation, September 19, 2019); thus, despite the district's best efforts to check for compliance, gaps in initiative implementations are happening.

Limitations

This study aimed to glean the level of test preparation implemented by the AIG staff in LEA-1 by distributing a survey. Survey results, despite anonymity, may be inaccurate due participant fear of professional retribution. Further, the sample size of participants was less than 50%, due to the voluntary nature of the survey. Smaller sample sizes give less reliable results.

Organization

This study started with an explanation of the problem and framed it in the context of its related field. Next, evidence supporting the significance of the problem was offered. Pertinent vocabulary that will aid in comprehension of the study was included. An explanation of the conceptual framework followed. Last, Chapter 1 consisted of the limitations and delimitations regarding the research.

Chapter 2 starts by restating the problem and its significance. Continuing, research from various authorities on the subject is offered. This literature is focused on best practices for improving equity in gifted education. The research explains the components of the study and is accompanied by actual data from North Carolina schools. A summary of the literature is included that provides a synopsis of the important points made by the research.

The next chapter explains the concept of the study and the instruments used to conduct research. Also, the type of study is described. Last, the contained information provides a detailed description of how the study was conducted.

Chapter 4 includes the results of the study. The chapter begins with a presentation of the survey results which includes the raw data from the surveys displayed with bar

graphs. The presentation of results is followed by a narrative summary of those results.

Next, a presentation of the interview results is included, followed by a narrative summary of the interview results.

Chapter 5 begins with a summary of the research followed by the interpretation of findings. General findings as well as specific data related to each research question are discussed. Recommendations based on the findings of research follow with specifics related to LEA-1 and generalizable findings that could apply to the larger educational community. The chapter concludes with a limitations review and suggestions for further study.

Chapter 2: Literature Review

Introduction

This chapter progresses by defining and discussing inherent problems associated with AIG programs on the national stage and in North Carolina. Underappreciation of minority subgroups in gifted education is at the center of the research. Continuing, best practices are delineated to explain efforts being done to address these problems. Next, this chapter reveals a gap in research regarding information on test preparation in North Carolina public schools. The theoretical foundation follows that serves as the basis for research. In conclusion, the chapter ends by providing research on the consequences related to providing or not providing equitable opportunities for gifted students.

Problematic Issues in Gifted Education

Equitable identification practices within AIG programs have been difficult to implement in SEAs and LEAs. The difficulties stem from broad basic elements to specific details of gifted programming. The federal government defers to local governments to define giftedness as well as to develop and implement their own AIG plans. The only federal legislation written specifically regarding gifted education is the Javits Act, passed by Congress in 1988 (NAGC, n.d.d). Since its inception, the act has undergone several revisions, but the original intent and purpose remain. Essentially, the funding of this act is to provide SEAs and LEAs with opportunities for grants that support the improvement of gifted programs. More recently, the purpose has been to provide support and resources to increase the identification of underrepresented populations in gifted programs (Gubbins, 2015).

SEAs and LEAs that are not properly funded face many challenges in the effort to

educate the gifted. One of the greatest challenges is equity. For example, New York state does not provide specific funding for gifted programs, and only 10% of the gifted high school population is Black or Latinx, even though these subgroups make up 66% of the total population (Roda & Kafka, 2019). In addition, the giftedness definitions derived by SEAs influence the vision for the education of the gifted population and thereby influence the entire program. Various definitions lead to varied programs, which invariably creates inequities across states and LEAs. Programs vary so greatly that a gifted student in one state or district may not be considered gifted in another (Van Gemert, 2018).

Once educational systems achieve the task of defining giftedness, they are charged with planning and implementing the program. This task entails the identification and servicing of gifted students. School systems have a duty to provide a gifted program that serves diverse populations equitably. Scholars in the field encourage best practices related to the identification of gifted students as well as developing students with burgeoning talents to achieve high equity levels.

According to NCRGE (n.d.), gifted education has been plagued by equity issues for more than a quarter of a century. One issue is the underrepresentation of minorities among the gifted population. The trend of underrepresentation gets bleaker when analyzing data regarding students with low SES. Considering the changing demographic trends in the United States, it is unwise to deny portions of our population the services they deserve (Hodges et al., 2018).

Cleveland (2018) conducted research on who was being identified as gifted in one South Carolina school district. The study looked at birth month, gender, and SES as

predictors of giftedness. This study found that SES was the greatest predictor of a student being identified. Cleveland explained,

Most of the gifted population is in the socioeconomic status of having paid lunch at 66%. Free lunch was only 28% of the gifted population. The total paid population was 47% while the gifted paid population was a much larger 66%. The total free lunch number of students was 46% which was close to their paid population. However, when you look at the gifted population free lunch is only 28%. So, a discrepancy is shown. (p. 78)

In summary, most of the gifted population was comprised of students who pay for their lunch, although they represent a minority of the total school population. Conversely, a majority of the population is on free lunch status, but they represent a minority status of the total gifted population.

NCRGE (n.d.) reported that students from the top 25% wealthiest households are five times more likely to be identified than students from the bottom 25% poorest households. McIntyre (2016) reported that a study by the University of Virginia examined approximately 5,000 gifted programs across all grades. Their findings revealed that low-income students were underrepresented more than Black and Latino students. McIntyre attributed a portion of this problem to the absence of national guidelines that would regulate equitable identification.

The underrepresentation problem in North Carolina is statistically evident. The RI for White students remained relatively steady from 1.49 in 2017 to 1.48 in 2019. Given that perfect representation is 1.0, this statistic indicates overrepresentation. Similarly, the RI of Asian students in 2017 was 2.00 and increased to 2.05 in 2019. Black students

showed a decline from .549 RI in 2017 to .387 in 2019, indicating approximately a 29.5% reduction in representation. Hispanic students also showed a decline in RI from .62 in 2017 to .456 in 2019, a 26.4% decline (NCDPI, 2019). The problem of underrepresentation these statistics illustrate is the focus of NCAIGPS Standard 1c and is at the center of a call to action crafted collaboratively by North Carolina state gifted professionals (NCDPI, n.d.). To get to the root of the problem of underrepresentation, it is important to understand gifted programs from their genesis, beginning with their definition.

Defining Giftedness

The way SEAs and LEAs define giftedness is very important as it lays the foundation for their program and influences policy. These definitions can foster equitable services or inequitable services. According to Coleman (2003), disproportionate representation occurs due to definitions of giftedness that are not broad or inclusive enough. These definitions rely on traditional concepts of giftedness and the demonstration of advanced reading and math skills. NAGC (n.d.d) stressed the importance of definition response among school systems. Once educational entities have established an inclusive definition of giftedness, they are charged with designing practices that reflect their vision. Many states, including North Carolina, use NAGC standards as a guideline for crafting their own standards that reflect best practices.

Best Practices

Serving gifted populations is a state mandate in North Carolina. NCAIGPS provide school districts with guidelines for creating gifted programs while leaving room for individualization. A meta-analysis of AIG identification practices revealed that

disproportionality is probably the result of inadequacies that fail to distinguish students with high potential from various backgrounds (Hodges et al., 2018). NAGC and NCRGE also advocate for identification practices they consider important when attempting to provide equitable programming for students.

Multiple Opportunities

After defining giftedness inclusively and providing universal screenings, leaders suggest providing multiple opportunities for identification. Therefore, the identification of students should not exist in only one space and time (Yaafouri, 2019). Rather, students should have numerous chances to show their talents (Shah-Coltrane, as cited in Fofaria, 2019).

Multiple Criteria

It is ill advisable for educational institutions to depend on one test for identification purposes. According to Roda and Kafka (2019), in order to eliminate subjectivity, New York City's gifted programs instituted an admissions policy based on a single test score rather than one based on multiple criteria. Subjective measures were thought to encourage biases within the system. Their elimination failed miserably regarding its intended goal of diversifying the gifted population. According to Roda and Kafka, "the percent of Black and Latinx students in G&T programs fell by half, from 46 percent of program entrants to just 22 percent" (p. 19). Wai and Worrell (2016) suggested a different approach that would expand spending at the federal level and would implement multiple forms of identification to incorporate more of America's diverse youth.

The employment of multiple criteria complies with the NAGC's (2019)

identification Standard 2.2.2, which states, “Educators select and use multiple assessments that measure diverse abilities, talents, and strengths that are based on current theories, models, and research” (p. 2). However, some scholars challenge this strategy. Lakin (2018) suggested that using cutoff scores from multiple criteria may have a negative effect on program diversity. Rather, she advocated for an “or” approach rather than an “and” approach. This means that a student could qualify by an aptitude score or an achievement score but does not have to have a qualifying score in both.

Talent Development

Talent Development refers to a wide range of interventions that are geared toward improving students with potential. Newell’s (2018) study focused on academic interventions via a talent development program. One goal was to improve academic performance through the implementation of the program. Research Question 2 specifically stated, “How does implementation of a talent development program impact underrepresented populations regarding achievement” (Newell, 2018, p. 113). This goal was attained as students increased their achievement by several indicators. Newell also employed alternative identification methods to select student enrollment, thereby increasing the diversity of students receiving gifted services.

Talent Development programs are implemented by LEAs in response to North Carolina Gifted and Talented Standard 1 Practice B. Further, Talent Development programs are considered standard programming according to NAGC (n.d.c) with specific reference to Programming Standard 3: Curriculum Planning and Instruction. Naglieri and Ford (2005) said that educators use talent development programs to enable underachieving gifted students the tools to overcome barriers that are inhibiting their

potential. NAGC (n.d.b) suggested identification policies that are responsive to national and state standards by implementing a combination of subjective and objective measures. Standard 1b advocates for the use of multiple opportunities and multiple criteria for identification. However, North Carolina defers to LEAs on how they respond to each gifted standard.

Subjective Measures

Subjective measures of identification encompass referrals from stakeholders such as parents or teachers. These measures serve to fulfill the need for qualitative data that may reveal talents undetected by quantitative measures. These methods may also allow for the consideration of self or peer nominations for the referral process, teacher observations, learning scales, and portfolios to proceed with identification.

Nominations

Rather than talents being revealed through assessments, some educational systems provide an opportunity for stakeholders to submit referrals to the gifted program. The referral has categories of reasons that justify the referral. Examples of reasoning are, but not limited to, mostly As in classwork, asks or answers questions above and beyond same age peers, enjoys studying and/or performing topics out of school, and writes/creates using detail and originality. The referral contains a section for gifted characteristics such as leadership, creativity, motivation, and academic performance. Last, sections for additional information are included to allow the person filling out the form to express pertinent qualitative data that may serve as justification.

Portfolios

Some LEAs allow for the submission of portfolios as a method for identification.

Portfolios are adopted by some LEAs as a response to North Carolina's Standard 1, Practice B. Allowance for portfolio submission for identification purposes satisfies the qualitative portion of Practice B. Portfolios allow for the presentation of multiple intelligences. Gardner (1999) theorized that people contain many different types of intelligences beyond what society most widely accepts: verbal, quantitative, and logical. His theory considers other intelligences such as kinesthetic and musical. This type of identification opens the gate to more students and combats the traditional gatekeeping idea of elite gifted populations (Hodges et al, 2018).

Objective Measures

Objective methods of gifted identification concentrate on quantitative data that can be measured numerically. These methods, such as aptitude, IQ, and achievement tests, possibly eliminate biases in comparison to a system that relies on teacher nomination for referrals. However, experts suggest that some tests come with their own embedded biases. According to Yaafouri (2019), conventional theories of giftedness are based on assessments that require the comprehension of language and vocabulary. These types of assessments are inequitable for ELLs. Despite the inequities present in certain assessments, when implemented on a mass scale, they tend to expand gifted access for underrepresented populations.

Universal Screenings

Mass screenings using intelligence or aptitude tests are touted by leaders in the field to be one of the most effective tools at improving equity in gifted programs. According to Redding (2018), "in one Florida district, the adoption of universal screening was linked to an 80% increase in the number of Black students and a 130% increase in

Latina/Latino students (p. 2). NCRGE (n.d.) promoted the adoption of universal screenings when enumerating 15 tips for identifying EL students. Fofaria (2019) also advocated for implementation of mass screenings to allow all students a chance to show their ability. Universal screenings are not specifically included in any North Carolina gifted standards.

Testing

As previously stated, tests are the most prevalent tool used in the gifted identification process in the entire nation (NAGC, 2015). According to Lakin (2018), the most common types of tests employed for gifted identification are aptitude, IQ, and achievement. Specific tests commonly used for aptitude are CogAT and NNAT. The ITBS and the Woodcock Johnson are examples of achievement tests. Most SEAs use a combination of these two types of tests to determine gifted identification. These tests measure different types of student abilities.

Two different types of intelligence are recognized by many psychologists: fluid and crystallized intelligence (Kaufman & Kaufman, 1993). IPC (2019) contrasted the two types by describing fluid intelligence as a person's ability to learn, process, and apply new information, while crystallized refers to applying previously accumulated knowledge.

Aptitude and IQ are often used interchangeably, but they are not the same. According to Cohen (2012), aptitude is related more to a specific skill, while IQ has a broader definition of ability that, depending on the definition and assessment, encompasses fluid and crystallized intelligence. Despite disputed differences, research on the two concepts showed high levels of positive correlations (Cohen, 2012).

According to Naglieri and Ford (2005), depending on the specific test, both aptitude and IQ tests assess fluidity and crystallized intelligence. If the tests incorporate vocabulary, which many do, they are incumbent upon previous language acquisition, thereby assessing crystallized intelligence. Contrastingly, NNAT, which is a nonverbal assessment, and segments of the reasoning section CogAT test fluidity and are not incumbered by linguistic knowledge (Naglieri & Ford, 2005).

Cohen (2012) stated aptitude tests are

designed to measure your natural talents and involves a series of separate tasks which each draw on a different aptitude. The results help you to determine which inborn abilities make it easier for you to learn or do certain things. (p. 1)

Schneider (as cited in Kaufman, 2014) asserted that IQ tests give a broader sense of intelligence. Most IQ tests contain elements reliant on acquired knowledge and how to apply it.

Naglieri and Ford (2005) described achievement tests such as the ITBS as constructs that assess prior knowledge, usually in the area of reading and math.

Achievement tests commonly serve as one side of a 2-sided equation used for determining giftedness. Gifted programs often employ various combinations of aptitude and achievement scores for identification purposes (Lakin, 2018).

Test Preparation

Given the heavy implementation of tests and their implications, adequate student preparation is warranted. NCRGE (n.d.) found that school districts across the country use cognitive tests extensively. According to Cohen (2012), a combination of aptitude and achievement tests are often used when determining admittance into an academic program.

This is consistent with the data presented in the SOS.

These tests are usually timed intentionally to measure the level of fluidity and application speed. Ergo, an argument could be made that preparing students for a test may alter their true or raw score (Anastasi, as cited in Powers, 1986). However, Powers (2017) argued that test preparation has the potential to reduce inaccuracies that contribute to lower scores that do not represent the taker's true ability. These preparations include such methods as relevant instruction, test familiarization, and coaching.

Relevant instruction preparation consists of studying the content that will be assessed on the test. Test familiarization focuses on learning about the mechanics of the test. Coaching entails strategies like process of elimination and guessing techniques. These methods were shown to reduce anxiety, increase speed, and improve confidence. Similar results were reported by IPC (2019) when participants indicated a reduction in anxiety as a result of preparation. According to Powers (2017), studies of all test preparation methods have produced gains on tests such as the SAT. Wing's (1989) research on SAT test preparatory participants supported Power's finding. Participants in the study scored higher than nonparticipants.

One of the reasons some students perform poorly on aptitude tests may be a deficiency in preparation. Aptitude tests themselves are somewhat counterintuitive for young students. Mentally rotating objects or predicting folds and hole punches are not typically part of the curriculum. However, if students were primed beforehand on solving problems much like the ones embedded in the aptitude test, it is possible they would perform at a higher level (Powers, 2017). Naglieri and Ford (2005) stated that directions and items on the nonverbal portion of the CogAT contain as many as 300 words. This

reduces the legitimacy of the nonverbal assessment and disproportionately affects ELLs. Test preparation could assure students understand the directions, thereby increasing their chances of achieving their true score.

Preparing students to take the aptitude assessments over time may provide them with the scaffolding they need to perform their best. Brown (2014) advocated for interleaved learning. This means that people learn best when they are introduced to new information or a skill, practice, stop for a measure of time, then continue practicing later. Brown described interleaved learning as a process that solidifies learning and creates lasting, meaningful connections that are stored in the brain's long-term memory. Conversely, according to Brown, cramming for a test or trying to master something right away is not optimal.

Brown (2014) asserted, "We have been raised to think that the brain is hardwired, and our intellectual potential is more or less set from birth" (p. 165). Rather than agreeing with the hardwired theory of the brain, Brown approved of the idea of neuroplasticity. Brown described this concept of the brain as an organ that is constantly changing, growing, and reprogramming itself. Further, greatness in any discipline is the result of countless hours of practice and not a result of purely natural ability (Brown, 2014). Last, further validation of this theory is supported by British neuroscientists who conceded the main parts of the brain are determined by genes, but the finer parts are established via external experiences (Brown, 2014).

Johnson (2015) attributed the underrepresentation of non-White students in North Carolina to an overreliance on standardized tests and the lack of alternative means. The study of six North Carolina school districts found that when alternative methods of

identification were implemented, enrollment of underrepresented populations increased.

The effects of providing test preparation classes at the elementary level is not known. While research exists regarding test preparatory courses in secondary settings, none was found regarding CogAT test preparation in an elementary setting. Last, while the general language of national, state, and local standards allows for and encourages identification practices that are responsive to underrepresented demographics, none specifically advocates for preparing students for the varying tests responsible for their identification (NAGC, n.d.b; NCDPI, 2018).

Theoretical Foundation

This study was rooted in part by the theory of nature versus nurture. Galton (1869) first coined this phrase that delves into the concept of what forces are responsible for the human condition and behaviors. Theorists adopt many philosophies regarding the topic. The essence of the debate inspired by this idea is that nature and genetics predetermine innate characteristics of humans and their behavior, or alternatively, behavior is acquired or learned (Plomin, 1995). To be a nativist is to believe that genetics are the driving force behind human behavior and performance. Conversely, a behaviorist believes that characteristics are not genetic but are a result of humans interacting with factors in their environment (Plomin, 1995). This study adopts the nurture and nature theory, the idea that both are necessary to form the human condition.

According to Brown (2014), most scientists agree that genetic and environmental variables play a role in IQ levels and other behavioral factors. Neuroplasticity is the idea that brains and their capacity are not fixed but possess a degree of malleability. A degree of metamorphoses occurs as a result of environmental stimuli. Further, transformations to

higher ability levels or new learning happen best through interleaved learning, meaning that learning is optimized when new information is presented and then time elapses. However, the information must be revisited and recalled in intervals for optimization (Brown, 2014).

RFT is the process that drives neuroplasticity. RFT proposes that the brain learns by relating one stimulus to another. Forming these connections allows humans the ability to think concretely and abstractly. Further, it allows us to assign an intangible value to tangible objects such as diamonds or sentimental family heirlooms. This theory postulates that most intelligence tests assess relational learning which can be taught through practice of similar test items (Stanley, 2019).

Consequences

Regardless of the impact gifted education has on its population, equal access to appropriate educational curricula and settings is a right of all students. According to North Carolina state law Article 9B, all students who demonstrate high levels of intellect or achievement require differentiation. However, across North Carolina, a disproportionality exists regarding minority gifted enrollment (Massey Cruz, 2017). Further, students of underrepresented subgroups with similar test scores and grades are consistently overlooked and go unidentified (Best, 2018). Research suggests that taking efforts to close the underrepresentation gaps have many benefits, while allowing the problem to persist results in incalculable losses for individual students, North Carolina, and the country.

Massey Cruz (2017) articulated potential consequences of African American underrepresentation in North Carolina:

Additionally, this limited access to gifted education programs among African American students has created an unequal environment that positions African American students at a disadvantage in comparison to their White counterparts. This discrepancy is important because without change, large numbers of African American students may not receive equitable access to a rigorous, challenging, creative curriculum. In order to be socially and occupationally competitive, it is imperative that African American students are exposed to and receive the same educational opportunities as White students. (p. 112)

Although this study focused on the African American population specifically, the same sentiment is true for all underrepresented populations previously described. Students not receiving education in an appropriate setting comes with consequences. However, when student needs are met, they and society reap the benefits.

Positive Effects of Gifted Identification

A 14-year-long study called Project Excite was conducted in an Illinois school district in 2000. This project, aimed at developing the academic performance of students from underrepresented populations, highlights the possible positive effects of expanding gifted inclusivity (Olszewski-Kubilius & Steenbergen-Hu, 2017).

The project started by collecting data on achievement gaps. Significant distance in academic achievement existed between White students and Black and Hispanic students. The goals of the project consisted of closing achievement gaps, increasing enrollment of targeted populations in advanced courses, and increasing college admissions (Olszewski-Kubilius & Steenbergen-Hu, 2017).

