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# Technology with Differentiated Instruction for Advanced Middle School Students' Reading Achievement

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This is to certify that the doctoral study by

Clarissa Haymon

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Walden University
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MA, Union University, 1999

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Dissertation Submitted in Partial Fulfillment

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## Abstract

Educators offer rich learning experiences to all students, including advanced learners. A school district experienced a decrease in improvement percentiles on annual state reading achievement tests for advanced middle school students between 2012 and 2015. Guided by the theory of differentiated instruction, this quantitative study evaluated the effectiveness of Achieve 3000, a technology-enhanced program for differentiating reading instruction in a middle school that has a large percentage of advanced learners. The program was fully implemented for advanced 6th through 8th grade students beginning in the 2017-18 school year. Using a causal-comparative design, the archived reading scores of 120 advanced 6th through 8th grade students were compared pre and post implementation of Achieve 3000. A paired samples *t* test examining the overall effect of the intervention indicated that students' posttest scores were significantly higher than their pretest scores. A mixed design ANOVA was used to examine the main and interaction effects of time (pretest vs. posttest) and grade level (6th, 7th, and 8th) on students' scores. A significant time by grade interaction was present with 6th grade advanced learners showing significantly greater increases in reading scores following the Achieve 3000 intervention as compared to the other grade levels. These findings suggest that the Achieve 3000 program is effective for meeting the specialized differentiated instructional needs of advanced learners. The implications for social change include offering educators viable, technology-enhanced options for effectively differentiating reading instruction for advanced learners resulting in enhanced academic achievement, thereby benefiting students and the school community.

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# Dedication

To Olivia and Harrison, thanks for your encouragement. You are amazing individuals, and I am blessed to be your mom. I pray my experience through this journey exemplifies the importance of faith, intentionality and persistence. I look forward to your successes. Stay close to God and SOAR!

# Acknowledgements

An endeavor such as this occurs through the support of many, but I am significantly grateful to one. Vince, I am nearing the conclusion of this journey greatly because of your consistent, steady support. I thank you!

I recognize that opportunity and advancement are the result of sacrifices of others. To my parents I express gratitude for a faith-based legacy. Faith and family are life's absolutes, and I thank you for teaching me that God is my lifeline.

Dr. Wilson, as I experienced breaking points, your wisdom and knowledge saved me. You are more than a professor, advisor or chair. You are an anchor.

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# Chapter 1: Introduction to the Study

With numerous educational policies and accountability models, there has been more examination of aspects that influence student learning in public education (Goddard, Goddard, & Kim, 2015). For example, leaders and researchers continue to search for ways to resolve the national decline in academic performance (Farrington et al., 2012). Due to the decline in academic performance, leaders in public education have recommended that schools focus on increasing math and reading skills. The creation of the No Child Left Behind Act in 2002 resulted in a focus on struggling learners; however, this led to a lessened emphasis on advanced learners (Monks, 2014). With Every Student Succeeds Act in 2015, the testing essentials remained with greater accountability falling to the local districts and states (Darrow, 2016). Moreover, although there has been a slight increase in achievement scores for struggling learners, there was a zero improvement in reading achievement scores for advanced learners; the Nation's Report for 2015 in Tennessee shows that from 2013 to 2015 the percentage of advanced learners remained stagnate at 3% whereas there was a more equal distribution of percentages in Below Basic at 25%, Basic at 43%, and Proficient at 30% (National Assessment of Education Progress, 2015). Therefore, this research was necessary to examine how a school district in Tennessee used the Achieve 3000 program for differentiated instructional practices with technology to improve Lexile growth reading scores for advanced sixth through eighth grade students.

## Problem Statement

The U.S. Government recognized that there were educational disparities and mandated that by 2014, 100% of all students in public education be required to score proficient in both reading and math (U.S. Department of Education, 2011), yet the 2015 National Assessment of Education Progress assessment results reveal that 66% of eighth grade students failed to reach that mark (U.S. Department of Education, 2017). Additionally, the national report card reported that only 34% of all eighth graders attained the "at or above proficiency" mark on the National Assessment of Education Progress reading assessment (National Assessment of Education Progress, 2017). With this stipulation of proficiency for all students, focus is placed on the needs of struggling learners while the needs of high achieving students are ignored. But public education must remain conscious of the needs of advanced learners, and it is important that research is conducted to analyze educational implications for this subgroup.