This project initiated in elementary school and continually followed and

supported five cohorts of students. The researchers looked at the admission standards for the program and reduced cutoff scores of aptitude and achievement tests from 90% to 75%. Once the first cohort of students was formed, the project implemented rigorous instruction and continued the process yearly resulting in five cohorts (Olszewski-Kubilius & Steenbergen-Hu, 2017).

The study results indicated profound improvement in achievement as well as other areas. The key findings showed a reduction in the math and science achievement gap between minorities and Whites. The project successfully prepared students for placement in above-grade-level math and improved representation rates. Students participating in the project consistently outperformed other students in the district of similar demographics. In general, participants had the highest achievement scores in the district and were comparable to Whites (Olszewski-Kubilius & Steenbergen-Hu, 2017).

The college admission statistics improved as the cohorts progressed. Cohorts 1-3 had a 73% 4-year college admission rate, whereas Cohorts 4-5 had a 97% admission rate. Cohorts 1-3 had a 14% admission rate to colleges ranked in the top 50% of the United States, while Cohorts 4-5 had a 43% rate (Olszewski-Kubilius & Steenbergen-Hu, 2017).

Qualitative student data supported the program's success. Students reported being grateful for the program and an increased confidence regarding competing academically with their classmates. In totality, 77% of all participants completed the program and only 2% dropped out due to lack of interest or motivational reasons (Olszewski-Kubilius & Steenbergen-Hu, 2017).

Newell (2018) reported similar results when expanding advanced classes through a talent development program in a North Carolina school district. Qualitative data from

parental surveys expressed approval of the program and quantitative data showed gains in achievement through various assessments.

These examples illustrate the power of gifted programs and their impact on students. Naglieri and Ford (2005) proclaimed that “gifted education is a need, not a privilege, and as educators, we must find ways to open doors to all children who stand to benefit from gifted education programs and services” (p. 35). When inclusivity is expanded, students of underrepresented groups benefit in many ways. However, in lieu of reducing required scores, the same inclusivity could be achieved by increasing student scores through test preparation.

The issue of representation is important from a societal perspective. Proper education of our citizens is essential for our nation’s economy and our ability to compete on a world stage (Wai & Worrell, 2016).

Consequences of Underrepresentation

McIntyre (2016) stated that educators need to foster the potential of gifted children. However, if the students are not identified as gifted, a greater chance exists for underachievement. If students with potential do not qualify for gifted programs under current identification policies, this could have grave consequences for their development and, if the trend is replicated, negative societal consequences.

The Jack Kent Cooke Foundation (JKCF, 2007) conducted research on talented low SES student populations and how the educational system failed to realize their potential, resulting in personal and societal losses. The problem is twofold; many minority students are not being identified as gifted for multiple reasons. Wai and Worrell (2016) attributed the lack of national and state funding as one of the culprits related to the

underachievement of low-income gifted students. Because mass screenings require additional funding, some school systems rely on nominations by teachers or parents. This process is notoriously biased and tends to overlook minorities and low-income students (Wai & Worrell, 2016). Further, due to lack of investment, some programs are not equipped to provide consistent educational stimulation. Therefore, low-income and minority students who are identified as gifted in elementary school drop out of the programs or continue to underperform throughout their academic career due to the lack of investment in quality programs. As a result, individual monetary consequences occur as students who graduate from college enjoy salaries that are double those of high school graduates (JKCF, 2007).

The consequence of not capitalizing on the talent of all students results in fewer college graduates. Research has shown the nation's prosperity is somewhat reliant on educated citizens with college degrees. Positive correlations exist between college graduates and better health, voter participation, lower incarceration rates, and greater independence from government related assistance programs (JKCF, 2007). According to Wai and Worrell (2016), the United States benefits greatly by accurately identifying and then supporting the gifted. If gifted students reach their full potential, they are more likely to become published authors, own patents, and earn doctoral degrees than the general population (Wai & Worrell, 2016).

Last, not investing in large swaths of the nation's population is neither equitable nor advantageous to society. If current trends of underrepresentation continue, the loss of talent may grow exponentially, while qualified students are not provided the same opportunities for growth or intellectual stimulation (Hodges et al., 2018).

Literature Review Summary

The presented research frames the problem of equitable access to gifted education for all demographics. However, special attention was paid to underrepresented groups in gifted education. A thorough explanation including supportive data exposes the underrepresentation of certain student populations on the national and state stage. The context of the problem was set among best practices regarding gifted identification with specificity given to testing methods.

Ample research of gifted identification best practices depicts successful equitable results. The research on best practices shows that if implemented correctly, progress towards improving RIs is possible. Quantitative data are supplied that support claims of best practices such as universal screenings. Also, the literature provided instances that illustrate the benefits of expanding gifted services to students who demonstrate potential.

This literature suggested testing policies and procedures as a possible culprit in the inequity problem. The literature revealed the implementation of tests to determine giftedness is the most prevalent method of identification. Also, in cases across the state and the country, students are encouraged not to study or prepare for these tests, resulting in students taking them cold. The information presented refuted this process and suggests preparation reduces anxiety and speed, thereby revealing a student's true score. Research to support this claim revealed preparation reduced test anxiety, increased confidence, and increased preparedness among participants (IPC, 2019). Therefore, if the underrepresentation issue is persistent in education from decades past to present day, current practices must come under scrutiny. Alas, if assessments are the main driving force behind gifted identification, assessments are suspect in perpetuating the status quo.

The literature defined and explained the concept of neuroplasticity; the idea that brains and their potential are not stagnate but rather pliable. Experiences can cause the structure of the brain to metamorphize. Intelligence is a product of genetics, but our environmental interactions also play a role. This concept supported the need to provide students with multiple opportunities to show their talents stretched over time. Thus, as brains mature, giftedness may be revealed later than the prescribed screening. Chapter 3 explains the study in detail.

Chapter 3: Methodology

Restatement of the Problem

Gifted programs have been fraught with equity issues since their inception. Historically, gifted populations have been comprised of mostly White students with higher SES (Roda & Kafka, 2019). Best practices have been created and researched by NAGC, NCRGE, the Davidson Institute, and NCAGT to correct the underrepresentation of subgroups. Research suggests these practices have positive impacts on diversifying gifted populations. However, the predominant monoculture of giftedness persists. North Carolina gifted populations have experienced a decline regarding the identification of underrepresented students (NCDPI, 2019). Despite research that suggests students benefit from aptitude test preparation (IPC, 2019; Powers, 2017), some school systems around the country and in North Carolina continue to discourage students from studying or preparing for tests that might help them be identified as AIG.

Theoretical Philosophy

This research operated under the philosophy that genetics is not the only factor in determining student IQ. While genetics may play a role in an educational setting, educators have a responsibility to meet the students at their current level of ability and strive for improvement. A behaviorist premise relies on the belief that student achievement can be affected through exposure and intervention. Watson's (1924) famous quote is the epitome of a staunch behaviorist philosophy:

Give me a dozen healthy infants and my own specified world to bring them up in, and I'll guarantee to take anyone at random and train them to become any type of specialist I might select-doctor, lawyer, artist, merchant-chief, and, yes, even

beggar and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors. (p. 104)

This quote epitomizes the essence of nurture as a formidable influence of human destiny. Cherry (2019) expounded on further evidence of the influences of nurture: “Identical twins reared apart have IQs that are less similar than identical twins reared in the same environment” (p. 1). Obviously, environmental conditions and the type or amount of nurturing influenced the IQ of the twins.

This study operated under a nature and nurture theory: the belief that knowledge and skills can be acquired by students to the point of excellency and are not solely reliant on genetics. Acquired knowledge and skills will positively influence gifted identification data. The nature and nurture theory and neuroplasticity have commonalities. Both foster the idea of brain flexibility regarding the acquisition and application of new information. However, thrusting a young student into a relatively alien situation and asking them to perform unfamiliar tasks may be overwhelming. Conversely, exposing the students to the types of questions on the test and familiarizing them with the process could help students perform their best (Powers, 2017). Test preparation may help some students from underrepresented populations perform better, possibly resulting in population augmentation.

Purpose

Testing is the most prevalent form of AIG identification (NAGC, 2015). Given this fact, it is important for educators to understand the different types of tests and what their results reveal about student abilities. Further, when comparing current identification practices with current rates of the underrepresentation of minorities who are identified as

AIG, it is apparent that the current practices are not solving the problem. Given the long track record of test reliance, it is unlikely that SEAs will adopt new identification policies devoid of testing measures. Thus, one way to attack the problem of underrepresentation may be to give students the tools and exposure to perform better on the tests, perhaps resulting in increased identification rates among minorities. This study aimed to examine the instruments used to help students prepare for the test in LEA-1.

Review of the Research Questions

LEA-1 uses six lessons to prepare students for the CogAT. This study asked teachers to take an objective look at them and teacher practices in terms of implementation levels to determine if more can be done to serve students. The research questions of this study are as follows:

1. To what extent do teachers in the district implement CogAT preparation?
2. How can the perceptions teachers hold on test preparation lessons be described?
3. How does teacher understanding of CogAT preparation goals align with the AIG program goals?
4. To what extent does teacher feedback suggest necessary change to CogAT preparation?

Further, this study intended to determine if teacher comprehension of district goals and their perspectives align regarding the purpose of the lessons. Teachers were invited to participate in virtual interviews to analyze initial survey responses by providing qualitative feedback. The interview questions were based on the research questions of the study and the survey item responses.

Setting

The study took place in one North Carolina public school district, LEA-1. More specifically, most of the study was centered around LEA-1's AIG department and their screening procedures. Tables 5-7 give an overview of North Carolina schools as a whole and Figures 3 and 4 illustrate additional LEA-1 data.

Table 5

North Carolina Public School Totals

Number of administrative units (2015-2016)		
Schools		
County units	100	87.0%
City units	15	13.0%
Total	115	
Number of public schools (2015-2016)		
Elementary (Grades PK-8)	1,845	71.2%
Secondary (Grades 9-12)	415	16.0%
Secondary (Grades 9-13 Early College)	80	3.1%
Combined	93	3.6%
Charter schools	159	6.1%
Total schools (public & charter)	2,592	

Most of these counties are standalone school systems. However, some city schools are incorporated along with the charter school system. Table 6 summarizes North Carolina's most recent student demographics.

Table 6*North Carolina Public School Student Data*

Average daily membership (FY 2015-2016)	
Students	Memberships
Grades K-8	1,008,419
Grades 9-12	451,433
Total	1,459,852
Ethnic distribution (Fall 2015)	
American Indian	1.3%
Asian	3.0%
Hispanic	16.5%
Black	25.7%
White	49.5%
Pacific Islander	0.1%
Other	3.8%

According to the Civil Rights Organization (2014), North Carolina ranks as the ninth most populous state regarding public student enrollment. Also, the National Assessment of Education Progress report published by the Cato Institute and written by Liebowitz and Kelly (2018), ranked North Carolina's education system 13th in the nation. Table 7 displays North Carolina charter school student data.

Table 7*North Carolina Public Charter School Student Data*

Average daily membership (FY 2015-2016)	
Students	Memberships
Grades K-8	64,540
Grades 9-12	13,251
Total	77,791
Ethnic distribution (Fall 2015)	
American Indian	0.8%
Asian	3.4%
Hispanic	8.4%
Black	26.3%
White	57.1%
Pacific Islander	0.2%
Other	3.8%

Charter school population is growing since the removal of the 100-school cap previously designated (Public Schools First NC, 2019).

LEA-1 was chosen as the focus of the study due to convenience sampling (Urdan, 2017). LEA-1 granted access to district data and personnel for research purposes. LEA-1 is a relatively large North Carolina district. Figure 3 summarizes characteristics of the district.

Figure 3*LEA-1 District Characteristics (Civil Rights Organization, 2014)*

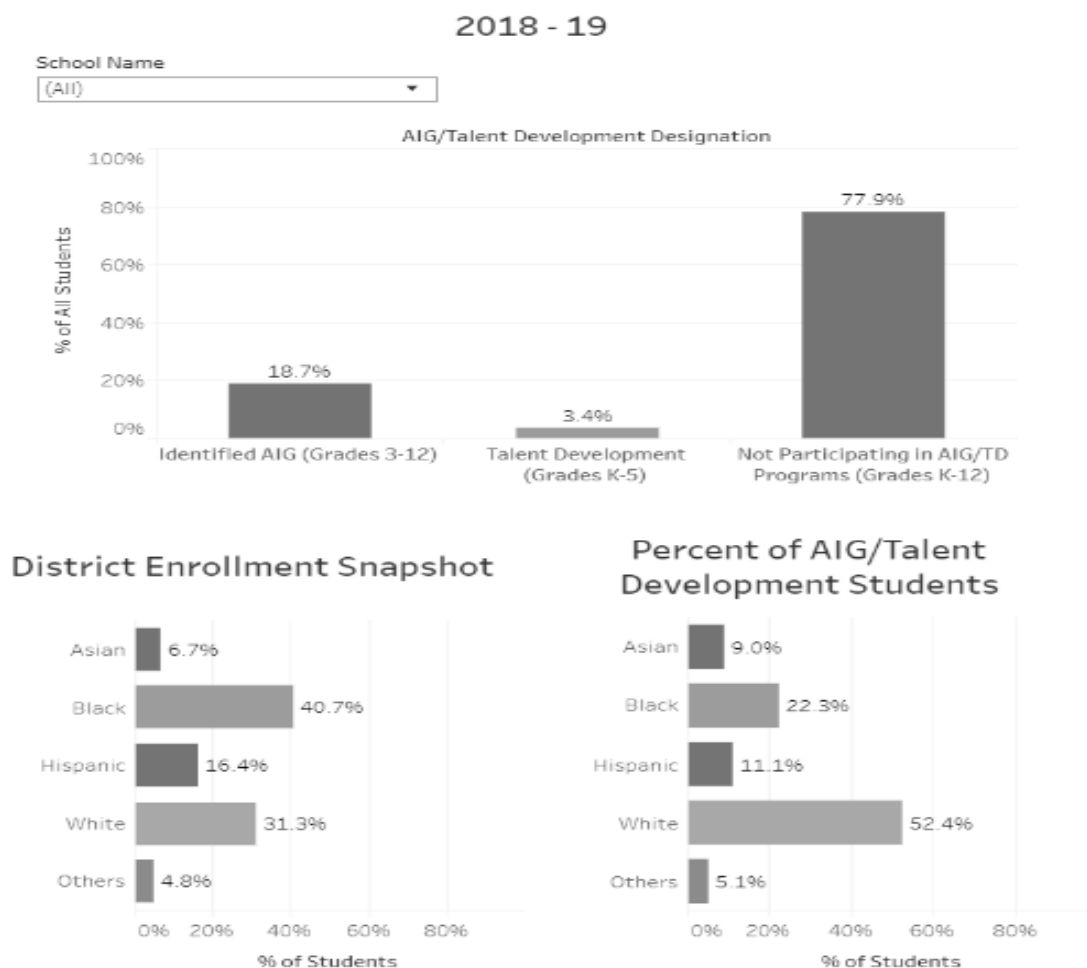
District Characteristics	
Number of Schools: 126	
Receives Title I Funds: 83	Offers Advanced Placement: 23
Classified as Charter Schools: 0	Offers Gifted & Talented Education Programs: 119
Classified as Magnet Schools: 45	Offers International Baccalaureate Diploma Programme: 4

More than half of the schools in LEA-1 receive Title I funds, and almost all schools have AIG programs. Figure 4 further characterizes LEA-1 with student demographic data.

Figure 4*LEA-1 Student Demographics*

Student Enrollment: 73,472	
American Indian or Alaska Native: 0.5%	Female: 48.8%
Asian: 6.1%	Male: 51.2%
Black or African American: 40.9%	Students with Disabilities (IDEA): 13.6%
Hispanic or Latino of any race: 14.5%	Students with Disabilities (Section 504 Only): 0.6%
Native Hawaiian/Other Pacific Islander: 0.2%	Students with Limited English Proficiency (LEP): 7.5%
Two or More Races: 4.0%	
White: 33.8%	

The largest demographic in LEA-1 is Black at 40.9%, followed by White at 33.8%. Figure 5 illustrates AIG enrollment statistics for LEA-1.

Figure 5*LEA-1 AIG Demographics*

LEA-1 has one of the highest AIG population percentages in North Carolina.

White students, at 58.5%, make up the largest demographic of students enrolled in AIG programs at LEA-1.

Approach to Research

According to Creswell (2018), the research approach can be chosen in relation to the research problem. This study sought to assess levels of lesson implementation and teacher perceptions and gather suggestions for lesson plan modifications. To answer these questions, quantitative and qualitative data were required. Therefore, a mixed methods approach was applied to this research project. Creswell stated that mixed methods research can reveal insights otherwise unnoticed by data triangulation. Integrated properly, one type of data supports the other.

A pragmatist philosophy was adopted to influence and guide this study. According to Creswell (2018), pragmatism aligns with a mixed methods design because the philosophy encompasses a pluralistic approach to problem-solving. Last, this philosophy is centered around solving real world problems, which also aligns with this study regarding the issue of underrepresentation and the connection to screening practices.

The research design of this study was an explanatory sequential mixed method. Creswell (2018) described this design as one that gathers quantitative data first and then uses that data to further investigate and gather qualitative data to provide insights. According to this design, quantitative research via a survey was conducted, the results were analyzed, and then those results were built on with qualitative research. The qualitative research was carried out by conducting virtual interviews to provide answers to open-ended questions related to the previous survey on perspectives of pre-CogAT

lessons. This design was advocated by Creswell, “researchers may first survey a large number of individuals and then follow up with a few participants to obtain their specific views and their voices about the topic” (p. 44).

One characteristic of explanatory sequential research design is that it is emergent. Creswell (2018) described the emergent design as fluid in nature, meaning the details cannot be strictly prearranged. This style couples well with the explanatory sequential design because unpredictable themes may emerge as a result of participant perceptions and expressions. Unpredictability may inspire changes to future questions or activities to achieve in-depth answers to the research questions. Anticipated research questions were prepared for interviews and then modified as a result of the data.

While analyzing data, the researcher looked for and established themes. However, no themes were predetermined. Creswell (2018) stated, “the traditional approach in social sciences is to allow the codes to emerge during the data analysis” (p. 207). The researcher determined established themes and made suggestions regarding changes to current practices.

The instruments used to collect the initial data were two surveys, described later in more detail. The surveys were designed using a Likert scale, and the data analysis tools were the chi-square test for independence and the Qualtrics software. The Likert design allowed for participants to express their opinions in a manner that could be quantified. Further, the interface had the capability to produce reports and data analysis of the results using descriptive statistics. The chi-square test calculated the probability of randomness when comparing the two surveyed groups.

The results of the two surveys were also analyzed for statistical significance using

the chi-square test for independence to determine if a relationship existed between the two groups. The formula below indicates the variables used in calculating the chi-square statistic:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

The numerator of the equation stands for the observed data, and the denominator is the expected outcome. This formula calculated a p value after the raw data from the surveys were entered. The lower the p value, the greater the relationship between the groups and vice versa. A p value result yielded a level of independence once calculated. Fisher (1925) established a p value of .05 as the standard for statistical significance. However, other factors and variables were considered before adopting the p value level. Kim (2020) stated that the p value level should be consistent with sample size. Further, Kim advocated for a higher p value with a small sample size of 20. The largest group of this study was 20, and a p value of .10 was adopted. The null hypothesis, H_0 , would have no difference in their opinion regarding survey items. The alternative hypothesis, H_1 , was that the two groups of teachers would have different opinions or views regarding survey items. Using these features informed the second phase of qualitative data collection by aiding in the creation of open-ended questions for the interviews.

Process Logic Model

The process of this research project is described through the implementation of inputs that result in possible desirable outcomes. Figure 6 organizes the study.

Figure 6*Research Process Logic Model*

CogAT preparation research logic model					
Inputs	Outputs		Outcomes		
	Participants	Activities	Short term	Mid term	Long term
Research questions	Elementary AIG teachers	Distribute surveys	Garner understanding of research topics from data analysis	Create an action plan	Provide increased equitable gifted screening practices
Teacher surveys	Third-grade regular classroom teachers	Collect quantitative and qualitative data from responses	If themes emerge, determine if they are actionable.		
Face-to-face interview questions	Interview participants comprised of AIG teachers	Analyze data to determine themes			
Assumptions:			External Factors:		
<ul style="list-style-type: none"> Themes will emerge Teacher participation 			<ul style="list-style-type: none"> AIG department implementation of modifications. 		

All surveys were designed to answer the research questions in order to examine the current practices involved in preparing students for the CogAT in LEA-1.

Recommendations were based on identified needs. Regardless of changes, the long-term goal of the process was to ensure that equitable gifted screening practices were taking place. Table 8 illustrates alignment between survey items and research questions.

Table 8*Research Question Alignment*

Research question	AIG teacher survey items	Third-grade teacher survey items	Interview questions
To what extent do teachers in the district implement CogAT preparation?	7, 8	6	3, 13
How can the perceptions teachers hold on test preparation lessons be described?	3, 4, 6	2, 3, 5	7, 8, 9, 18, 19
How does teacher understanding of CogAT preparation goals align with the AIG program goals?	10, 11, 12	8, 9, 10	5, 15
To what extent does teacher feedback suggest necessary change to CogAT preparation?	5, 9, 13	4, 7	4, 6, 10, 11, 12, 14, 16, 17, 18, 19

Although all items aligned specifically to a research question, the instruments were also designed to provide a broad range of information for analysis. Further, the instruments were aligned to national and state standards. Figure 7 organizes this alignment.

Figure 7*Survey Alignment to State and National Standards*

Survey	Research/best practice
AIG teacher survey	2.1.1. Educators develop environments and instructional activities that prepare and encourage students from diverse backgrounds to express characteristics and behaviors that are associated with giftedness (NAGC, 2019).
Third-grade teacher survey	2.1.3. Educators use universal screening and multiple indicators of potential and achievement at various grade levels from Pre-K through grade 12 to provide multiple entry points to services designed to meet demonstrated needs (NAGC, 2019).
Interview questions	1.c. Ensures AIG screening, referral, and identification procedures respond to under-represented populations of the gifted (NCDPI, 2018.).

NAGC Standard 2.1.1 specifically states that test preparation is an essential element when providing learning environments that encourage diversity in gifted programs. This standard strongly aligns with the purpose of this study and the items on these instruments. The next two state standards also strongly align to the reason for the conduction of this study, to ensure equitable practices are being implemented that address the problem of underrepresented students in gifted education.

Preparatory Lessons

The preparatory lessons conducted consisted of six lessons that focused on priming students for the three categories of the test. The test is divided into verbal, quantitative, and nonverbal sections; therefore, the lessons cover the same categories.

Lesson 1

The first lesson focuses on the verbal portion and teaches students about

establishing relationships through analogies. The lesson plan can be found in Appendix A.

Lesson 2

Lesson 2 concentrates on the quantitative section by using number analogies. The lesson plan can be found in Appendix B.

Lesson 3

The third lesson focuses on skills assessed in the verbal section of the test. The lesson is designed to help students think about and understand the classification of various objects. Further, students determine which objects may belong to a particular group or which might be excluded depending on various characteristics. The lesson plan can be found in Appendix C.

Lesson 4

This lesson focuses on the quantitative section of the test and guides student understanding of number puzzles. The lesson plan can be found in Appendix D.

Lesson 5

This lesson is centered around the nonverbal portion of the test. Students gain exposure to rotating objects mentally, folding paper, and predictions of hypothetical scenarios. The lesson plan can be found in Appendix E.

Lesson 6

This lesson focuses on predicting what an object would look like if it were mirrored, flipped, or rotated. This lesson consists of nonverbal skills. The lesson plan can be found in Appendix F.

Data Collection and Analysis

According to Fleming (2016), “we cannot fix what we cannot measure” (p. 2). Appropriate data must be collected and analyzed using the correct instruments and methodology. To complete data analysis, 10 steps were accomplished.

Step 1

AIG elementary teacher surveys were distributed by email. AIG teacher survey (AIGTS) items follow. Each item was measured using a Likert scale. The range of answer choices included strongly agree, agree, disagree, and strongly disagree, encompassing a 4-point scale, except for Item 13. Item 13 was written in a yes/no format in order to get a specific quantity of how many teachers modify the current lessons. This item’s aim was to determine the level of need for lesson modification. The AIG teacher survey is as follows:

1. Survey consent.
2. Students should be given CogAT test preparation activities.
3. All pre-CogAT lessons align to all parts of the CogAT test.
4. The pre-CogAT lessons are effective in preparing students to take the CogAT test.
5. More should be done to prepare students for the CogAT.
6. The pre-CogAT lessons positively impact student CogAT results.
7. Elementary AIG teachers in this district consistently implement the pre-CogAT lessons.
8. I implement every part of each lesson.
9. The pre-CogAT lessons should be updated or modified.

10. A goal of the pre-CogAT lessons is to prepare students to perform their best on the CogAT.
11. A goal of the pre-CogAT lessons is to increase underrepresented subgroup populations in the AIG program.
12. A goal of the pre-CogAT lessons is to improve student critical-thinking and problem-solving skills.
13. I adapt or modify the lessons.

Appendix G contains a copy of the actual survey. The candidate created all survey items with the purpose of gathering data that pertain to the research questions.

Survey Item Description

Item 1 was included to glean teacher perceptions regarding their view of test preparation. Some teachers may have believed that students should not be prepared for aptitude assessments and that the test itself is sufficient for revealing giftedness. A low percentage score on this item revealed attitudes contrary to the research presented in this study, whereas a high percentage score indicated philosophical alignment to current research on the topic.

Item 2 was included to gather teacher perceptions regarding alignment between the actual test and the pre-CogAT lessons. The item resulted in further investigation of alignment through interview questions.

Item 3 collected information regarding perceptions of the effectiveness of the lessons regarding actual test preparation. Even if the lessons are aligned, there may be a missing element regarding preparation. For example, since it is a timed test, students may need more experience in taking the test itself. A practice test could provide this type of

experience.

Item 4 provided data regarding the screening process in general. This item initiated a conversation about what is being done, what should be done, and what can be done in relation to current screening practices.

Item 5 was included to garner data regarding test results. Teachers may have experiences that support or refute the impact of the lessons on CogAT results.

The level of implementation is a basic question that needs answering to further understand current practices in LEA-1. Item 6 provided clarity on this topic.

Items 7 and 8 provided insight as to what AIG teachers are actually doing in the field. For example, they may implement all the lessons but not every part of the lesson for one reason or another. This item served to initiate that conversation.

Items 9-11 were designed to answer the research question regarding the level of teacher knowledge referring to district initiative goals.

Step 2

I sent out a separate survey to every third-grade regular classroom teacher. Below are the survey items. An actual version is included in Appendix H. The third-grade regular classroom teacher survey is as follows:

1. Survey consent.
2. All pre-CogAT lessons align to all parts of the CogAT test.
3. The pre-CogAT lessons are effective in preparing students to take the CogAT test.
4. More should be done to prepare students for the CogAT.
5. The pre-CogAT lessons positively impact student CogAT results.

6. Elementary AIG teachers in this district consistently implement the pre-CogAT lessons.
7. The pre-CogAT lessons should be updated or modified.
8. A goal of the pre-CogAT lessons is to prepare students to perform their best on the CogAT.
9. A goal of the pre-CogAT lessons is to increase underrepresented subgroup populations in the AIG program.
10. A goal of the pre-CogAT lessons is to improve student critical-thinking and problem-solving skills.

This survey was adapted from the previous AIGTS. All items specific to AIG implementation were removed. The same Likert scale was applied to each item.

Step 3

I examined the results of interview volunteer responses, included as the last item in the AIGTS.

Step 4

I collected data from both surveys using Qualtrics software.

Step 5

I conducted an analysis of responses.

Data Analysis. This study used descriptive statistics to analyze the quantitative data and thematic coding to examine the qualitative data. According to Urdan (2017), descriptive statistics will only apply to the population from which the data have been collected. Therefore, the results of this study are not generalizable but rather unique to the district. However, the study itself and the larger concepts are generalizable and could be

replicated to determine specific district results.

The quantitative data of survey items were described by using statistical percentages calculated by the Qualtrics software. This software is capable of computing item response percentages relative to the total population. Each item response contains a percentage that will serve as the measure of teacher perceptions. For example, if 90% of teachers strongly agreed for Item 1, it would indicate a clear majority of participants favored CogAT test preparation activities. This statistical evidence served as one of the initial data points to inform the qualitative portion.

The qualitative portion of the study was initiated after reviewing the quantitative data. Documented observations and comments were added while examining the quantitative data for each survey item. This action cultivated a familiarization of the results of the survey and influenced the next qualitative portion of this mixed methods study, virtual face-to-face interviews. According to Creswell (2018), no specific rule exists when deciding on the number of interview participants. However, he suggested four to five participants based on the review of many qualitative studies. This study incorporated five interview participants.

The participants were asked to review the initial quantitative data and the interview question before the interview in order to give informed thoughtful answers to interview questions. Also, participants were asked to familiarize themselves with the pre-CogAT lessons for the same reason.

The researcher then analyzed the interview responses while looking for themes to emerge. According to Creswell (2018), identifying themes is part of winnowing the data. In this process, the focus was on part of the data while disregarding other parts. This

study did not operate on fixed preconceived themes due to its emergent design. However, given the nature of the questions, themes such as modification and antiquation were predicted.

The researcher analyzed all data and applied a coding process to determine emerging themes. Creswell (2018) described this process as labeling or putting information into categories. The researcher looked for repeated sentiments, beliefs, and observations expressed by the participants to establish codes. Next, the candidate tabulated the codes to determine their prevalence. Prevalent codes provided thematic evidence.

Step 6

I gave the interview participants the survey results, including statistical information.

Step 7

After entering and reviewing quantitative data, the interview participants were asked to answer questions virtually. The interview questions follow.

1. Were some of the results predictable? Explain?
2. Were you surprised by any of the results? Which ones and why?
3. Do we have an implementation problem? Approximately 85% of AIG teachers and 95% of regular education teachers agree that there is consistent implementation.
4. To what extent do you feel CogAT preparation implementation is sufficient?
5. To what extent do you believe teachers understand the goals of the CogAT lessons?

6. Would you like to see changes in the district's gifted screening procedures?
Explain.
7. How would you describe teacher perceptions of the pre-CogAT lessons?
8. Do you have a favorite lesson? Please explain.
9. Do you have a least favorite lesson? Please explain.
10. Would you like to see modifications to the pre-CogAT lessons? Please explain.
11. In Question 5, approximately 44% answered no to increasing efforts to prepare students for the CogAT. What are your thoughts?
12. When you compare data from S6, 78% agreed that the lessons do positively impact student results, however a large percentage disagree with more preparation. What do you think of this comparison? Do you see conflictions? Is their negative correlation? Would you expect a positive correlation? What explains this result in your opinion?
13. S8, why do you think 50% teachers do not implement each part of each lesson?
14. S9, What explanation can be given for the fact that nearly 40% of teachers think that the lessons should not be modified, yet 100% teachers say they modify the lessons.
15. In your opinion, what is the purpose of implementing these lessons?
16. What lessons do you modify and what are your modifications?
17. Do have any other suggestions regarding this screening policy?
18. Do you think the lessons align to the actual test?

19. Are the lessons effective?

Table 8 aligns the research questions to the previous survey and interview questions.

Step 8

I compiled results consisting of quantitative and qualitative data.

Step 9

I crafted recommendations based on the data.

Step 10

I created suggestions for further study.

Threats to Validity

As previously stated in the limitations section of this study, one threat to the validity of this study was the possibility of participants being disingenuous in their responses. There was no way of knowing if the collected responses were a true representation of beliefs. For instance, participants may not have believed that the surveys were anonymous and therefore responded differently.

Role of the Researcher

I am an AIG teacher at two sites in LEA-1. I created the surveys and was responsible for their collection and initial data analysis. Further, I conducted the virtual interviews of volunteers and led the activities previously described. Since this study was conducted in my district of employment, certain considerations applied. Creswell (2018) described a study in a site that is the researcher's own organization as backyard research. This type of research can influence or compromise participant responses or the researcher's interpretations of data. Creswell stated that in this type of situation, it is imperative for the researcher to show participants that the data will not jeopardize

participant employment status. First, as previously stated, I deliberately included steps to ensure anonymity. The first step was creating a survey that protects identity. Next, I piloted the test to assess if the safeguard measures worked. Last, I announced to the participants that safeguard measures had been implemented and tested.

Another way I attempted to gain the confidence of participants was to be transparent about the purpose and process of the study. I conveyed to participants that the purpose of the study was to ultimately provide the best academic experiences and opportunities for students. Besides the purpose, I explained the process of using participant responses for the sole intended purpose of objectively examining LEA-1's screening process and the pre-CogAT lessons. Last, interview participant names were not revealed but were labeled as sequential Respondents 1-5.

Summary

This chapter began by rephrasing the problem of inequity and underrepresented subgroups in gifted education and their connections to screening procedures. Screening procedures are linked by the research as a possible solution to these problems with specific regard to CogAT test preparation.

Next, the chapter framed the theoretical philosophy that drove the purpose of this study. A behaviorist viewpoint allows for and encourages the new acquisition of knowledge and skills. This is contrary to the belief that intelligence is fixed and humans have predestined academic circumstances.

The purpose of this study was to ensure that equitable screening practices are implemented in LEA-1. Equitable screening practices have been documented as having a positive impact on equitable access to gifted education. Since testing is the predominate

method of screening procedures, test preparation is a relevant topic that could improve gifted accessibility.

Next, research questions were embedded in this chapter for review. The research questions drove the study and were the focus of the data collection instruments. Alignment tables were embedded to illustrate survey and interview items and their relevancy to research questions.

The setting of the research was described starting with state data. To understand the larger picture of the North Carolina school system, data on student population and demographics were provided. Next, data were provided for LEA-1 that cover general population and gifted program enrollment statistics.

The study was explained by describing the research design which functioned as an emerging study. The instruments for data collection, surveys, were described next in detail. Last, a logic model organized the study's sequences and outcomes.

In the next section, the CogAT preparatory lessons were described. Six lessons make up the collection. A brief explanation of each lesson was included, and Appendices A, B, C, D, E, and F include their expanded version.

Data collection and analysis followed with a description of 10 steps that explained the process of the study. Condensed versions of the surveys were included, and the items were described. A table that aligns the research questions to the surveys items was included, followed by a figure that aligned standards to the purpose of the surveys.

Threats to validity and the role of the researcher concluded the chapter. The major threat to validity in this study is accuracy. If participant responses are not in concordance with the actual experience, the data will be skewed. Last, the role of the researcher was

described.

Chapter 4: Results

Review of Problem Statement

Gifted education is predominately comprised of a monoculture of White affluency (NAGC, n.d.b). This issue is problematic due to the fact that giftedness exists in all cultures and ethnicities, and the statistics related to this problem are a result of inequities in accessing opportunities and the curriculum. Currently in education, the prevalent method of gifted identification is the use of tests (NAGC, 2015). While mass screenings have shown to increase identification diversity, inequities persist. These inequities are a call to action for educators to implement practices that eliminate the excellence gap. This study aimed to measure the equity level and benefits of providing preparation for the screening methods employed at LEA-1.

Restatement of Research Focus

LEA-1 employs the CogAT as a screening tool to identify giftedness, and it also prepares students for the test using six pre-CogAT lessons. As previously stated, and documented, test preparation is not a universal practice in North Carolina or the nation. Test preparation inconsistencies are a result of competing philosophies in education regarding the decision to conduct test preparation for aptitude or IQ tests or to what extent. This study aimed to collect data on teacher perceptions of the efforts to prepare students for the CogAT in one North Carolina district. These data could inform decisions regarding test preparation programs in this district and others. Favorable perceptions of preparation programs serve to encourage their continuation or initiation. Unfavorable perceptions provide data that could influence leaders to discontinue or modify current preparation programs.

The research questions are as follows:

1. To what extent do teachers in the district implement CogAT preparation?
2. How can the perceptions teachers hold on test preparation lessons be described?
3. How does teacher understanding of CogAT preparation goals align with the AIG program goals?
4. To what extent does teacher feedback suggest necessary change to CogAT preparation?

Overview of the Chapter

This chapter proceeds with the results of the research, organized by research questions. Each research question is linked to relevant survey and interview results. The raw data collected from two surveys, the AIGTS and the Regular Education Teacher Survey (RETS), and interview results provide information that will aid the pursuit of answering the research questions. Identical survey items appear on both surveys but occur at different points and have different item numbers. Each item's relationship to specific research questions is explained as a part of the data presentation. A summary of the results follows including tables to organize the data with accompanying dialog highlighting various data points.

Presentation of Survey and Interview Results

LEA-1's AIG department consists of 51 elementary school teachers. Of these, 18 participated in this study's survey, thereby garnering a 35% participation rate. LEA-1 has 68 elementary schools, of which 23 regular education third-grade teachers from 15 schools participated, amounting to 22% of schools that participated. However, of the

original 23 participants, three opted out, leaving 20 participants who completed the survey.

Survey Item 1 for the AIGTS and the RETS contained information pertaining to the study and provided an opportunity for consent. The subsequent items were presented in a 4-stage format from strongly disagree to strongly agree, with disagree and agree being the intermediaries. Leveled answers allow for the survey participants to express how they feel regarding an issue or item and give the researcher a method of measuring participant attitudes. Conversely, two options, agree or disagree, limit participant expression and provide less data for the researcher.

This study also contains an interview component. Five respondents from the initial survey indicated that they would volunteer for interviews. The interviews were conducted virtually using the ZOOM software. Each participant is labeled Respondent 1-5. Four of the respondents were AIG teachers and their experience ranged from 10 to 30 years. The fifth teacher was a regular education teacher who has been teaching for 4 years.

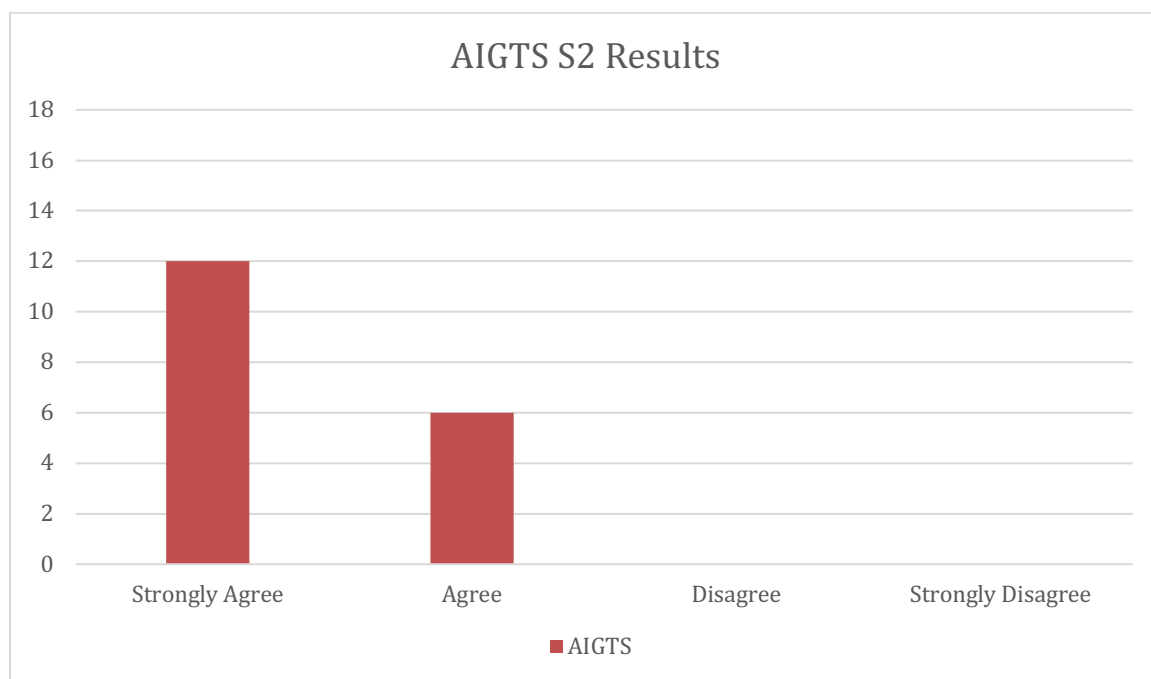
The interview questions presented to the respondents were based on the research questions and the survey results. The interview responses were coded according to the research questions. Themes from the interviews started to emerge as the qualitative data were analyzed. Time, equity, autonomy, and communication were common threads. Thematic nomenclature evolved from dialogue through the examination of specific reoccurring words. Synonyms of those words or other dialogue that described the meaning of the themes were also accepted as occurrences. Respondents expressed negative and positive views regarding these topics and how they relate to the pre-CogAT

lessons and the research questions. These expressions were also tabulated.

Teachers in LEA-1 felt very strongly that test preparation was necessary. All AIG teachers agreed that students should be given preparation for the test. Sixty-six percent of AIG teachers strongly agreed, while 34% of AIG teachers selected agree. However, this item produced the only scaled unified result without dissention. Figure 8 illustrates the results.

Figure 8

Results from AIGTS S2



Note. AIG S2: “Students should be given CogAT test preparation activities.”

The unification of this topic provides a philosophical base that adds validity to subsequent responses. For example, one survey item asked if more should be done to prepare students for the CogAT. If survey participants did not believe in preparing students for the test, they most likely would not agree with the idea of more test preparation. Since all AIG teachers agreed that preparation should occur, the prior survey

item was analyzed in isolation without biases, thereby increasing validity of results. This item was not included in the RETS and is discussed further in the limitations section.

Further survey data directly related to each research question follows.

Research Question 1: To What Extent Do Teachers in the District Implement CogAT Preparation?