In looking at advanced learners in Tennessee, where the district in this study was located, assessments revealed that math scores are consistently higher than reading. Although Tennessee did not provide 2015–2016 state assessment results for middle schools because of the gradual transition to online testing, high school results for the state reveal that only 8% of students in English I performed at the mastery level with 22% on track to mastery and 42% approaching mastery (Tennessee Department of Education, 2016). Furthermore, the 2015 third through eighth grade assessments revealed that one district outperformed the state by 26% in math but only 19% in reading; the deidentified middle school for this study further outperformed the state math score by 41% with 65%

of its sixth through eighth graders scoring advanced but only 32% receiving advanced reading scores (Tennessee Department of Education, 2016).

When comparing this particular middle school's 2012–2013 test results, findings (see Table 1) reveal that although 57.8% of students were advanced in math, only 32.6% were advanced in reading; for the 2014–2015 year 65.1% of the sixth through eighth graders were advanced in math and again only 32.4% were advanced in reading (Tennessee Department of Education, 2017). Public records reveal that for the 2016–2017 academic year, only 19.7% of the students were advanced in English language arts (ELA) with 24.7% advanced in math (Tennessee Department of Education, 2017). The school that was the focus of this study has more students achieving advanced scores in math than reading, and the data display that there is a need to examine the declining reading performance with advanced students in this district. The following accountability numeric value information shows the percent of students scoring in each proficiency level. This indicates that students may not be receiving support to attain high reading achievement.

Table 1

*Reading Versus Math Accountability Scores*

| Proficiency level | Reading fact accountability numeric value | Mathematics fact accountability numeric value |
|---|---|---|
| Below Basic | .80 | 1.00 |
| Basic | 11.00 | 6.90 |
| Proficient | 55.80 | 27.00 |
| Advanced | 32.40 | 65.10 |

The problem at the focus school is that a significant proportion of students who score advanced in reading are either stagnate or decreasing in percentiles on the annual state reading assessments; therefore, there is a need to explore implications of this program analysis and address reading growth for advanced learners. Table 1 reveals that when comparing Proficient and Advanced growth with Basic and Below Basic growth, progress is greater in the Basic/Below Basic category (Tennessee Department of Education, 2017). Furthermore, while demonstrating a decline in reading scores on the annual state reading assessment (88.9% in 2014 to 88.2% in 2015), these same students continue to perpetuate steady progress on the annual state math assessment (88.3% in 2014 and 92.1% in 2015). Additionally, the 2015 Tennessee Department of Education Profile Report reveals that this district earned the lowest value score in literacy, with an overall measure value of 5 and a literacy value of 2. Finally, in 2015 this district dropped from a C to a D in its Value-Added Value, and the Mean Gain in reading for academic year 2014 to 2015 declined from 0.4 to -0.7 (Tennessee Department of Education, 2015). This illustrates that students in the district are not making adequate reading gains (Tennessee Department of Education, 2017). This warranted the investigation of whether improvement can be made to increase this district's growth percentage for advanced students on the annual state reading assessment through using technology for differentiated instruction.

Although it is typically more challenging to move advanced learners, a greater percentage of such students falls in this category for this district. Students in this district comprise a low proportion of struggling readers. Therefore, by addressing this gap in

practice of progressive reading achievement with advanced learners, there is a possibility that an improvement can be made to increase overall reading progress for this district. It was necessary to investigate strategies to augment learning outcomes in advanced learners by conducting research on education within the Tennessee school system. According to Tennessee Governor Bill Haslam, a goal for the state is an educational system that can produce citizens with competitive and successful skillsets for the workforce (Perry, 2017). Governor Haslam also expressed that to attract business and industry in Tennessee public education must maintain quality performance and ranking; specifically, business leaders across the world are prepared to invest in Tennessee based on a steady commitment to education (Haslam, 2016). Moreover, by continuing to improve educational practices Tennessee is suited for additional growth and economic expansion (Haslam, 2016).