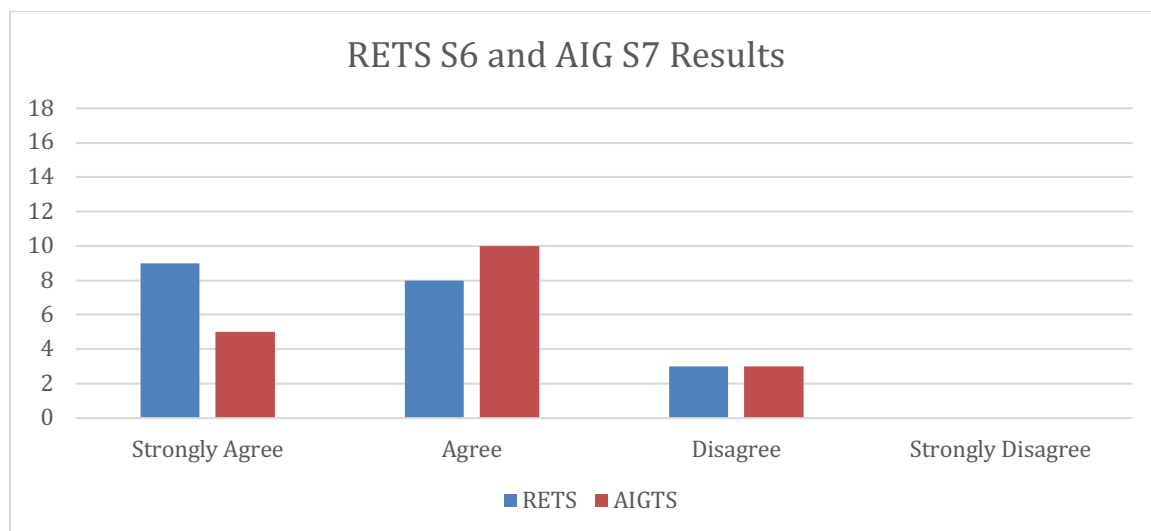
This question is important to establish causality and is essential to the essence of this study. Hypothetically, results could be skewed if the data suggested that the lessons are not being implemented. For instance, AIGTS S4 probes teacher perceptions about the effectiveness of the lessons. Ergo, the effectiveness of the lessons is dependent on their implementation. High implementation rates add validity to related survey items.

Survey Results

RETS Item S6 and AIGTS Item S7 stated, “Elementary AIG teachers in the district consistently implement the pre-CogAT lessons.” This item aligns with Research Question 1, because it is designed to measure the extent that the lessons are being implemented. Figure 9 displays the results.

Figure 9

Results from RETS S6 and AIGTS S7



Note. S6 and S7: “Elementary AIG teachers in this district consistently implement the pre-CogAT lessons.”

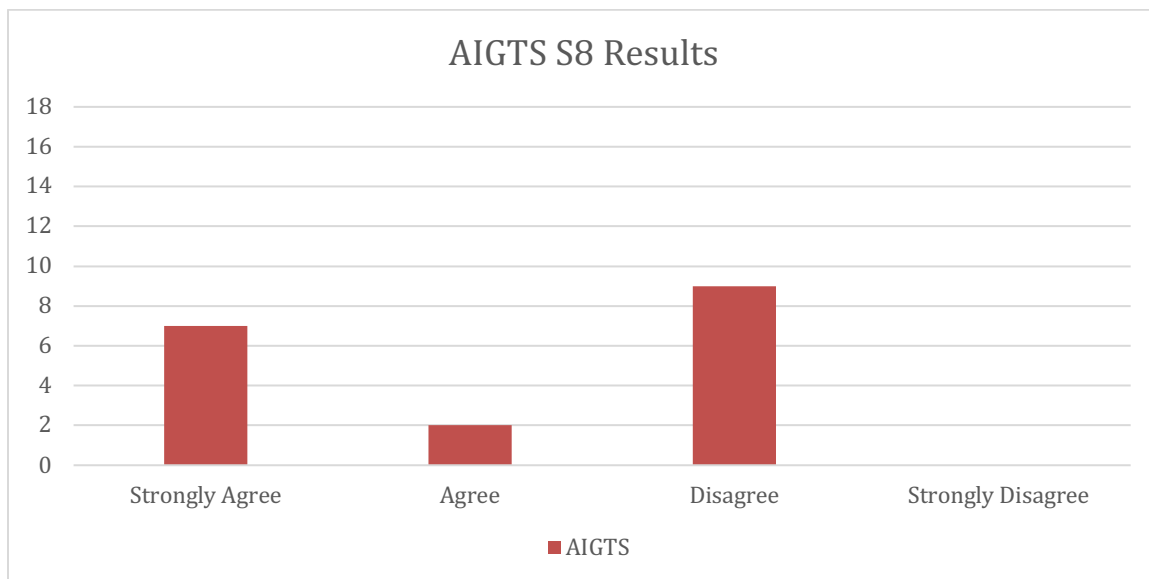
The majority of regular education teachers, 85%, indicated that the lessons are being implemented with consistency. No teacher chose “strongly disagree,” but 15% of the regular education teachers chose “disagree” and the most selected choice was “strongly agree” at 45%. There were similarities when compared to the AIG teacher results. The majority of AIG teachers (83.2%) expressed that they strongly agreed that consistent implementation took place. The data suggest a high level of implementation in general and therefore add validity to this study by establishing baseline data that logically support other survey items. However, “agree” was the most popular choice, with a 55.5% response rate, indicating that some AIG teachers did not feel strongly about the consistency or implementation of the lessons.

Item S8 of the AIGTS stated, “I implement every part of each lesson,” and only pertained to AIG teachers because they are responsible for delivering the lessons. Figure

10 displays the results.

Figure 10

Results of AIGTS S8



Note. AIGTS S8: “I implement every part of each lesson.”

This item has the majority of responses (50%) in the “disagree” category, while “agree” and “strongly agree” comprise the other 50%. Even though “disagree” acquired the most responses, in general, this item is split in the middle as half agreed and half disagreed with implementing every part of every lesson. These data suggest the need to evaluate which parts of the lessons are not being implemented and why.

Research Question 1 Interview Responses

Interview participants were asked to review the survey results related to Research Question 1 and expound on them. The interview question asked was, “Fifteen percent of teachers thought that AIG teachers are not implementing the lessons consistently. What are your thoughts?” Respondent 1 answered,

I think you have some disagreement there because I know for me, I am at two

schools. Two days a week at one and three days at another. I know that for me, if we have to miss a pre-CogAT lesson we are going to make it up because that is priority number one for me. I don't think all AG teachers are on the same page with that necessarily. It causes a lot of grief and stress trying to fit that in in two days, but I feel like it is necessary to preserve the fidelity of the program and especially when it comes to equity.

When asked the same question, Respondent 2 answered,

I don't agree with it, (inconsistent implementation) but I understand why some teachers think so. I think it is time. I think it is the time that we actually go back to school and when the CogAT test is scheduled, usually the first couple of days in October. There isn't a lot of time, especially if you are at two schools. To implement and try to get those six lessons in on that time frame is really really hard. And as far as consistency, I changed one of the lessons so that could also be a reason for the results. Teachers changing the lessons.

Respondent 3 answered, "I think 85% seems like a good strong representation. I don't think we have an implementation problem." Respondent 4 answered,

I think we are implementing the lessons, but I think everybody is doing it differently. I think that is where you are getting some disagreement, it comes from interpretation of how the lessons are being implemented. If teachers weren't implementing them, I think the disagreement would be higher.

Respondent 5 answered, "I feel like it's more consistent than not."

Overall, interview respondents agreed with a high level of implementation.

However, respondents expressed that there are some inconsistencies with implementation

regarding frequency and how preparation is being delivered.

Interview participants also responded to the survey item, “I implement every part of every lesson.” When asked why 50% of AIG teachers disagreed with this survey item, Respondent 1 answered,

Well it is impossible to implement every part because some of the links don’t work. Also, it comes down to resources. One of the lessons requires a lot of space because the students are supposed to hop on a large poster on the ground to answer questions in the activity. I don’t have a lot of space in my room so it’s not something I can do. It sounds good in theory but in practice it doesn’t work right.

Respondent 2 answered,

Well I know I modified one because I didn’t think it transferred well to what they needed to know for the test. It was the one with the M&Ms and it was just too much and isn’t an important part of what I wanted them to get out of the lesson.

Respondent 3 answered, “Yeah, I think it goes back to obviously the technology piece and some teachers or schools don’t have what they need for 100% implementation.”

Respondent 4 answered, “I understand that because I don’t implement any of them. I am a more nuts and bolts teacher and used the lessons from the CogAT website due to time constraints.”

In summary, respondents reported issues with the lessons, an alignment problem, lack of resources, and time constraints as barriers to lesson plan implementation. Table 9 illustrates the coded data according to themes.

Table 9*Research Question 1 Interview Theme Summary*

Research question	Theme coding	Respondent quotes
1. To what extent do teachers in the district implement CogAT preparation?	Time- 3	R1: "I am at two schools...it causes a lot of grief trying to fit that in in the two days."
		R2: "I think it is the time that we actually go back to school and when the CogAT test is scheduled...There isn't a lot of time, especially if you are at two schools."
		R3: "I am a more nuts and bolts teacher and used the lessons from the CogAT website due to time constraints."
	Equity- 3	R1: "I feel like it is necessary to preserve the fidelity of the program and especially when it comes to equity."
		R1: "I don't have a lot of space in my room so it's not something I can do."
		R3: "Yeah, I think it goes back to obviously the technology piece and some teachers or schools don't have what they need for 100% implementation."
	Autonomy- 3	R2: "And as far as consistency, I changed one of the lessons so that could also be a reason for the results. Teachers changing the lessons."
		R4: "I think we are implementing the lessons, but I think everybody is doing it differently."
		R2: "Well I know I modified one because I didn't think it transferred well to what they needed to know for the test."

Time, equity, and autonomy are the themes that occur the most regarding Research Question 1. These themes shed light on the possible causes of inconsistent implementation. Respondent 1 discussed the theme of time in the context of her school assignments. She is at two schools and pointed out that split time between the schools

makes it difficult to get all the lessons in. Respondent 2 mentioned that the timeframe set for when the test is given causes a time crunch.

Respondent 1 also mentioned equity in terms of making sure all students get the same amount of lessons and preparation. Autonomy was mentioned by Respondent 2 when she described modifying the lessons to aid in student comprehension. Respondent 4 also mentioned the theme of autonomy and said that she has changed her preparation completely and does not implement the lessons. She asserted that AIG teachers are implementing preparation but that it is being done differently from school to school. Table 10 summarizes thematic codes and evidences.

Comments were also tabulated by positive, negative, and neutral categories to illustrate teacher perceptions of the lessons. Table 10 organizes the data.

Table 10

Research Question 1 Comment Category Results

Research question	Positive/negative/neutral response
1. To what extent do teachers in the district implement CogAT preparation?	Positive- 2 Negative- 2 Neutral-1

Respondent 3 thought the survey results on implementation were positive, while Respondent 5 expressed a neutral comment about consistency. She stated that her class did not receive CogAT preparation 1 year but did every other year. The data show the majority of all teachers agree that preparation implementation is taking place. However, the data also support inconsistencies with implementation.

Research Question 2: How Can the Perceptions Teachers Hold on Test Preparation Lessons Be Described?

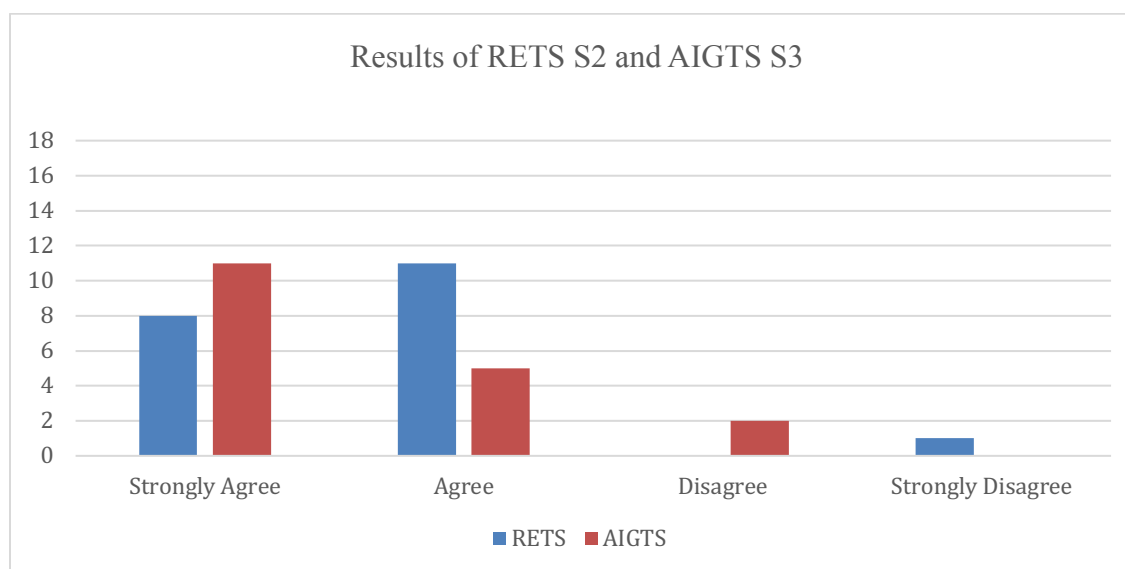
The survey and interview questions focused on teacher perceptions of alignment, effectiveness, and the impact of the pre-CogAT lessons on student performance on the CogAT. However, interview participants were given the opportunity to elaborate about their perceptions in general.

Survey Data

S2 of the RETS and S3 of the AIGTS stated, “All pre-CogAT lessons align to all parts of the CogAT test.” This item relates to Research Question 2 because it attempts to glean teacher perceptions of how the lessons line up to the actual test. Figure 11 illustrates the data.

Figure 11

Results of RETS S2 and AIGTS S3



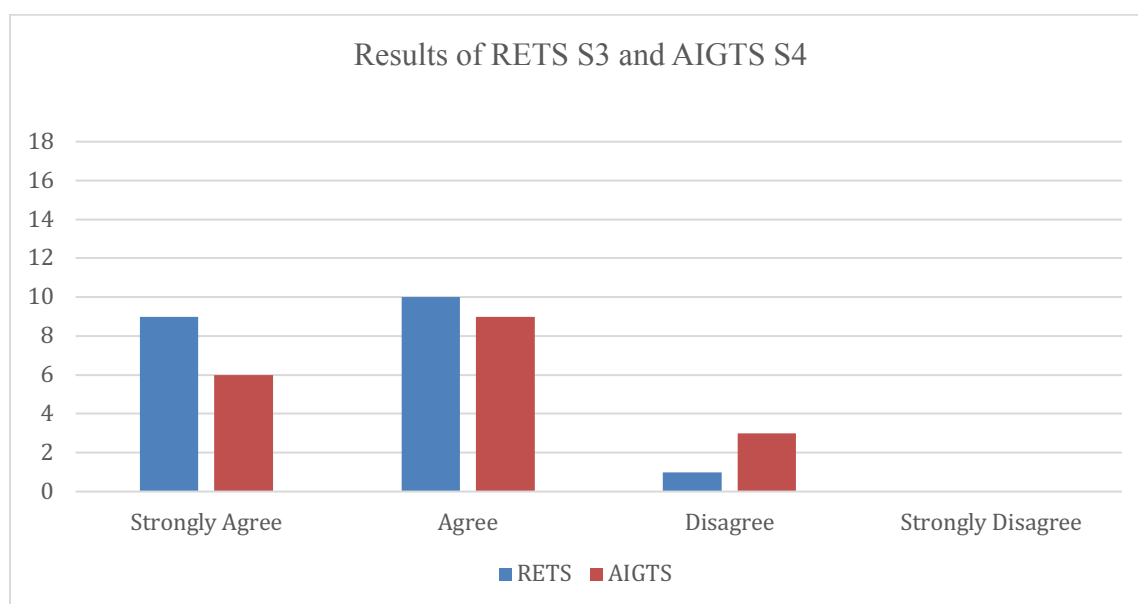
Note. RETS S2 and AIGTS S3: “All pre-CogAT lessons align to all parts of the CogAT test.”

In totality, 95% of regular education teachers agreed that the pre-CogAT lessons align well with the test itself, while 5% chose strongly disagree. This identical survey item on the AIGTS, S3, garnered 89% agreement, leaving 11% who disagreed with alignment between the lessons and the test.

Item S3 on the RETS and item S4 on the AIGTS stated, “The pre-CogAT lessons are effective in preparing students to take the CogAT.” Figure 12 illustrates the data.

Figure 12

Results of RETS S3 and AIGTS S4



Note. S3 RETS and S4 of AIGTS: “The pre-CogAT lessons are effective in preparing students to take the CogAT test.”

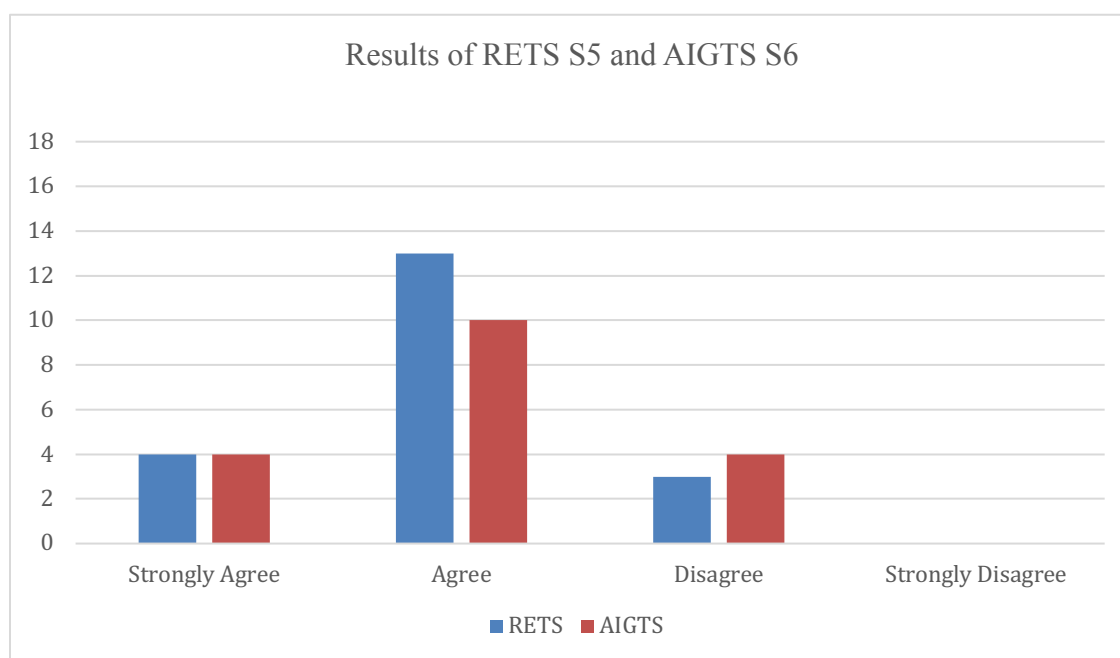
The data presented indicate that 95% of regular education teachers believe that the lessons are effective in preparing students for the CogAT, as opposed to 5% who disagreed. This item aligns with Research Question 2 because it reveals teacher perceptions about the lessons and their degree of effectiveness. The AIG teachers agreed with the effectiveness of the lessons at an 87% rate, while disagreeing at a rate of 16.6%.

Juxtaposed with the RETS, the AIGTS disagree percentage was 11.6% higher, while the agreement percentage was 13 percentage points lower.

The next survey item, RETS S5 and AIGTS S6 stated, “the pre-CogAT lessons positively impact student CogAT results.” This item relates to Research Question 2 by attempting to gain insight on teacher perceptions of the impact of the lessons. Figure 13 displays the results.

Figure 13

Results of RETS S5 and AIGTS S6



Note. S5 RETS and S6 of AIGTS: “The pre-CogAT lessons positively impact student CogAT results.”

In general, most regular education teachers, 85%, agreed that the lessons positively impact student CogAT results, while 15% disagreed. The most prevalent answer was “agree” with 65%. The AIGTS results of this item were somewhat dissimilar to the RETS. Overall, approximately 77.7% of all AIG teachers agreed that the lessons

have a positive impact on student CogAT results. Approximately 22.2% disagreed, which was the least selected category, while agree was the most at 55.5%. In comparison to regular education teachers, AIG teachers agreed less with this item. This specific item regarding the positive impact of the lessons is related to the effectiveness item. If some teachers do not perceive the lessons as effective, they may not perceive them as having a positive impact.

Research Question 2 Interview Responses

An interview question related to Research Question 2 was, “How do you describe teacher perceptions of the pre-CogAT lessons in general?” Respondent 1 answered,

I think they (the lessons) are very necessary to provide equity. In relation to regular education teachers, for the most part I do not think the lessons are taken seriously. I usually have to go in the classroom and remind them that it’s time or make a call or get them off the playground. It just becomes an extra planning time for them. Last year the 3rd grade team complained to the new principal. The new principal thought that it was absurd that I was asking for time and support to conduct the lessons. The AG department had to get involved. I just think there is a lot of misinformation and I think that regular education teachers just don’t get why we’re doing what we’re doing.

Respondent 2 answered,

I feel like the lessons are thorough and I feel like they are pretty good. I feel like they cover the nine subtests in the CogAT pretty well. Teachers often tell me that they think the lessons are great and the students enjoy them.

Respondent 3 answered,

I think that regular education teachers have a positive perception of the lessons. They are always excited when I come in. I think that they are able to see their students in a different light. Some of the lessons we do cause students to think in various ways and this sometimes reveals latent talents.

Respondent 4 answered,

I think everyone sees the value of them. We have to have something in place because the thinking required for the test is so foreign to students. I think it is how we prepare them is where we differ. I think the lessons are great but they are too much. I can't implement them and get them ready for the test in the time that I have.

Respondent 5 answered,

I think they're really important. I feel like the lessons are necessary to let them understand the format because it's getting familiar that matters. Sometimes it is not the content but the way a question is asked that trips them up. These lessons expose them to what they will see on the test so it gives some kids that extra push that may result in their identification. I also feel like the lessons are much easier and only shows them the basic level of questions. On the test only the first four questions are easy and then they get very difficult.

All respondents had positive perceptions of the lessons. However, there was some criticism regarding lack of rigor or difficulty and their length. Also, Respondent 1 stated that in her experience, regular education teachers do not always see the value or necessity of them.

Another interview question that pertained to this research question was, "Do you

think the lessons are effective in preparing students to take the CogAT test?” Respondent 1 answered, “Some of the issue with the effectiveness of the lessons goes back to the fact that they need to be updated. Also, it breaks down on the lines of resources in terms of time spent at certain schools.” Respondent 2 answered,

Well 95% of regular education teachers agreed that the lessons were effective. I think the fact that 27% of AG teachers thought the lessons were not effective, is us being critical on ourselves because we’re in it. I think that it is just teachers saying the lessons could use some tweaking but they are mostly effective.

Respondent 3 answered,

I think they are effective. Teachers are putting their own spin on them to try and make them more effective. We have a lot of talented teachers out there and they put their own spin on it because they know the kids and they put their own personality into the lessons.

Respondent 4 answered,

I am one of the ones who thought they were not effective due to the timeframe we have to work with. I can’t get them done. I think they are good, so I respectively do it by using them in a way when you have more time or like I said using them as an extension. I give them to the classroom teachers and ask them to incorporate them in morning work. I think they are effective that way.

Respondent 5 answered,

I feel there are problems with effectiveness because so few students get identified. I do think they are effective in preparing students overall, but I can see why people would say no because the numbers can be low and some students you

think will qualify, don't.

In general, interview respondents perceived the lessons as effective. However, Respondents 1 and 4 mentioned the adversity of time constraints. Respondent 5 agreed with general effectiveness but questioned why so few students get identified if the lessons are effective.

Another topic that related to teacher perceptions of the lessons was alignment. When asked about how the lessons align to the test, Respondent 1 answered,

I would have to go back and look but if I'm not mistaken lesson four with the number puzzles doesn't match up. I mean I get the algebra part of it, but I don't think the way it is presented in the lesson gets at exactly what they need to know for the quantitative part.

Respondent 2 answered, "I don't think the one with the M&Ms lesson aligns perfectly. Yes, there are some aspects of it where students may utilize that type of thinking, but it is not the same structure as what is on the test."

Lesson 4 was mentioned as the least favorite lesson of AIG teachers, and they questioned its structure and alignment. Respondents 1 and 2 thought this lesson was problematic due to its abstract nature and the absence of similar items on the CogAT.

Table 11 summarizes the thematic interview data for Research Question 2.

Table 11*Research Question 2 Interview Theme Summary*

Research question	Theme coding	Respondent quotes
2. How can the perceptions AIG teachers hold on test preparation lessons be described?	Time- 3	R4: "I can't implement them and get them ready for the test in the time that I have." R1: "Also, it breaks down on the lines of resources in terms of time spent at certain schools." R4: "I am one of the ones who thought they were not effective due to the timeframe we have to work with."
	Equity- 2	R1: "I think the lessons are very necessary to provide equity." R4: "We have to have something in place because the thinking required for the test is so foreign to students."
	Autonomy- 2	R4: "I think it is how we prepare them is where we differ." R3: "We have a lot of talented teachers out there and they put their own spin on it because they know the kids and they put their own personality into the lessons."
	Communication-1	R1: "I just think there is a lot of misinformation and I think that regular education teachers just don't get why we're doing what we're doing."

Respondents mentioned time as it relates to the extensive nature of the lessons.

Equity was mentioned in relation to students and the need to provide scaffolding for the CogAT. Autonomy was discussed as necessary to modify lessons for various reasons. Communication, or the lack thereof, was brought up by Respondent 1 as barrier to implementation.

Research Question 2 evoked a proportionately high number of positive and

negative comments, as respondents replied to questions about their perspectives of the lessons. Table 12 tabulates the data.

Table 12

Research Question 2 Comment Category Results

Research question	Positive/negative/neutral response
2. How can the perceptions AIG teachers hold on test preparation lessons be described?	Positive- 9 Negative- 8 Neutral- 1

Interview respondents had mostly positive perceptions and responses regarding Research Question 2. However, they pointed out negative issues as well. The length of the lessons as it relates to the time allotted at various sites was the most occurring theme along with equity. Equity was mentioned as a necessary objective of lesson implementation. The theme of autonomy occurred in reference to respondents needing to adapt the lessons to fit their learning environments and situations. Within the communication theme, the need for increased information was expressed to establish a higher level of interdependence among colleagues.

Research Question 3: How Does Teacher Understanding of CogAT Preparation Goals Align with AIG Program Goals?

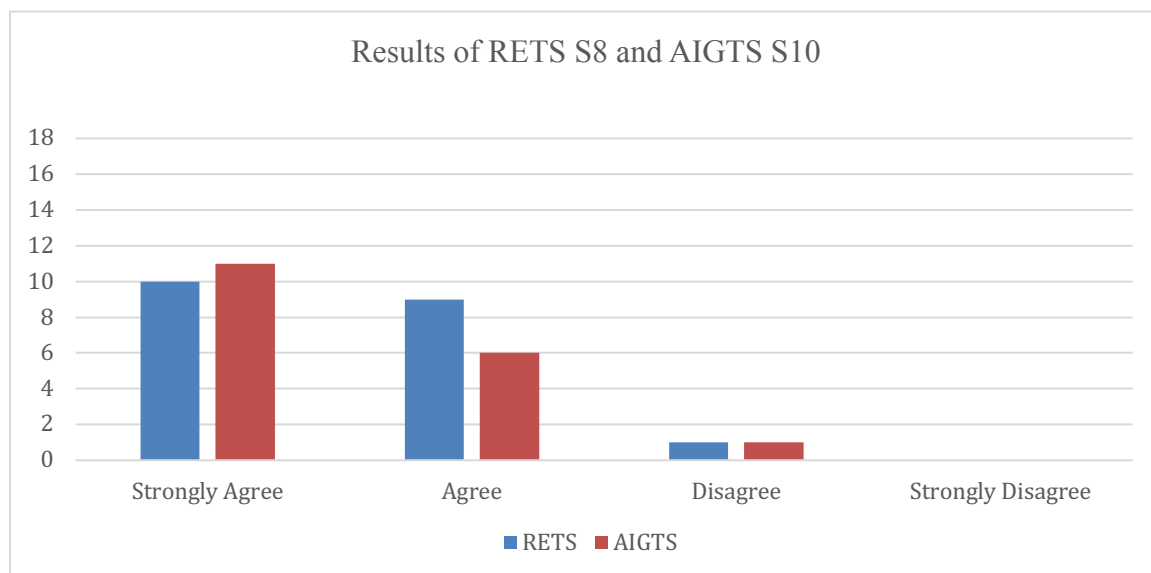
According to LEA-1's AIG department, the pre-CogAT lessons were created and implemented to achieve three goals. These goals are based on preparing students for the CogAT, to increase underrepresentation, and to improve student critical-thinking skills. Survey and interview items were crafted around these goals to obtain information regarding teacher awareness of the goals.

Research Question 3 Survey Items

Item S8 of the RETS and S10 on the AIGTS stated, “A goal of the pre-CogAT lessons is to prepare students to perform their best on the CogAT.” Figure 14 illustrates the data.

Figure 14

Results of RETS S8 and AIGTS S10



Note. S8 and S10: “A goal of the pre-CogAT lessons is to prepare students to perform their best on the CogAT.”

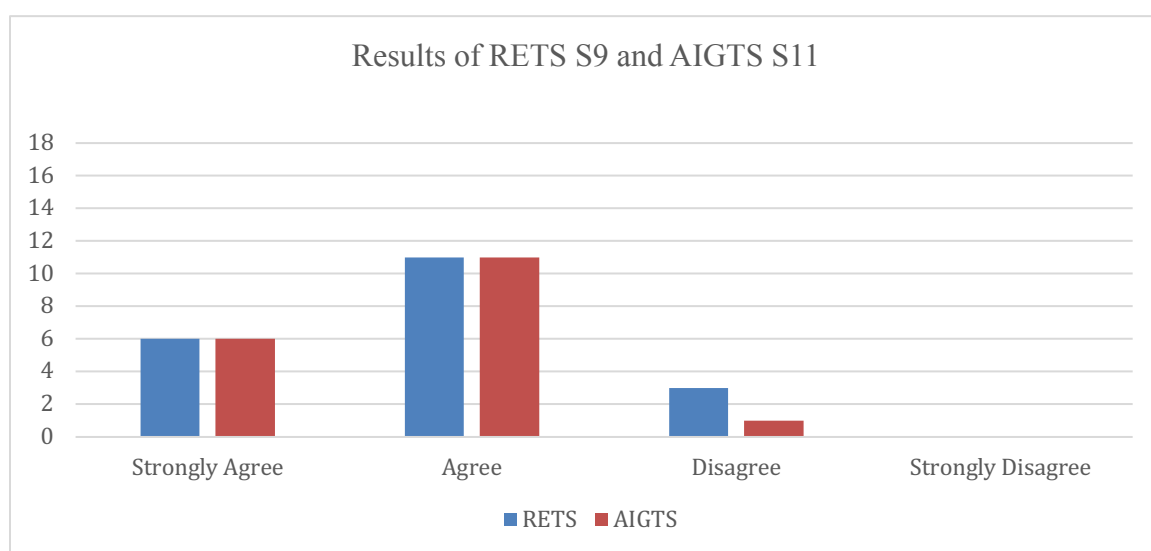
The majority of regular education teachers, 95%, agreed that one of the goals of pre-CogAT lessons is to prepare students for the CogAT test. The most selected category was “strongly agree” at 50%, while “disagree” received 5% of the votes and “strongly disagree” received 0%. Similar findings were reported in the AIGTS. The AIGTS revealed that approximately 94% agreed that one goal is to prepare students for the CogAT test. Roughly 6% disagreed with this item. The largest difference between these two surveys on this item is the “strongly agree” option which amounted to an increase of

11.1 percentage points on the AIGTS. Albeit a small percentage, some teachers are not aware that this is one of the goals of the pre-CogAT lessons.

Item S9 on the RETS and item S11 on the AIGTS stated, “A goal of the pre-CogAT lessons is to increase underrepresented subgroup populations in the AIG program.” Figure 15 illustrates the data.

Figure 15

Results of RETS S9 and AIGTS S11



Note. S9 and S11: “A goal of the pre-CogAT lessons is to increase underrepresented subgroup populations in the AIG program.”

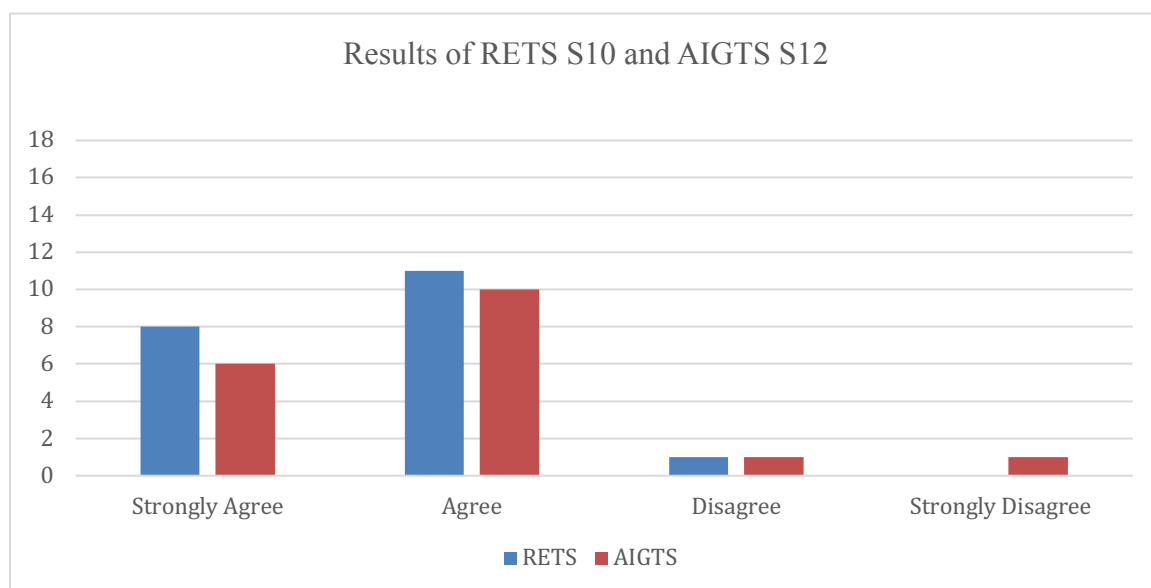
The majority of survey participants who took the RETS, 85%, agreed that one of the goals of the pre-CogAT lessons is to increase underrepresented subgroup populations in the AIG program. The category with the largest response was “agree” with 55%. The AIGTS had one noticeable disparity in comparison. Similar to the RETS, the majority of AIG teachers agreed that one of the goals of the pre-CogAT lessons is to increase groups that are underrepresented in the AIG program. The “disagree” category revealed the largest disparity between the two surveys, approximately 10 percentage points, with the

RETS data having the higher value at 15%.

Item S10 on the RETS and S12 on the AIGTS stated, “A goal of the pre-CogAT lessons to improve student’s critical thinking and problem-solving skills.” Figure 16 illustrates the RETS data.

Figure 16

Results of RETS S10 and AIGTS S12



Note. S10 and S12: “A goal of the pre-CogAT lessons is to improve students’ critical thinking and problem-solving skills.”

The majority of regular education teachers, 95%, agreed that a goal of the lessons is to improve student critical-thinking and problem-solving skills. The AIGTS had a noticeable difference. One respondent chose the option “strongly disagree,” a choice not represented in the RETS data.

Research Question 3 Interview Responses

The survey questions related to Research Question 3 were based on the actual goals determined by the AIG department. When asked about the survey responses

regarding AIG department goals for the pre-CogAT lessons, Respondent 1 answered,

I was surprised that there was not a whole lot of unity within the AG department about the goals of these lessons. And that might also break down along people who were hired after they came out and people who were hired before because they did make that really clear as to why they were being redone and what the goals were and why they did it. But people who are newer may not understand.

Respondent 2 answered, “I think that AIG teachers know why we are doing the lessons but not regular education teachers.” Respondent 3 answered, “I think the 95% or so is actually very good. I feel good about that percentage of teachers who are on message and teaching the lessons with fidelity.” Respondent 4 answered,

I think AG teachers understand it, classroom teachers I sense sometimes don’t. We have to communicate it to the teachers. You know, tell them that we are trying to increase numbers and we’re trying to make sure kids are able to show their best on this test.

Respondent 5 answered,

I think the main reason for these lessons is to prepare students for the format. I mean you can’t teach in the amount of time that you are given... it’s not like you can teach a kid who doesn’t have that natural aptitude to get that natural aptitude. But it does give that kid who has the ability but may get tripped up on the format help.

The interview respondents were all knowledgeable of the AIG department’s goals for the pre-CogAT lesson plans. However, respondents expressed that new AIG teachers and regular education teachers are sometimes not aware. Table 13 summarizes the most

recorded theme expressed by respondents.

Table 13

Research Question 3 Interview Theme Summary

Research question	Theme coding	Respondent quotes
3. How does teacher understanding of CogAT preparation goals align with the AIG program goals?	Communication- 3	R1: "People that are newer might not understand." R2: "I think the AIG teachers know why we are doing what we are doing but not regular education teachers." R4: "I think AG teachers understand it, classroom teachers I sense sometimes don't. We have to communicate it to the teachers."

The need for increased communication regarding the AIG department's goals regarding the pre-CogAT lessons was the sole theme expressed by participants on the topic. Respondents mainly expressed a breakdown in communication between AIG and regular education teachers. However, Respondent 1 was surprised that not all AIG teachers were aware of the goals and cited the absence of communication within the department.

Respondent comments were coded by their connotation. Table 14 summarizes the data.

Table 14

Research Question 3 Comment Category Results

Research question	Positive/negative/neutral response
3. How does teacher understanding of CogAT preparation goals align with the AIG program goals?	Positive- 1 Negative- 1 Neutral- 0

Some respondents thought the percentage of teachers who were aware of the goals was high. However, other respondents thought that even one person not on message was

not acceptable.

Research Question 4: To What Extent Does Teacher Feedback Suggest Necessary Change to CogAT Preparation?

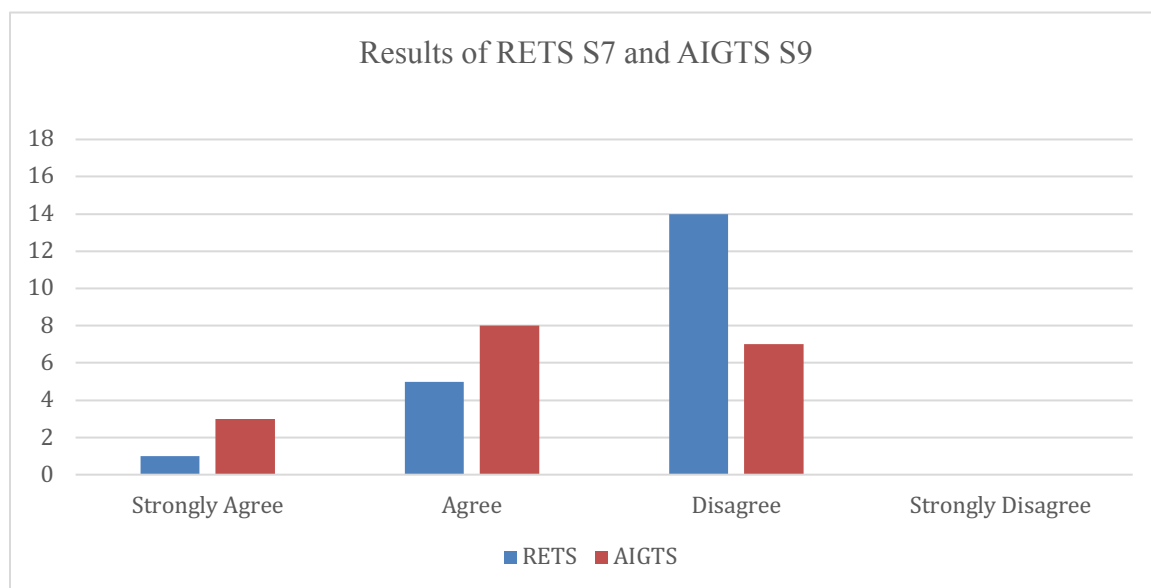
All survey and interview items are indirectly related to this question and served as a guide when crafting recommendations in Chapter 5. However, three survey items were directly related to Research Question 4.

Research Question 4 Survey Items

Survey Item S7 on the RETS and S9 on the AIGTS stated, “The pre-CogAT lessons should be updated or modified.” Figure 17 displays the RETS data.

Figure 17

Results of RETS S7 and AIGTS S9



Note. S7 and S9: “The pre-CogAT lessons should be updated or modified.”