As a state-wide directive, this district is exploring means to continuously adhere to the charge of unremitting educational growth. In the 2016–2017 academic school year, the initial Achieve 3000 proposal provided a segmented program implementation through a few limited clusters to explore the intricacies of the program at meeting the needs of advanced learners for this district. With this current academic year as the first year of integration and implementation across all grade levels, it is expected that learners will yield target reading growth through equitable, quality access of this technology-based literacy instruction. Therefore, the purpose of this program analysis of the Achieve 3000 program was to determine the effectiveness of differentiated instructional practices with the use of technology on reading scores for advanced sixth through eighth grade

learners. The Achieve 3000 program promotes its methodology as scientifically researched, proven and patented for engaging individualized learning through critical reading with consistently embedded challenges for improving literacy skills (http://www.achieve3000.com/). An analysis of the Achieve 3000 program's outcome on reading achievement for advanced students allows for advanced students' needs to be addressed in the regular general education classroom, which is the setting where a majority of the academic day takes place. By addressing this gap in practice for the academic needs of advanced reading students, advanced learners can be enriched with individualized, advanced work while participating in the regular education classroom.

In a long-term trend analysis, the National Center of Educational Statistics revealed significant implications in reading as compared to math with only a three-point growth in reading and a 12-point growth in math from 1992 to 2012 (National Center of Educational Statistics, 2017). Later findings show that in 2015 while there was no measurable difference from 2014 to 2015 for fourth graders and eighth graders, scores were lower in 2015 as compared to 2013 for eighth grade students (Condition of Education, 2016).

The decreasing percentiles on the state reading achievement test for advanced middle school students for this deidentified district is significant because middle grades are the last chance students have to excel before entering high school. The following Table 2 exemplifies that the lack of ongoing reading progress in middle school corresponds high school progress in that English is the area of decline for middle school and continues as the area of decline for high school (Tennessee Department of Education,

2017). These placements then transfer into high school course placement and may even impact future college degree pathways (Loveless, 2016). In analyzing the following data with attention to reading implications, this table shows the decline in middle school correlates into high school performance and ranking.

Table 2

*Reading and Math Achievement Values*

| Accountability Achievement Value | Label | School Name | Subject Description | Fact Accountability Achievement Count |
|---|---|---|---|---|
| Declined | Improvement | All Schools | English II | 1 |
| Improved | Improvement | All Schools | Algebra II | 1 |
| Improved | Improvement | All Schools | Algebra I | 1 |
| Improved | Improvement | All Schools | 3-8 Math | 1 |
| Improved | Improvement | All Schools | 7th Math | 1 |
| Improved | Improvement | All Schools | 3rd Math | 1 |
| Declined | Improvement | All Schools | 3-8 Reading Language | 1 |
| Declined | Improvement | All Schools | 3rd Reading Language | 1 |

*Note.* From Tennessee Department of Education (2017).

A review of reading achievement on a broader spectrum conducted by the National Center of Educational Statistics revealed that in 2010 average reading scale scores and percentages for eighth graders in public schools in Tennessee ranked below the national average for proficiency levels for eighth grade reading students on state achievement tests. When comparing classrooms in Tennessee to other states, there is evidence that the education system in Tennessee has experienced many unique challenges

(Haslam, 2009). Moreover, too great of a percentage of middle school students in the state of Tennessee has failed to reach the proficient mark in the content area of reading (Frist, 2011). Education reports for the state revealed that the reading scores of eighth grade students categorized as "proficient" and "advanced" were only one point above the national average (National Assessment of Education Progress, 2015). Additionally, overall average reading scores for eighth students in the state of Tennessee remained at the same levels in 2015 as 2013; in, gains must be evident for all students to continue with reading growth (National Assessment of Education Progress, 2015).

Again, annual state achievement scores revealed an increase in math, science and social studies, yet there continues to be a decline in reading (Tennessee Department of Education, 2014). As a portion of the American Recovery and Reinvestment Act Race to the Top recipients established several concrete goals. For Tennessee, quality instruction and technology surfaced as two of the most significant goals. Feedback for the state recommends a greater focus on teachers and technology embedded with operational structures and flexibility for innovative approaches as the means to goal acquisition (Boser, 2012). Thus, in focusing on differentiated instruction through the integration of technology, the Tennessee district that is the focus of this study remains poised to address the gap in practice for its population of advanced learners.

Additionally, although there is a large body of research in support of differentiated instruction, there are limited findings on the student achievement outcomes with differentiated instruction (Goddard et al., 2015). Because it was the singular, consistent change in the last academic school year and the first year with full

implementation with fidelity across all three grade levels of ELA classes, this program analysis was pivotal in addressing this gap in practice by providing evidence to better understand the effectiveness of differentiated instruction with technology integration on reading proficiency of advanced learners.

## Nature of the Study

With ongoing changes in public education and technological advancements, it is important for educators to remain equipped with a skill set that mirrors the American progression (Chen & Herron, 2014). Historically, education improved for many students during the 1960s and 1970s, but efforts were constrained for many. For example, programs for the advanced student population were not designed to generally improve the broader educational system (Center for Comprehensive School Reform and Achievement, 2008). There are approximately 66 million gifted students in the United States, yet an insufficient number of these students experience education instruction that helps develop their educational and psychological advancement (Anaya, 2014). Research shows that when the needs of advanced learners are not addressed the chances of academic completion and success decrease (Center for Comprehensive School Reform and Achievement, 2008). The gap between advanced and underachieving students indicates that the needs of advanced students for growth and development may not be addressed. Reforms and additional services for struggling learners have not been designed to meet the needs of the broader educational system (Jennings, 2012). Therefore, by providing differentiated instruction that allows students to progress at their individualized

instructional levels, there is opportunity for advanced academic achievement (Tennessee Department of Education, 2016).

Reading scores of advanced students are on the decline and research on strategies to mitigate declines and increase reading scores is significant. Well-educated individuals have more opportunities to compete globally, help stabilize the job market, assist with the debt ratio, and enter a competitive housing market (Oliff et al., 2013). Therefore, because public education is significant to society's economic advancement (Perry, 2017), educational reform is important for working for a frontline educational system (Tatter, 2015). Thus, strategies to augment learning for all students, regardless of their academic placement, should be continuously explored. A program analysis of the now fully-implemented Achieve 3000 program addresses the gap in practice for this district and helps address the need for education reform.

## Research Questions and Hypotheses

The purpose of this program analysis for this Achieve 3000 program was to determine the effectiveness of differentiated instructional practices with the use of technology on Lexile growth reading scores for advanced sixth through eighth grade students. As first year of complete implementation with fidelity, the literacy coach provided the same training and a clear set of expected norms for all teachers. Students and families were informed of expectations as well. Furthermore, the final findings include the same students for Time 1 and Time 2 with the only change of time from beginning of the year to the end of the year. Therefore, this path of inquiry included two key questions.

Research Question 1: Does the method of technology-enhanced differentiated instruction through Achieve 3000 impact Lexile growth reading scores for advanced sixth through eighth students?

$H_0$1: There is no impact on Lexile growth reading scores for advanced sixth through eighth students based on the method of technology-enhanced differentiated instruction through Achieve 3000.

$H_a$1: There is an impact on Lexile growth reading scores for advanced sixth through eighth students based on the method of technology-enhanced differentiated instruction through Achieve 3000.

Research Question 2: Does Lexile growth differ by grade for sixth through eighth grade learners in technology-enhanced differentiated instruction through the implementation of Achieve 3000?

$H_0$2: There is no difference in Lexile growth for sixth through eighth grade learners based on technology-enhanced differentiated instruction through the implementation of Achieve3000.

$H_a$2: There is a significant difference in Lexile growth for sixth through eighth grade learners in technology-enhanced differentiated instruction through the implementation of Achieve3000.