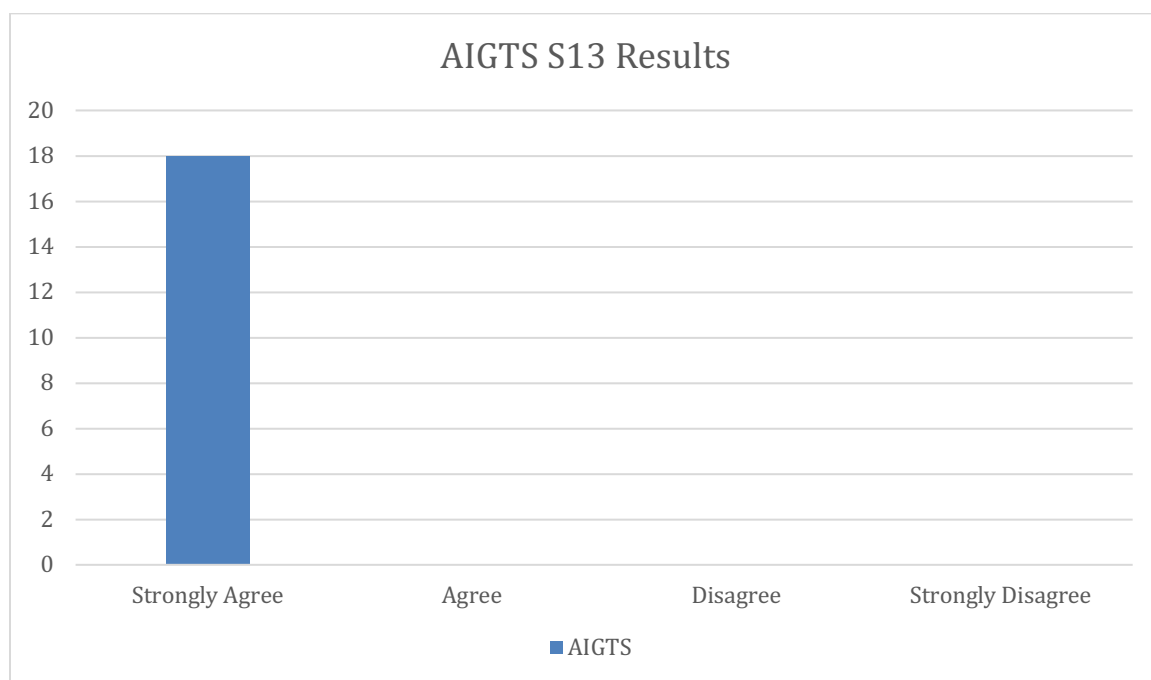
Seventy percent of the responses indicated regular education teachers overwhelmingly disagree with the idea of updating or modifying the current lessons. The AIGTS were more evenly distributed. The majority of AIG teachers agreed that the

lessons should be updated. Approximately 61% of the AIG teachers chose either agree or strongly agree. The “disagree” selection garnered approximately 38.8% of the answer choices.

Item S13 stated, “I adapt or modify the lessons,” and was only included in the AIGTS because regular education teachers are not responsible for implementing the pre-CogAT lessons. This item relates to Research Question 4, necessary change. Figure 18 illustrates the results.

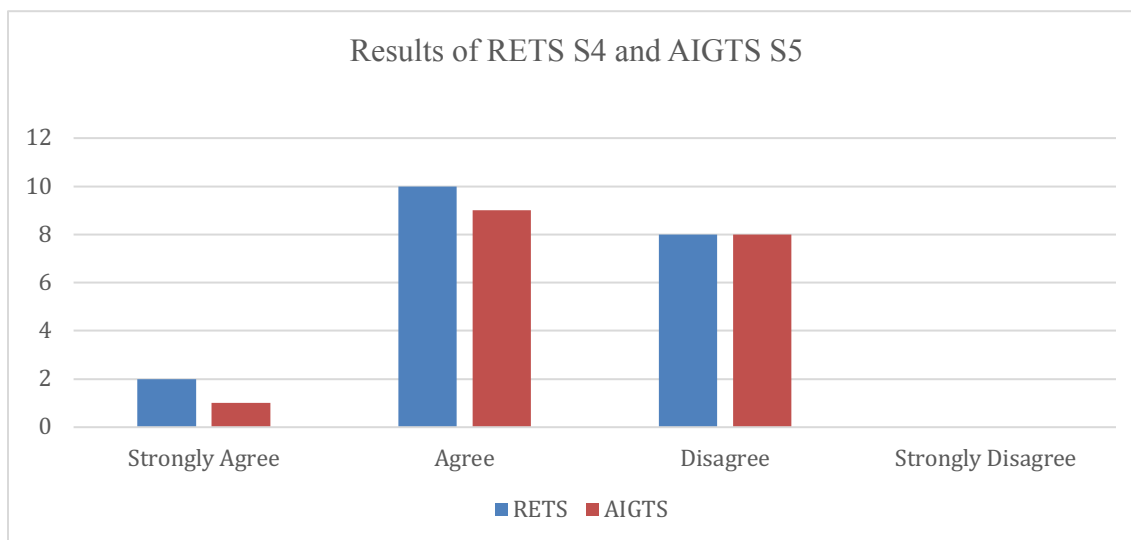
Figure 18

Results of AIGTS S13



Item S13 revealed that 100% of respondents modify the pre-CogAT lessons. Apparently, no AIG teacher who responded to the survey, 35% of the total population for the entire AIG department, employs the lessons as is.

The RETS S4 and the AIGTS S5 stated, “More should be done to prepare students for the CogAT.” Figure 19 illustrates the results.

Figure 19*Results of RETS S4 and AIGTS S5*

Note. S4 and S5: “More should be done to prepare students for the CogAT.”

The results show that 60% of RETs agree with doing more to prepare students, while 40% disagree. Greater than 55% of AIG teachers agreed more should be done to prepare students for the CogAT, while approximately 44% disagreed with that statement. The two surveys differed by 4.5 percentage points in the agree category and 4.4 points in the disagree category.

Research Question 4 Interview Responses

Interviewees were asked to expound on the items related to Research Question 4. In the interview question, “Do you think we are doing enough, is it sufficient,” Respondent 1 expressed,

I think that if the goal is to expose children to what it is they’ll see, the kinds of thinking on the test and then for them to be willing to take that and run or not. To apply it or not, to that end, I do think it’s sufficient.

Respondent 2 answered, “I do think it is sufficient. I think what we do is a lot.”

Respondent 3 answered, “I think it is sufficient to prepare for the CogAT. I think the lessons help identify kids that take that test. But I would like to see more latitude with identification methods such as a portfolio.” Respondent 4 answered,

I think it’s sufficient for doing the thinking skills. I think that we need more for building vocabulary. I think it actually need to start earlier and instruct 2nd grade. I don’t think waiting until the month before the test is enough. It is too late.

Respondent 5 answered,

I would like to see more of a comprehensive test that would identify students. I also think that bumping up the amount of critical thinking tasks that we ask kids to do that may make them think outside of the box is gonna help. I don’t think enough nurture is done in the lower grades and it is not in the curriculum. I think a lot of teachers don’t know how to do that because they’re not trained to do that. But I feel like if that happened, some of those kids that are naturally smart but don’t qualify for gifted might. They have just never had to think in that way but maybe they could if they had practice and exposure.

All interview respondents except for Respondent 5 agreed that current preparation methods are sufficient. Respondent 5 disagreed with the other respondents and stated that more should be done in earlier grades to prepare students for the type of questions on the CogAT.

Another survey item related to Research Question 4 was, “Do you think the pre-CogAT lessons should be updated or modified?” Respondent 1 expressed her opinion:

So certainly, I think that we need to update the lesson plans in terms of links.

Especially when I think about people just coming in that are new to the program

who may not have an entire week to prepare for each lesson. I also think we should incorporate more technology at least as an extension. Another modification is they should be dwindled to five lessons because of the testing calendar. Some of the lessons can be combined.

Respondent 2 answered, “I think some of them should be changed. I modify them myself. I also don’t think some of them align to the test.” Respondent 3 answered, “I am not averse to modifications if teachers think we need to. I feel like they are a good base for teachers to work from and then teachers employ autonomy to modify for what works for them.” Respondent 4 answered,

They don’t need modifications because teachers are already modifying the lessons themselves. Teachers don’t want something coming down from the district because they are afraid of losing their autonomy. They feel like they will have to modify the newly modified lessons.

Respondent 5 answered, “I don’t think the lessons need modifications. I think they work well for their purpose.”

Two respondents stated that the lessons should be modified, while Respondent 3 was neutral. The remaining two respondents disagreed with modifications. Table 15 summarizes the thematic data of responses.

Table 15*Research Question 4 Interview Theme Summary*

Research question	Theme coding	Respondent quote
4. To what extent does teacher feedback suggest necessary change to CogAT preparation?	Autonomy- 2	R3: "I feel like they are a good base for teachers to work from and then teachers can employ autonomy to modify for what works for them." R4: "Teachers don't want something coming down from the district because they are afraid of losing their autonomy."

Autonomy was the prevalent theme and was expressed by respondents as a reason for not modifying the lessons as teachers are already modifying them and making them work for themselves. Table 16 organizes and tabulates positive, negative, and neutral comments.

Table 16*Research Question 4 Comment Category Results*

Research question	Positive/negative/neutral response
4. To what extent does teacher feedback suggest necessary change to CogAT preparation?	Positive- 5 Negative- 3 Neutral- 4

Most of respondent comments regarding Research Question 4 were positive. Further, most respondents, four of five, agreed that the lessons were sufficient preparation. Respondent 5 would like to see more done in the lower grades. Some neutral comments were made as suggestions for increasing preparation efforts. Further, two respondents agreed with modifying the lessons, while one remained open to the idea and two disagreed with making any modifications. The negative comments were tabulated when a respondent pointed out flaws in the lessons.

Summary of Survey Results

All AIG teachers agreed that students should be given some sort of test preparation for the CogAT. This sentiment is important, as the surveys progressed due to this opinion. If teachers held a contrary opinion, some of the later results would be somewhat irrelevant. For example, if teachers did not believe students should be prepared, they would certainly disagree with Item S5 which asks if more should be done to prepare students for the CogAT. The fact that all teachers agreed that students should have preparations adds a layer of validity to the subsequent items that pertain to this one philosophy.

In general, the AIGTS and RETS had very similar results, barring a few items. These surveys revealed that teachers agreed with most survey items. The “agree” and “strongly agree” responses amounted to over 80% of all responses on both surveys, thereby accumulating mostly positive results. Table 17 displays the summary of responses for the AIGTS.

Table 17*AIGTS Survey Statistics Summary*

Items	AIGTS response strongly agree	AIGTS response agree	AIGTS response disagree	AIGTS response strongly disagree
2. Students should be given CogAT test preparation activities.	12/66.6%	6/33.3%	0	0
3. All pre-CogAT lessons align to all parts of the CogAT test.	11/61%	5/27.7%	2/11%	0
4. The pre-CogAT lessons are effective in preparing students to take the CogAT test.	6/33.3%	9/50%	3/16.6%	0
5. More should be done to prepare students for the CogAT.	1/5.5%	9/50%	8/44.4%	0
6. The pre-CogAT lessons Positively impact student CogAT results.	4/22.2%	10/55.5%	4/22.2%	0
7. Elementary AIG teachers in this district consistently implement the pre-CogAT lessons.	5/27.7%	10/55.5%	3/16.6%	0
8. I implement every part of every part of each lesson.	7/38.8%	2/11.1%	9/50%	0
9. The pre-CogAT lessons should be updated or modified.	3/16.7%	8/44.4%	7/38.8%	0
10. A goal of the pre-CogAT lessons is to prepare students to perform their best on the CogAT.	11/61.1%	6/33.3%	1/5.5%	0
11. A goal of the pre-CogAT is to increase underrepresented subgroup populations in the AIG program.	6/33.3%	11/61.1%	1/5.56%	0
12. A goal of the pre-CogAT lessons is to improve students' critical thinking and problem-solving skills.	6/33.3%	10/55.5%	1/5.5%	1/5.5%
13. I adapt or modify the lessons.	100%/yes	na	na	na

The quantities of this table show that in the survey's entirety, the least chosen category was "strongly disagree" with one response. The most chosen category was "agree" with 158 responses, followed by "strongly agree" with 72 responses. The "disagree" category had 39 responses. Table 18 organizes the data gathered by the RETS.

Table 18*RETS Statistics Summary*

Items	RETS response strongly agree	RETS response agree	RETSS response disagree	RETS response strongly disagree
2. All pre-CogAT lessons align to all parts of the CogAT test.	8/40%	11/55%	0	1/5%
3. The pre-CogAT lessons are effective in preparing students to take the CogAT test.	9/45%	10/50%	1/5%	0
4. More should be done to prepare students for the CogAT.	2/10%	10/50%	8/40%	0
5. The pre-CogAT lessons positively impact student CogAT results.	4/20%	13/65%	3/15%	0
6. Elementary AIG teachers in this district consistently implement the pre-CogAT lessons.	9/45%	8/40%	3/15%	0
7. The pre-CogAT lessons should be updated or modified.	1/5%	5/25%	14/70%	0
8. A goal of the pre-CogAT lessons is to prepare students to perform their best on the CogAT.	10/50%	9/45%	1/5%	0
9. A goal of the pre-CogAT is to increase underrepresented subgroup populations in the AIG program.	6/30%	11/55%	3/15%	0
10 A goal of the pre-CogAT lessons is to improve students' critical-thinking and problem-solving skills.	8/40%	11/55%	1/5%	0

The most chosen category in the RETS was “agree” with 88 responses. The next most chosen category was “strongly agree” with 57 responses followed by 34 responses in the “disagree” category. The least chosen category was “strongly disagree” with one response. Table 19 compares the results of the two surveys.

Table 19*AIGTS and RETS Comparison*

Answer choices	AIGTS response	RETS response
Strongly agree	72/26.6%	57/31.6%
Agree	158/58.5%	88/48.8%
Disagree	39/14.4%	34/18.8%
Strongly disagree	1/.003%	1/.005%

Table 19 illustrates that AIG teachers and regular education teachers responded similarly in general to their perspective surveys. The surveys were very similar as previously illustrated but were tailored for each teacher's role. The biggest discrepancy in answer choices is the "agree" category with a difference of approximately 10 percentage points. Neither group chose "strongly disagree" very often, with one response each. The varying degree of choices allows for participants to rank survey items accordingly to reflect how strongly they feel about a particular topic. Conversely, with one dimensional answers, one response is equal to the next. Therefore, one participant who does not have a high level of interest in the topic has the same amount of voting authority.

An item analysis of the data provides more information in relation to this study's research questions. Research Question 1 asked, "To what extent do teachers in the district implement CogAT preparation?" These data are important to establish because if teachers are not implementing CogAT preparatory lessons, other data gleaned from the surveys become less relative. The majority of respondents from both surveys indicated that AIG teachers do consistently implement the lessons. The negative responses amounted to 15.7%. Further, 50% of AIG teachers indicated on S8 that they do not implement every part of every lesson.

Research Question 2 asked, "How can the perceptions of AIG teachers hold on

test preparation lessons be described?” According to S3, 88.7% of AIG teachers perceived that the pre-CogAT lessons aligned well to the CogAT test. In terms of effectiveness, 83.3% perceived that the lessons effectively prepare students for the CogAT. Some AIG teachers, 44.4%, perceived the current preparation practices as inadequate, according to S5 data. S6 revealed that 77.7% of AIG teachers perceived the lessons as having a positive impact on student CogAT results.

According to RETS data related to Research Question 2, 95% believed the pre-CogAT lessons aligned with items on the CogAT test. The results indicated that 95% of teachers thought the lessons give students adequate preparation. The data revealed that 60% of teachers felt more should be done to prepare students for the CogAT. The survey also showed that 85% of regular education teachers believed that the pre-CogAT lessons positively impact student results on the CogAT. Last, 70% of teachers thought the lessons should not be updated or modified.

Certain survey items related to Research Question 3, “How does teacher understanding of CogAT preparation goals align with the AIG program goals?” S8 of the RETS relates to the research question and revealed that 95% of regular education teachers agree that one goal of the pre-CogAT lessons is to prepare students for the CogAT. The next item, S9, revealed that 85% of teachers agreed that a goal of the pre-CogAT lessons is to increase underrepresented subgroup identification. Last, S10 showed that 95% of regular education teachers agreed that a goal of the lessons was to improve student critical-thinking and problem-solving skills.

The AIGTS reported that 94.5% agreed that test preparation was a goal of the pre-CogAT lessons. S11 of the AIGTS showed that 94.5% of respondents agreed that another

goal of the lessons is to increase underrepresented subgroup identifications in the AIG program. Last, S12 revealed that 88.8% of respondents agreed that one of the goals of the lesson was to improve critical-thinking and problem-solving skills.

Research Question 4's aim was to assess the need for change regarding CogAT preparation procedures at LEA-1 by gleaning teacher feedback. To address this question, it is helpful to look at some of the same questions previously analyzed in the reverse perspective. S9 of the AIGTS and S7 of the RETS address this question directly. The AIGTS revealed that 62% of respondents expressed the need for change regarding the pre-CogAT lessons. RETS S7, which is identical to AIGTS S9, revealed that 30% of respondents felt the lessons need to be updated or modified. Last, 62% of AIG teachers thought the lessons should be updated or modified.

Summary of Interview Results

Interview respondents provided additional qualitative data that supported or challenged the quantitative data from the surveys. Creswell (2018) described this type of mixed methods approach and asserted that the two types of data can be combined to maximize their strengths while also mitigating their limitations. The surveys provided raw data but lack the descriptions and insights provided by the qualitative data of the interviews. The interview respondents also took the surveys which adds a layer of validity to the result because it gave them a chance to explain their thought process behind their answers. Table 20 summarizes the interview results.

Table 20*Interview Summary/Theme Coding*

Research question/interview question	Theme coding	Totals
RQ-1. To what extent do teachers in the district implement CogAT preparation?		
I-3. Approximately 15% of teachers thought that AG teachers are not implementing the lessons consistently. What are your thoughts?	Time- 2 Equity- 1 Autonomy- 2 Communication- 0	Time- 3 Equity- 3 Autonomy- 3 Communication- 0
I-13. So why do you think 50% of AG teachers said they don't implement each part of every lesson?	Time - 1 Equity - 2 Autonomy - 1 Communication- 0	
RQ-2. How can the perceptions AIG teachers hold on test preparation lessons be described?		
I-7. How do you describe teacher perceptions of the Pre-CogAT lessons in general?	Time- 1 Equity- 2 Autonomy- 1 Communication- 1	Time- 3 Equity- 2 Autonomy- 2 Communication- 1
I-19. Do you think the lessons are effective in preparing students to take the CogAT test?	Time- 2 Autonomy- 1	
I-18. Are the lessons aligned to the actual test?	Time- 0 Equity- 0 Autonomy- 0 Communication- 0	
RQ-3. How do teachers understanding of CogAT preparation goals align with the AIG program goals?		
I-3. To what extent do you believe teachers understand the goals of the CogAT lessons?	Time- 0 Equity- 0 Autonomy- 0 Communication- 3	Time- 0 Equity- 0 Autonomy- 0 Communication- 3
RQ-4. To what extent does teacher feedback suggest necessary change to CogAT preparation?		
I-4. Do you think we are doing enough, is it sufficient?	Time- 0 Equity- 0 Autonomy- 0 Communication- 0	Time- 0 Equity- 0 Autonomy- 2 Communication- 0
I-10. Do you think the pre-CogAT lessons should be updated or modified? Why?	Time- 0 Equity- 0 Autonomy- 2 Communication- 0	

Teacher autonomy was the most common theme with seven total references. Time and equity had the next highest occurrences with six and five, followed by communication with four references. Table 21 tabulates the theme summary.

Table 21

Theme Totals and Consistency

Theme	Total occurrences
Time	6
Equity	5
Autonomy	7
Communication	4

The theme of autonomy was also the most consistent theme across interview items related to the research. Autonomy was referred to in five of eight interview questions. Equity and time had an equal number of references with four, followed by communication with two.

The positive, negative, and neutral classified comments are contextually dependent on interview items. The research question with the most positive and negative results was Research Question 2. This question explored attitudinal perceptions and was most applicable to positive, negative, and neutral associations. A total of nine positive comments included comments of approval from AIG and regular education teachers. The negative comments amounted to eight and critiqued the lessons for being antiquated, somewhat misaligned, too extensive, and too simplified. Another noteworthy research question regarding contextual responses was Research Question 4. This question asked participants to give their opinion regarding making modifications to the lessons. This question received five positive statements that advocated for the lessons to be left as is and praised their content. However, three negative responses critiqued the lessons and

revealed ways in which the lessons should be modified citing broken links, misalignment, and technology upgrades.

In order to determine if there were statistically significant differences in the survey responses of AIG teachers and regular education teachers on the same items, a chi-square test of independence was administered on each set of questions. Strongly agree and agree responses were combined into an agree category, and strongly disagree and disagree were combined as disagree. The following formula was used:

$$\chi^2 = \sum \frac{E'}{(O' - E')^2}$$

Statistically significant results were determined by identifying any result that was less than the p value, set at .10. The results from the AIGTS and RETS were similar, and when a chi-square test was performed, only one survey item's responses were found to be statistically significant in relation to AIG teachers and regular education teachers.

Regular education teachers were significantly more likely to disagree that the pre-CogAT lessons should be updated or modified, and AIG teachers were more likely to agree.

Table 22 displays the results of the chi-square analysis.