## Purpose of the Study

There is a problem in that a significant proportion of the advanced learners in the district being studied have stagnate or decreasing percentile scores on the state annual reading assessments. Although evidence supports the need for differentiated instruction

to address the needs of all learners, there is an insufficiency in how to implement these practices in the general educational setting of public education (Alavinia, 2012). The purpose of this program analysis of the Achieve 3000 program was to determine the effectiveness of differentiated instructional practices with the use of technology on reading scores for advanced sixth through eighth grade learners. An essential component of differentiated instruction is providing advanced learners an avenue to excel beyond grade-level content; the Achieve 3000 program notes the capacity to provide such learning opportunities (http://www.achieve3000.com/). The results from this research can provide information to address the gap in practice for advanced students and offers information on strategies to augment reading scores in this population.

## Theoretical Framework

Abraham Maslow's hierarchy of needs can be used to exemplify how students' needs can direct educational organization (McLeod, 2017). For instance, the educational system is expected to analyze and address its deficiencies to help students with individualized success. In Maslow's (1943) hierarchy of needs, these types of deficits can be analyzed to help magnify pathways to individualized actualization and educational success. When there is a plan for creating a school culture with instruction that is personalized and learning that is interest driven, students feel safe and secure and supported through quality resources to pursue self-fulfillment in learning, which means maximizing fullest achievement (Chametzky, 2014).

Using Maslow's (1943) first level of hierarchy of needs, basic needs, there is an initial point of student motivation with correlation to stress levels, safety, and security.

Although Maslow's general explanation of basic needs include food and water, for the purpose of learning it also means quality resources and instruction. It is important to analyze the effect of educational institutions' tools and instructional practices on student outcomes such as the deficits in teaching materials and students' lack of active involvement in the learning process of public education (Marcell, DeCleene, & Juettner, 2010). Teachers maintaining direct instructional methods that use traditional worksheets, textbook assignments, and traditional activities to meet the objective of engaging learners yields significant negative results for students (Wilhelm & Wilhelm, 2010). To consider the needs of advanced learners, it is mandatory to extend beyond the conventional curriculum of today's realm of education (Bannister, 2017). The key is understanding that each student is to be viewed as a valuable learner worthy of challenging work; in grasping this, learners are thereby able to thrive (Bannister, 2016). ). Learners are better able to retain information longer and greater with more internalization when learning is diversified and thereby individualized (Joseph et al., 2013). Furthermore, growth and development occurs when students are allowed to embrace their uniqueness in the school setting (Yacapsin, 2013). There is an individualized component to each adolescent, and it is the role of public education to empower all learners (Podgurski, 2016). Therefore, differentiated instruction is needed to address the various basic academic needs of all students (Botty & Shahrill, 2014).

In the next level of Maslow's needs, safety and security, quality interactions with educational facilitators, acceptance, and approval are all key aspects of healthy interactions. Although a teacher may not be able to meet the typical basic needs beyond

the school free/reduced lunch programs, there are many other avenues to consider in addressing students' needs (Burleson & Thoron, 2014). A teacher's willingness to open the classroom structure to differentiated instruction affords the opportunity to reach the multifaceted learning needs of a student while demonstrating motivation to see all learners succeed (Jesus, 2012). A teacher developing instruction to fit the needs of all students includes adapting materials, modifying content, incorporating projects, and implementing quality assessments, which all provide learners with opportunities for creativity, fulfillment, and achievement (Jesus, 2012). Students also value established policies and protocols such as class resources, programs, hardware, software and overall norms (Urwiler & Frolick, 2008). Furthermore, students seek quality relationships with their instructors, and by embracing students' individual differences, positive interactions are solidified in transition to Maslow's next level of hierarchy of needs (Yacapsin, 2013).

In consideration of Maslow's next level of need, self-esteem, there is the charge for educators to demonstrate the commitment to students in pursuit of academic achievement and accomplishment (Yacapsin, 2013). One practical way of reaching the diverse needs of learners is through the implementation of online learning platforms (Dimitriadou, Nari, & Palaiologou, 2012). According to Maslow (1943), self-esteem is the result of learning that allows for independence and freedom. These attributes are allowed to materialize in differentiated instruction.