Table 22

Survey Item Statistical Significance

Survey item	p value	Significant? $\alpha = .10$
AIGTS S3 and RETS S2	.45	No
AIGTS S4 and RETS S3	.24	No
AIGTS S5 and RETS S4	.78	No
AIGTS S6 and RETS S5	.56	No
AIGTS S7 and RETS S6	.88	No
AIGTS S9 and RETS S7	.05	Yes
AIGTS S10 and RETS S8	.93	No
AIGTS S11 and RETS S9	.34	No
AIGTS S12 and RETS S10	.48	No

The data from Table 22 display only one statistically significant result and suggest with 95% confidence that the results of that item are not random. The null hypothesis H_0 was that there is no difference between the two groups of teachers with respect to their views on survey items. The alternative hypothesis H_1 was that the two groups of teachers will have different views on survey items. The results suggest that the two groups of teachers varied significantly on Items S7 and S9 with a p value of .05. For this item, the data support the rejection of the null hypothesis and the adoption of the alternative; the two groups viewed the item differently as a result of their position or perspective. The data support the idea that the results are the product of two different views and are dependent on the specific characteristics of the group members. The regular education teachers were more likely to disagree with modifying the pre-CogAT lessons than the AIG teachers. For all other items, the null hypothesis cannot be rejected, and the data suggest the two groups had similar views on survey items.

Summary of Findings

According to the quantitative data collected regarding implementation, the pre-CogAT lessons are being employed by AIG teachers at a high level in LEA-1. However, quantitative and qualitative data reveal a low level of consistency regarding how the lessons are delivered and what is included. All AIG teachers who participated in the surveys and all the interview respondents acknowledged that they modify the lessons. Inconsistencies regarding how students are prepared could generate inequitable services if one teacher has better resources and implementation strategies.

Respondents cited equity issues six times in the presented data. They referred to equity as a motivating factor to providing services that negate inequities for students.

Inequities were also mentioned regarding time deficiency and resources. Respondents cited lack of resources for inconsistent CogAT preparation.

AIG teachers cited the time they were allowed in the classroom and the timeframe they had to work with from the beginning of school to the administration of the CogAT as inadequate. Further exacerbating the issue are teachers who have multiple schools. Last, this was one of the main reason teachers indicated they do not implement every part of every lesson.

The collected data revealed a generally positive perception of the pre-CogAT lessons with regular education and AIG teachers. Participants cited that they were sufficient, effective, and contributed positive impacts on CogAT results. However, these results were not unanimous and revealed room for improvement. One negative concern was that the lessons are not rigorous enough to optimally prepare the students.

Teacher understanding of the AIG program's goals related to the pre-CogAT lessons rated high. A few participants indicated they were not aware of the goals. One reason given for this is that the goals are not being communicated to new teachers clearly and AIG teachers do not always communicate the goals to regular education teachers.

Participants reported mixed reviews when considering the option for modifying the lessons at the department level. The majority of teachers indicated that more should be done to prepare students for the CogAT. Further, the majority of teachers indicated that the lessons have a positive impact on CogAT results. Continuing, all AIG teachers indicated that they modify the pre-CogAT lessons. However, the majority of regular education teachers do not want the lessons to be modified, and a significant minority of AIG teachers, 38.8%, do not want modifications. Dialog from respondents offered logical

reasoning for these results. The data revealed all teachers are making modifications, so some teachers do not desire the renovation of the current lessons because they have already been modified on an individual level.

Chapter 5: Discussion

Summary of Research

Identification practices can serve as a gateway or an impediment to gifted education depending on the type and how they are implemented. The use of tests for the purpose of identifying gifted students is the most common practice (NAGC, 2015). Further, the CogAT is the most common test used for gifted screening in the nation (Riverside Insights, n.d.). Therefore, whether or not to prepare students for the test or to what extent evokes ethical and equity issues. Inequity in education has been linked to persistent underrepresentation of some subgroups while fostering the overrepresentation of others (NAGC, n.d.c). LEA-1 gives the CogAT to every third-grade student and also implements CogAT preparation procedures. However, some school districts in North Carolina do not provide preparation procedures. This study measured the effects of CogAT preparation by surveying and interviewing AIG and regular education teachers. These results are generalizable to other North Carolina districts which could inform their identification practices.

This study is comprised of a mixed methods research approach. This approach incorporated quantitative data from surveys and thematic coding with qualitative data from interviews to provide interconnected corroborations (Creswell, 2018). During this process, 38 surveys and five interviews were conducted. The surveys and interviews were based around the following research questions:

1. To what extent do teachers in the district implement CogAT preparation?
2. How can the perceptions AIG teachers hold on test preparation lessons be described?

3. How does teacher understanding of CogAT preparation goals align with the AIG program goals?
4. To what extent does teacher feedback suggest necessary change to CogAT preparation?

Survey and interview questions were based on these research questions. Once the survey results were collected, interview participants were given the opportunity to comment on them and expound on their own related experience.

Interpretation of Findings

Parts of the quantitative data collected by the surveys seemed to contradict each other. The majority of teachers thought the pre-CogAT lessons are necessary, effective, and provide a positive impact on student CogAT results. However, a large minority (44%) do not think the AIG department should do more to prepare students for the CogAT. This finding was surprising because the collected data suggest increased preparation efforts could potentially improve student results even further. This assertion is based on survey data that reveal the majority of teachers agreed current preparation efforts are effective and have a positive impact on test results. According to Powers (2017), test preparation positively affects tests results. Since underrepresentation is a current problem in LEA-1, more must be done to ameliorate the problem.

Further, 100% of AIG teachers answered that they modify the assignments, but only 60% agreed that the lessons should be updated or modified. The data collected in the study suggest minor alignment problems, outdated resources, lack of resources, and activities that take too long to implement. Despite these apparent issues and the admission that all surveyed teachers modify, approximately 40% of teachers disagreed

with modifying the lessons. A qualitative data analysis provides explanations for these seemingly contradictory findings.

Research Findings

The data from the AIGTS was resoundingly clear within LEA-1 regarding the debate of whether or not to prepare students for aptitude tests. All the AIG teachers agreed that students should receive preparation. This clear-cut evidence provides support for the argument that teachers perceive that even students with potential giftedness need guidance with novel experiences. Given any other classroom or standardized test, there would be no debate regarding preparation. In fact, according to the American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (2014), Standard 3.19 stated that students have the right to be prepared for tests and should not be penalized if they have not had the opportunity to learn the content.

Findings Related to Research Question 1

The survey data suggest that there is not a substantial issue with the lack of implementation of test preparation. Similar results from both AIG and regular education teachers add validation to this assertion. The fact that approximately 85% of all survey participants agreed that AIG teachers do consistently implement the lessons indicates that most participants think AIG teachers are implementing some form of preparation. However, the quantitative survey data and qualitative interview data revealed a potential problem with consistency in regard to what kind of preparation students are receiving. All survey participants and interview respondents expressed that they modify the lessons in some way. Respondent 4 revealed that she does not even use the pre-CogAT lessons at

the center of this research. Rather, she employs CogAT-specific preparation materials from the CogAT website. The variation in modifications and lesson delivery creates inconsistencies with implementation. These inconsistencies could be contributing to the problem of underrepresentation because some students at certain sites may be more prepared than others. Powers (2017) asserted that test preparation removes barriers for students by increasing speed and reducing anxiety. Standard 3.5 of Educational and Psychological Testing advocates for the removal of barriers that inhibit a test taker's ability to perform their best. A study published by the International Journal of School and Educational Psychology found that test anxiety can manifest as early as seven and that women, minorities, and those with disabilities are more likely to have it (Embse et al., 2013). According to Hill and Wigfield (1984), students who are prone to anxiety perform poorly on timed tests. The CogAT is a timed test used for gifted screening in LEA-1, and research has shown that there is an underrepresentation of minorities who are the most prone to performance anxiety.

The main reason given by interview respondents for making their own modifications to the lesson was an inefficient timeframe. Time was coded from two of the five respondents. Time constraints were connected to the other themes of equity and autonomy. Inequities are apparent when an AIG teacher is split between two schools as opposed to some schools that have a full time AIG teacher. Respondents reported that if a school is only allotted an AIG teacher for 2 days a week, scheduling the six lessons within the first month of school is difficult. The CogAT is scheduled early in the school year, thereby causing a narrow window of opportunity and accessibility. The theme of autonomy was referenced in this portion of the interviews. Autonomous actions and

lesson modifications were taken by the respondents as a direct result of the lack of time given for implementation. Vaughan and Albers (2017) proclaimed that practices are often very different from what was intended, due to barriers that prevent them from being fully realized. Time constraints act as a barrier in LEA-1 and exist for AIG teachers in terms of daily time allowed as well as the short timeframe allocated for CogAT preparation.

Respondent comments related to this question were contextually mixed with an equal number being positive and negative. Most comments were about the survey results and AIG teacher efforts to implement the lessons. One negative comment was from Respondent 5 who was concerned about consistency. She noted an AIG teacher did not provide CogAT preparation for students during one of the academic years.

Further results of Research Question 1 are related specifically to the CogAT lessons. The survey revealed that 50% of AIG teachers admit they do not implement every part of every lesson. This fact resulted in respondents discussing the themes of time, equity, and autonomy. The results of this item support the concept of time as a barrier and teacher autonomy creating inconsistencies that generate inequities. This item also tallied negative comments. Respondent 1 expressed that some of the embedded links are broken. Respondent 2 expressed that some parts of the lessons do not align perfectly with the CogAT. Alignment issues can be with the content or structure of the lessons. Any disconnect between the preparation material and the CogAT would not be in compliance with fair testing standards and puts students at a disadvantage (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014).

Findings Related to Research Question 2

The main goal of Research Question 2 was to glean teacher perceptions of the pre-CogAT lessons. All interview respondents had a positive perception of the lessons. They stated comments such as, “they are necessary to provide equity” and “the lessons are very thorough.” This section of the interview garnered nine positive responses and eight negative responses. One of the negative comments was made by Respondent 1 and was related to regular education teacher perceptions. Respondent 1 expressed that based on her experience, she did not feel like regular education teachers always valued the lessons. Respondent 5 expressed that she thought the lessons were much easier than the test itself, which confused students on the test.

The perceptions of AIG teachers and regular education teachers also led to the theme of communication. AIG teachers either expressed how regular education teachers valued or showed signs of devaluing the lessons. Respondents 1 and 4 reported some negative experiences with teachers not wanting to give them the time to complete the lessons or the refusal to aid in implementation. The remaining participants had positive opinions of the lessons and reported their experiences with other teachers were positive. The theme of communication as related to Research Question 2 suggests the need for AIG teachers to communicate with colleagues regarding the details and purpose of the lessons. Another represented theme was equity as it related to teacher perceptions that CogAT preparation was necessary to level the playing field for all students. According to Ringer (2014), preparation increases positive results of test takers. Survey and interview participants all agreed that preparation was needed to reveal the true scores of students on aptitude tests.

Another topic related to Research Question 2 was effectiveness. The majority of survey participants had a positive perception of the effectiveness of the lessons. Most participants from both surveys reported they thought the pre-CogAT lessons served as effective preparation for the CogAT. However, the AIG survey participant responses were 12 percentage points lower than the regular education teachers. Many teachers are trained to frequently conduct reflections and self-evaluations of their pedagogical practices. This survey item asked them to evaluate part of their practice. The gap in percentage points between the two groups can be explained by the fact that AIG teachers are modifying the lessons to improve their effectiveness. Regular education teachers are not as intimately aware of these changes, as indicated by communication gap respondent results, thereby resulting in a higher effectiveness approval rating by regular education teachers. This item had the second lowest *p* value at .24, which also suggests the two groups of teachers saw this question differently. The data suggest a trend that regular education teachers think the lessons are more effective regarding preparation.

Interview respondents offered the need for updates and time constraints as effectiveness issues. However, Respondent 1 further explained that the time constraints are more a policy or procedural issue than an issue with the lessons themselves. Last, Respondent 5 expressed that she had concerns with effectiveness because very few students get identified.

Items related to Research Question 2 resulted in an almost equal distribution of positive and negative replies. Autonomy was a prevalent theme related to this item and appeared from respondents who attested that one of the reasons for their effectiveness is that teachers modify them to fit the timeframe or population. Beatty (2011) stated that

critics of reducing teacher autonomy to more prescribed and scripted lessons say it narrows student learning to their detriment, especially low-income students. Teachers value autonomy and only 76% on the North Carolina Teacher Working Conditions Survey (NCTWCS, 2018) expressed their dissatisfaction with the level afforded to them. Autonomy was the second lowest percentage in its category on the NCTWCS (2018).

Time was the next most occurring theme. According to the NCTWCS (2018), only 48% of LEA-1 teachers reported they had enough time to meet the needs of all students. This fact is probable cause for AIG and regular education teachers competing for time.

The last item related to Research Question 2 asked participants to give a perspective on the amount of positive impact the lessons have. The majority of AIG and regular education teachers reported that the lessons have a positive impact on student CogAT results. However, this item did receive dissent; 18.5% of teachers thought that the lessons do not make a positive impact on CogAT results. RFT suggests that test preparation does have a positive impact on test results (Hayes, 2001). Further, research by Powers (2017) demonstrated some parts of aptitude tests are coachable. The disagreement rate on this item correlates to the similar amount of participant disagreement regarding misalignment at 11% and effectiveness at 16%, suggesting a negative trend in perceptions of the lessons by some participants. Respondent 4 expressed that there is no way to tell how much of an impact the lessons have. Respondent 1 stated that she would like to see a comparison between the scores of students who received the lessons and those who did not receive pre-CogAT instruction.

Findings Related to Research Question 3

This question was represented by three items on the survey. All three questions were based on the actual goals directed from the AIG department. Therefore, when teachers disagreed, it exposed a deficiency in knowledge or goal awareness. The survey results indicated that 10% to 15% of participants were not aware of every goal. The communication theme scored the highest on this item when coding interview responses. Communication issues between the AIG department and the regular education colleagues were noted the most. Respondents commented that AIG teachers knew the goals but did not perceive that the regular education teachers and principals were always informed. Danielson (2006) asserted that communication between educators is essential to maximize student learning. Without teachers possessing the knowledge of AIG department goals, they are less likely to be achieved.

Findings Related to Research Question 4

The last research question aimed to garner information from teacher perceptions regarding necessary change and relates to three items from the surveys and interviews. The first survey item related to this topic asked participants if more should be done to prepare students for the CogAT. Both surveys revealed that the majority of teachers, approximately 57%, agreed with doing more to prepare students. However, when compared to the interview participants, all AIG teachers who were interviewed disagreed with doing more to prepare third-grade students. When discussing the issue further, some contradicted themselves to a degree. The negative comments referenced the need for more vocabulary building. The neutral comment was made by Respondent 5 and referred to the screening process in general. She expressed the desire for a more comprehensive

test to be used in gifted identification. Although a significant portion of teachers disagreed with doing more to prepare students, more preparation or employing different intervention strategies to break current trends could increase underrepresented populations (Stanley, 2019).

The next item offered participants the opportunity to express if the lessons should be updated or modified. According to the surveys, the majority of regular education teachers disagreed with making modifications, while the majority of AIG teachers agreed that modifications should occur. These results suggest a relationship exists between the group of respondents and the answers to the question. This item had a p value of .05 and is considered statistically significant when applied to the .10 threshold. Regular education teachers were much less likely to desire modifications to the lessons than AIG teachers. This result adds credence to the position regular education teachers may not be privy to needed modification because they witness lessons in the classroom that have already been modified. Two of the interview respondents agreed that the lessons need revisions and cited broken links and alignment issues.

One interview respondent was neutral about prospective changes, while the other two were against the need for modifications. Respondent 4 referenced S13 of the AIGTS, which showed that 100% of all AIG teachers modify the lessons. She made the observation from the data that teachers are already modifying the lessons, so they do not need to be modified by the AIG department. Autonomy was the most prevalent theme expressed during the discussion of this topic, as participants explained their experience with the lessons. Autonomy was mentioned frequently by respondents, and they expressed anxiety over modifications to the lessons. According to interview respondents,

teachers are already modifying them and do not want their autonomy impacted negatively. However, this is a bigger issue with new AIG teachers. Learning the policies, procedures, and responsibilities of an LEA-1 AIG teacher can be daunting. Two teachers left the AIG department in the 2019-2020 school year due to the demanding nature of the job. Further, five new teachers are slated for employment in the 2020-2021 school year. Modifying lessons takes time through trial and error. New teachers may not have the experience or the time necessary for modifications. Therefore, modifications or updates would likely benefit new teachers more than seasoned teachers. However, the benefits of updates and modifications would most likely benefit students the most.

Connection to Theory

The results of this study support its theoretical foundation. All AIG teachers agreed with the philosophy of preparing students for the CogAT. This expressed viewpoint aligns with the nature and nurture theory. Participant responses in this study illustrate the belief that genetics and environmental interactions make up human characteristics (Cherry, 2019).

Neuroplasticity theory is synonymous with nature and nurture and is supported by participant results (Brown, 2014). Participants asserted by their responses that student performances on aptitude tests can be influenced through preparation. The data to support this claim are the majority of participants who expressed that the pre-CogAT lessons positively impacted student CogAT results.

Nature and nurture theory is the broader context under which neuroplasticity and RFT operate. RFT is the driving mechanism behind this study. The pre-CogAT lessons are designed to prime students for the type of questions on the CogAT. This allows

students the opportunity to relate one stimulus to another in a different context (Stanley, 2019). The majority of teachers agreed with this philosophy and added validity to RFT by agreeing that the pre-CogAT lessons are an effective means of CogAT preparation.

Recommendations for Practice

To address LEA-1 inconsistencies in the implementation of the pre-CogAT lessons, it is recommended that the department host a share session. This session would invite AIG teachers to share their ideas and lesson modifications. These qualitative data could also be cross referenced with quantitative data such as CogAT scores and identification rates delineated by subgroup. Sites and teachers with consistently high CogAT scores should be provided with an opportunity to share what works for them. The AIG department should consider adopting modifications from sites with high CogAT scores and identification rates. Data should be used by leaders to understand issues better, make complex decisions, and turn the information into meaningful action (Earl & Katz, as cited in Blankstein et al., 2010). Following these steps, the LEA-1's AIG department could take what is working in some sites and provide those resources to teachers across the district in an effort to increase student performance and equitable practices.

Time was mentioned by respondents as the most consistent impediment to implementation. The problem of time is caused in part by the scheduling of the CogAT early in the fall semester. This problem could be remedied by possibly moving the test to second grade. Giving the CogAT to second graders late in the year would provide ample time for preparation. NAGC (2015) advocated for multiple opportunities to show giftedness. Providing another attempt in the third grade could be beneficial, and the students would have more experience with the test. Last, the lessons should be analyzed

for efficiency. Some of the lessons could be logical combined. Lessons 1 and 2 both involve analogies, verbal and number analogies. Combining two lessons into one could increase the preparation and test timeframe.

Due to the inevitability of teacher turnover in LEA-1, it is important to reiterate and revisit the program's goals. The survey results revealed that some AIG teachers were not privy to the program's goals regarding the pre-CogAT lessons. This problem will become worse without intervention, as new teachers are hired. The team concept can address this issue and provide cohesive programming. Further evidence for the need of teaming is the survey results that revealed all AIG teachers are modifying the pre-CogAT lessons, which is being done on an individual teacher level. Drago-Severson (2009) stated, "the practice of teaming is crucial to securing opportunities for critical reflection and to building schools and districts as learning centers" (p. 72). Further, Garmston and Wellman (as cited in Drago-Severson, 2009) advocated for teaming so educators could exchange ideas that can produce change and create a collaborative culture that can attain measurable goals. Teacher comprehension of the department's goals helps facilitate the main objective of cohesive comprehensive programming. Once the AIG teachers are unanimously aware of the program goals, they can then share those goals with their perspective schools through professional development. This professional development aims to alleviate miscommunications that can result in power struggles among colleagues.

Modifications of the pre-CogAT lessons were supported by AIG teachers, albeit through a small majority. Revamping the lessons could possibly be revisited after the previously mentioned sharing session. Alternatively, individual teachers could use the

additional resources or ideas gleaned from sharing and incorporate them into current practices to preserve autonomy. Further, the AIG department could conduct a mandatory poll to obtain comprehensive data on attitudes related to modification to inform decision making. The revelation of the age of the lessons' creation and the subsequent change in the content of the CogAT suggest the need for updates. Ainsworth (2010) advocated for constant reflection and modifications to implement a rigorous curriculum. The pre-CogAT lessons have not been modified since their inception and could benefit from increased technological sophistication. Further, examining the new form of the CogAT and comparing it to the pre-CogAT lessons could reveal necessary changes that would better accommodate ELLs.

An analysis of each lesson plan revealed that Lesson 2 has a link that is no longer current. Lesson 3 also has a link that is defunct. Further, Lessons 5 and 6 do not contain a technological component, a suggestion made repeatedly by respondents. Lesson 4 was the least favorite of the interview respondents. This lesson is criticized for being too abstract and misaligned with the CogAT. The lesson aims to prepare students for the quantitative battery of the CogAT by balancing equations using numbers and symbols. Teachers testified that the types of balancing problems in Lesson 4 are not found on the test. Misalignment issues between the pre-CogAT lessons and the test contribute to objective inefficiency and consequently cause equity problems. Also, respondents blamed the lack of resources as a barrier to pre-CogAT lesson implementation. A resources inventory could be employed to all AIG teachers. This would give teachers a platform to advocate for necessary resources to ensure proper implementation.

According to IPC (2019), practice items should have the same structure as test items.

On the verbal battery, students are directed to choose from a series of words that relate to another set of words with a common category. Essentially, students are directed to pick the word that categorically belongs with the other words. However, in the LEA-1 pre-CogAT lessons, students are directed to pick words that do not belong. Practicing the same structure could reduce the opportunity for mistakes on a timed test.

Adding more difficult items to each lesson is suggested. Challenging students in the classroom with increased rigor will provide better practice and possibly identify student strengths aside from test results. Increased rigor will better prepare students for the difficult test items (Ainsworth, 2010).

Currently, LEA-1 does not implement a practice test to prepare students for the CogAT. Mavilidi et al. (2014) indicated in their study that familiarizing students with a test before they take it had positive effects. The lessons are aimed at preparing students for the type of questions students will encounter on the test. However, practicing the structure and timing of the test would give students a clearer picture of what the test will be like. Further, reviewing their performance on the practice test gives them an accurate idea of areas upon which they need to improve. Also, providing students practice with low-stakes tests and building their confidence could transfer to the real test. According to Ainsworth (2010), preparation and formative assessments are educational best practices. These best practices should be applied to any intellectual endeavor in the realm of education, including CogAT preparation.

Research has shown that test anxiety begins as early as 7 years old (Embse et al., 2013). This age coincides with the onset of high stakes testing in schools. Prevention measures should be practiced early on to reduce or avert test anxiety. Professional

development for teachers on reducing test anxiety should be implemented. Programs like *Performing Beyond Fear*, created by Madeline Bruser in 2017, could be implemented to alleviate stress and anxiety. The program focuses on team building, discussions, and stress reduction strategies. Wisdom (2018) cited interventions such as relaxation training, cognitive methods, and mindfulness as being beneficial anxiety reducers. Relaxation training involves breathing exercises, while cognitive methods employ calming self-talk and mindfulness includes yoga and meditation. Giving students the tools to combat test anxiety will reduce their stress and can positively impact testing outcomes (Talbot, 2016).

It is the recommendation of this study that all LEAs conduct mass screenings to detect giftedness and prepare students for those screenings to provide equity. According to LEA-1, 100% of AIG teachers surveyed agreed that test preparation is necessary. This study is generalizable to other districts, especially districts that do not practice gifted screening preparation in general or CogAT preparation specifically.

Limitations

The sample size of this study was reliant on voluntary participation. The AIG teacher sample size was approximately 35% of the total AIG department population. A larger sample size may have yielded increased accuracy and reliable results (Creswell, 2018). Similarly, the regular education teacher sample was relatively low. Each individual principal had to give permission for their teachers to participate. Once permission was received, teachers participated on a voluntary basis, resulting in a 22% participation rate.

More data across a longer timeframe would provide a better picture of how much of an impact the pre-CogAT lessons have on students. Observing more cohorts of

students who did not receive preparation versus students who did have preparation would increase reliability. Also, examining multiple years of preparation data would improve results.

Last, AIGTS Item S2 could have been included on the RETS. This inclusion could have given more reliable and robust data on the issue of whether or not to prepare students for the CogAT. This oversight resulted in only allowing the AIG teachers to express their opinion. According to the survey data, the two groups of teachers did deviate in views on some items. Collecting data on this item from a different survey group could have provided different points of view for further dialogue and analysis.

Recommendations for Further Research

An internal analysis of what is currently being done in LEA-1 could potentially yield useful data. Examining what resources, strategies, and methods are being employed at each site and then cross-referencing with quantitative data could provide generalizable information. These identified best practices have the potential to increase uniformity, thereby increasing equity which could result in the augmentation of underrepresented groups.

LEA-1 could collect and analyze current AIG identification data related to current preparation practices and pre-CogAT lessons. Next, the district should organize a committee for modifying and updating the lessons and practices previously described. LEA-1 could then collect subsequent data and compare results regarding general identification and underrepresented subgroup percentages.

Further, a larger study could be conducted on a macro scale, comparing the scores of districts that do prepare students for the CogAT to the scores of districts that do not

prepare students. A study of this scale could provide robust data that could inform LEAs to the degree of effectiveness regarding preparation efforts. Alternatively, on a more micro level, comparing two districts in a similar study could reveal generalizable results applicable to other LEAs. Relative to this study, research could be conducted to compare the RIs of districts that conduct universal screenings to those that do not.

Last, further study could be conducted that focuses on the degree of test anxiety students are exhibiting. The inception of test-based accountability policies has increased pressure on educators and students to perform well on standardized tests (Embse et al., 2013). More needs to be done to assess the psychological effects of this initiative. Once data are collected to determine stress and anxiety levels, interventions can be tailored and implemented to reduce the effects.

Conclusion

The literature and the research presented in this study provide a clear case for conducting preparation for universal screenings regardless of the tool implemented to test for giftedness. Neuroplasticity and RFT have proven that humans have the capability to increase their intellect and performances on IQ and aptitude tests. Providing preparation fosters success on assessments and is an established best practice. The sentiment of educators participating in this study would agree without dissent. LEAs that do not practice preparation are overlooking hidden talent sitting in their classrooms. The hidden talent may be in the form of a student from an underrepresented subgroup.

Last, the data gleaned from this study informs LEA-1 of the benefits and areas of growth regarding their identification procedures. Although teacher perceptions are largely positive of the pre-CogAT lessons, suggestions could inform lesson modifications.

Updates and adjustments are necessary in the rapidly changing educational environment.

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Appendix A

Lesson 1

Beginning Thinking Skills Lesson 1- Analogies

Activating Strategy

Share the video from the following link: <http://www.vocabulary.co.il/analogies/analogy-lesson-video/>

Teacher Directed

Materials: Colorful folders, pictures of items (use Google Images to find pictures or use those provided). Tape or glue pictures of items in the folders. For example: a finger, a hand, a nose and a face. Make two or three of these to use with the class.

- Call four students to the front of the room and give them each a folder. As each folder is revealed, ask the student to hold it high enough for the class to see. Reveal the inside of folder # 1 (finger) and say “finger is to” and then reveal the inside of folder # 2 (hand). Discuss the relationship between the finger and the hand. Reveal the inside of folder #3 (nose) and say “as nose is to...” Discuss the relationship again, finger is *part of the hand*” and so *nose would be part of....*ask for responses and then reveal the inside of folder #4 (face). Repeat with any additional examples that you have made.

Guided Practice

Materials: Access to the following link: <http://www.quia.com/cb/7146.html> , white boards (if available) with dry erase markers or sheets of scrap paper.

- Divide students into two teams to play Analogy Jeopardy

Independent Practice

Materials: Laminated copies of the verbal analogies pages from the CogAT practice verbal analogies problems and markers.

- Students can work in pairs or individually to solve the problems.

Appendix B

Lesson 2

Beginning Thinking Skills Lesson 2- Number Series and Number Analogies

Activating Strategy:

Students will be given a number pattern with 4 clear plastic cups filled with unifix cubes (see photo below.) The numbers 3, 6, 9, will be written on the outside of the cups. Unifix cubes should be inserted into each cup in groups of three. Give each group extra cubes and ask them to determine how many cubes should be placed in the last cup marked with the question mark (?). The answer is 12 and the students should make 4 groups of three cubes to put into the last cup. Now, ask the groups to explain how they knew the answer. The students should be able to explain the pattern was to add another set of 3 cubes.

<http://3.bp.blogspot.com/->

204FHhThbFM/UEeVuV5MbiI/AAAAAAAAAGs/JV3PHP2M8NM/s1600/DSC_0286.jpg

Materials: One set for each group: 4 clear plastic cups, 35 unifix cubes

Teacher Directed:

Teach the different ways types of number series with an example of each:

- Odd or even skip counting
 - Skip counting by multiples of 2, 3, 4, etc.
 - Fibonacci sequencing- 1,1,2,3,5,8, etc.
 - Skip counting by addends like +300, +300; or subtrahends like -55, -55
- Materials: This website is a good resource- <http://www.myschoolhouse.com/courses/O/1/79.asp>

Give a few examples of number analogies. Teach the students that these numbers follow the kind of rules as the patterns/sequences. -

- 3 is to 12 as 5 is to?
- 8 is 4 as 100 is to?

Guided Practice

The teacher will use the computer to display the game called Line Dry. This is a number sequence game that asks the user to type in the missing number in the sequence. To assess the student understanding of the game, we will use a dance mat (like twister.) The right foot is ones digit, left foot is for the tens digit and the right hand can be the hundreds digit for each answer. You don't have to do too many of these, but it gets them moving and actively thinking about their answer. If they miss the answer, let them continue on with the class. Materials: computer for the game-

<http://www.fuelthebrain.com/games/line-dry/> or continue with the list used in the above

Teacher Directed- <http://www.myschoolhouse.com/courses/O/1/79.asp>

Dance mats- <http://numberloving.com/2012/04/22/dance-maths/>. Laminate the mats for longer use.

See the photos below.

Independent Practice

Students will practice the sample problems for the Number Series and Number Analogies from the CogAT teacher packet.

Materials:

CogAT Practice problems for Number Series and Number Analogies.

Alternate idea:

Make stations for each table group. This student has a laminated mat and problem card. There is a space for 10 problems to be answered on the mat. You could laminate the mats and cards and have the students to use dry erase markers. <http://1.bp.blogspot.com/-2aEFTKSaz5s/T4BC5mukK9I/AAAAAAAAABdc/Opmf4jrenUI/s1600/P4040885.JPG>

Appendix C

Lesson 3

Beginning Thinking Skills Lesson 3- Verbal and Figure Classification

Activating Strategy

Materials:

- One tube sock or brown paper bag per group with the following items hidden inside: paperclip, cap eraser, sticker, crayon, glue stick and file card/note card/scrap piece of paper.

- White board or scrap paper.

Students will feel the object in the sock or bag and list what items they think are present. They will then determine what item does not belong with the group and circle that item on their list. Each group will then write a rule for the group of like objects.

*The rule might be that the crayon does not belong, because it is the only one that can make a mark.

* Another group might think that the paper doesn't belong, because everything else can go on or be attached (glued) to paper.

Teacher Directed Materials: The teacher will use the whiteboard and computer link: <http://www.indiabix.com/logical-reasoning/verbal-classification/> or make a printed copy of the problems on this link to use with a document camera or overhead projector.

The teacher will model rules of classification and how to determine which item does not belong. Teacher will model two Figure Classification problems from the CogAT Practice (#1-2.)

Guided Practice

Materials: Eight posters (classification game in resources) will need to be placed around the room, clipboards (if available), pencil, and paper numbered 1-8

Poster description- A poster will be folded in half. The outside cover will be an answer to a problem from another poster. The student will lift the flap to reveal a new problem and then will move to the place in the room that displays the answer to their current problem. (Consider using a timer like the one at <http://www.timeme.com/count-down-timer.htm> to limit the time spent or monitor rotations).

The students will be put into groups of 3 or 4 to complete a scavenger hunt and will have a total of 8 problems to solve.

Independent Practice Materials: Printed copy of the Set One from
<http://www.education.com/study-help/article/verbal-classifaction-questions-set-7/>

Appendix D

Lesson 4

Beginning Thinking Skills Lesson 4- Number Puzzles

Activating Strategy

Materials-

- Colorful folders with a drawn balance on the inside (left and right of the folder are like the left and right sides of a balance scale)
- Use colored items for manipulatives:
Fill a snack sized baggie for each pair of students with colored Unifix or M&Ms. (The objects should be the same size.) The students will place the objects on the scale to determine the value of the color needed.

Write a chart on the board-

Problem 1-

Color	Value
1 Blue	2 Yellow
1 Yellow	3 Green
2 Blue	? Green

Problem 2-

Color	Value
1 Red	1 Yellow and 1 Brown
1 Yellow	3 Green
1 Red	1 Brown and? Green

Problem 3-

Color	Value
1 Green	1 Blue and 2 Red
1 Blue	2 Yellow
2 Green	? Yellow and? Red

Teacher Directed

Materials: Teacher models Balance Bender examples using the overhead, Elmo or you may use the two problems from the following site

http://www.criticalthinking.com/software-demos/balance-benders-beginning/story_html5.html

Guided Practice

Materials: One Set of each per group:

- Colorful folders (FROM ACTIVATING ACTIVITY) with a drawn balance on the inside (left and right of the folder are like the left and right sides of a balance scale)
- Zip lock bags of number tiles #1-14 (printed on cardstock or mini-tiles from hardware store)

- Add a diamond and a question mark (printed on cardstock) to the zip lock to use as variables
- Laminated set of questions 1-4 from CogAT practice page on Number Puzzles
- Dry erase marker and eraser per group.

The teacher will model along with the groups as to how to solve question #1.

Independent Practice

Materials: Same materials as Guided Practice

Students will work in groups to complete problems 2-4 on the CogAT practice page for Number Puzzles.

Closure

Materials: Copy of problems 5-6 of CogAT practice page for Number Puzzles. Teacher and class will work together to solve multi-step balance problems.

Appendix E

Lesson 5

Beginning Thinking Skills Lesson 5- Paper Folding

Activating Strategy

Share an example of origami from Japan. Relate to Valentines hearts and snowflakes in the U.S.

Teacher Directed

Materials: Three large black construction paper samples of paper folding, white stick on dots, page 46 (Building Thinking Skills Level 2).

- Fold the construction paper to represent the papers folded in rectangle-shaped halves with the white dots to represent the holes that are punched and dash white lines to represent the folds.

Ask the students to predict what the paper will look like when unfolded. (Share three samples: one dot, two dots and three dots.)

Shared problem solving of sample problems on p. 46

Guided Practice

Materials: Page protectors, colored cardstock, colored copy paper, colored stick on dots (enough to make a set of activities so that students can work in pairs).

- In each page protector place piece of card stock. On one side of the card stock, place a piece of colored paper folder into quarters with marks to represent the folds, and dots to represent the holes punches. On the other side of the card stock, place one piece of the same colored paper, and a sheet or strip of colored dots. Challenge each group to look at the folded paper in the page protector (they can't take it out) and imagine what it would look like unfolded. Then using the extra colored paper and dots, create their answer (what it would

look like unfolded). Ask students to wait before taking out the folded paper in the page protector. Call on groups one at a time to show the class the folded paper problem that was in their packet. Then share their solution before unfolding the problem to check their answer. Collect materials.

Independent Practice

Materials: Pages 3-4 of the CogAT practice activities (Paper Folding) cut so that there is one problem per page, colored construction paper, markers and zip lock bags. Tape or glue the activities onto the construction paper and laminate.

· Distribute zip lock pages with the six practice activities and marker to student pairs. Working in pairs, students will select the best answer for each problem and use the marker to indicate their answer.

Appendix F

Lesson 6

Beginning Thinking Skills Lesson 6- Figure Matrices

Activating

Give students a mirror and a small bag of polygons to explore symmetry like in the photo.

Materials- Per student or pair

- Bag of mixed polygons
- Plastic mirrors (these can be found in the math kits)

Teacher Directed

Materials:

- Plastic mirrors (these can be found in the math kits)
- Activity sheets from resources (Has this figure been transformed 1 & 2)
- Teaching Resources can be found in the Building Thinking Skills Level Two Book on p. 82-86

Using a document camera or overhead projector, use the four problems to demonstrate symmetry and transformation of figures. Show how the mirror can be used as a tool to help decide if the figure has been transformed and how.

Guided Practice

Materials:

- Plastic mirrors
- CogAT practice problems for figure matrices
- Construction paper
- Zip lock bags
- Dry-Erase Markers

Cut the problems, glue or tape to construction paper, laminate and place in the zip lock bags along with a marker. Distribute bags to student pairs. Student will solve problems and use the marker to indicate the correct answer.

Independent Practice

Materials: Building Thinking Skills Level Two Book on p. 77-81

Students may work in partners to complete the exercises. Teacher will rotate to observe student responses and to check for understanding.

Appendix G

AIG Teacher Survey

Pre-CogAT Lessons Survey

Survey Flow

Standard: SURVEY INSTRUCTION (0 Questions)

Branch: New Branch

If

If I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the... I consent, begin study Is Selected

Branch: New Branch

If

If I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the... I do not consent, I do not wish to participate Is Selected

EndSurvey:

Standard: Faculty Satisfaction (13 Questions)

Page Break

Start of Block: SURVEY INSTRUCTION

Start of Block: Faculty Satisfaction

S1

I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the district. You will be presented with information relevant to the district Pre-CogAT lessons and asked to answer some questions about them. Please be assured that your responses will be kept completely confidential.

The study should take you around 5 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason.

By clicking the button below, you acknowledge that your participation in the study is voluntary, you are 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

☐ I consent, begin study (1)

☐ I do not consent, I do not wish to participate (2)

Skip To: End of Survey If I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the... = I do not consent, I do not wish to participate

S2 Students should be given CogAT test preparation activities.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
Students should be given preparation activities (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the... = I consent, begin study

S3 The Pre-CogAT lessons align to the actual CogAT test.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
The Pre-CogAT lessons align to the actual CogAT test. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the... = I consent, begin study

S4 The Pre-CogAT lessons are effective in preparing students for the actual CogAT test.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
The Pre-CogAT lessons are effective in preparing students for the actual CogAT test (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S5 More should be done to prepare students for the CogAT.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly disagree (4)
More should be done to prepare students for the CogAT. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S6 The Pre-Cogat lessons positively impact student CogAT results.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
The Pre-Cogat lessons positively impact student CogAT results. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the... = I consent, begin study

S7 Elementary AIG teachers in this district implement the Pre-CogAT lessons.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
Elementary AIG teachers in this district implement the Pre-CogAT lessons. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the... = I consent, begin study

S8 I implement every part of each lesson.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
I implement every part of each lesson (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S9 The Pre-CogAT lessons should be updated or modified.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
The Pre-CogAT lessons should be updated or modified (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S10 A goal of the pre-CogAT lessons is to prepare students to perform their best on the CogAT.

	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
The sole district goal of the pre-CogAT lessons is to prepare students to perform their best on the CogAT. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S11 A goal of the pre-CogAT lessons is to increase underrepresented subgroup populations in the AIG program.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
A goal of the pre-CogAT lessons is to increase underrepresented subgroup populations in the AIG program. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S12 A goal of the pre-CogAT lessons is to improve students' critical thinking and problem solving skills.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
A goal of the pre-CogAT lessons is to improve students' critical thinking and problem solving skills. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the... = I consent, begin study

S13 I adapt or modify the lessons?

- ☐ Yes (1)
- ☐ No (2)

End of Block: Faculty Satisfaction

Appendix H

Regular Education Pre-CogAT Teacher Survey

Regular Education Pre-CogAT teacher survey

Survey Flow

Standard: SURVEY INSTRUCTION (10 Questions)

Standard: Faculty Satisfaction (0 Questions)

Page Break

Start of Block: SURVEY INSTRUCTION

S1

I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the district. You will be presented with information relevant to the district Pre-CogAT lessons and asked to answer some questions about them. Please be assured that your responses will be kept completely confidential.

The study should take you around 5 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason.

By clicking the button below, you acknowledge that your participation in the study is voluntary, you are 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

☐ I consent, begin study (1)

☐ I do not consent, I do not wish to participate (2)

Skip To: S2 If I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the... = I consent, begin study

Skip To: End of Survey If I am interested in understanding the extent of implementation regarding Pre-CogAT lessons in the... = I do not consent, I do not wish to participate

S2 The Pre-CogAT lessons align to the actual CogAT test.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
The Pre-CogAT lessons align to the actual CogAT test. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S3 The Pre-CogAT lessons are effective in preparing students for the actual CogAT test.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
The Pre-CogAT lessons are effective in preparing students for the actual CogAT test (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S4 More should be done to prepare students for the CogAT.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
More should be done to prepare students for the CogAT. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S5 The Pre-CogAT lessons positively impact student CogAT results.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
The Pre-CogAT lessons positively impact student CogAT results. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S6 Elementary AIG teachers in this district implement the Pre-CogAT lessons.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
Elementary AIG teachers in this district implement the Pre-CogAT lessons. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S7 The Pre-CogAT lessons should be updated or modified.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
The Pre-CogAT lessons should be updated or modified (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S8 A goal of the pre-CogAT lessons is to prepare students to perform their best on the CogAT.

	Strongly agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
The sole district goal of the pre-CogAT lessons is to prepare students to perform their best on the CogAT. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S9 A goal of the pre-CogAT lessons is to increase underrepresented subgroup populations in the AIG program.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
A goal of the pre-CogAT lessons is to increase underrepresented subgroup populations in the AIG program. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S10 A goal of the pre-CogAT lessons is to improve students' critical thinking and problem solving skills.

	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
A goal of the pre-CogAT lessons is to improve students' critical thinking and problem solving skills. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>