In Maslow's final step of hierarchy of needs, self-actualization, there is an understanding that when learners are not allowed to explore their gifts, talents and areas of interest, optimal success and satisfaction are negated (Maslow, 1943). The result of

quality education is self-actualization that entails realizing personal potential and owning personal growth. Using differentiated instruction with technology integration allows students to be remain aware and to take ownership of their individualized learning and reading progression. Therefore, Maslow's hierarchy of needs provided key expectations to analyze the Achieve 3000 program through which students can consider their own achievement, mastery, and independence (see McLeod, 2017).

## Operational Definitions

*Advanced learner*: A learner at mastery who scores in the top 75th percentile on state achievement tests (Tennessee Department of Education, 2017).

*Cooperative learning*: A learning strategy that allows students working in collaborative settings to accomplish set goals through democratic practices (Altun, 2015).

*Community of practice:* The practice entails a setting with various individuals and groups working toward a common goal with a shared interest (Trayner & Trayner, 2015).

*Differentiated instruction:* A strategy that includes helping students learn by connecting interests, experiences, and curriculum (Dixon, Yssel, McConnell & Harding, 2014).

*Level set:* Universal screener that measures reading comprehension of nonfiction text (http://www.achieve3000.com/).

*Lexile:* Reading level as determined from a universal screener of nonfiction reading (http://www.achieve3000.com/).

*Northwest Regional Educational Laboratory:* Researches educational needs, trend, and issues (Britsch et al., 2005).

*Standardized Testing for the Assessment of Reading (STAR):* Offers online tests by Accelerated Reader and provides student reading level with percentile, grade level, and need (Renaissance Learning, 2010).

*Subgroups*: A predefined category, which represents diverse learners based on academic need, ethnicity, and gender (Tennessee Department of Education, 2010).

*Universal Design for Learning:* Links flexible technology components to recognition, strategic, and affective networks for needs of diverse learners (Center for Applied Special Technology, 2015).

## Assumptions, Limitations, Scope and Delimitations

Because the program analysis was limited to one school for the district under investigation, there is a threat to reliability in that there is a limited number of advanced learners. This research design can also lead to concerns regarding bias due to unknown individual differences of the participants, posing a threat to validity and the outcome of the study (Levy & Ellis, 2011). Therefore, the results of the study may not generalize to other students in different settings of profile, size, schedules, or subject areas. It is an assumption that the data are reflective of the students' true abilities and skills. That is, the students put forth appropriate effort when completing the assessments and participating in the intervention. Furthermore, it is an assumption the teachers followed the recommended implementation procedures for the assessments and the program.

Without an overall standard of measurement representing those not treated, it is not certain whether pretesting could have impacted the results (Levy & Ellis, 2011).

Every effort was made to reduce researcher bias. For example, there was no contact, related to the analysis, with the teachers or classrooms throughout the investigation.

## Significance

Public education is a venue that should facilitate learning, encourage a constant pursuit of knowledge, promote independent learners, and grow digital literacy (Wadmany & Kliachko, 2014). Furthermore, society is moving toward globalization, meaning students need skill sets that allow them to analyze, reason, and evaluate (Farrington et al., 2012). Although the Achieve 3000 program claims to have the instructional capacity to address these learning components (http://www.achieve3000.com/), a program analysis was needed to review such implications for this population and setting.

As society continues to become involved in international economies and innovation, the outcomes of literacy are significant (Schatz, 2015). This topic is especially important as struggles with literacy typically persist into adulthood (Rapp et al., 2007). Additionally, reading level is the greatest predictor of success after high school; there is currently too great a percentage of students lacking in reading proficiency (Pimentel, 2013). Therefore, this investigation on reading achievement strategies for advanced learners was significant to not only the students and parents but also to teachers and the community.

## Summary

It was necessary to address lack of reading proficiency for advanced students at the middle school level, as 87% of students report plans to attend college yet less than

half of students feel prepared for college success (Leal, 2015). The students who succeed are typically students who enrolled in challenging course loads and stayed ahead in terms of school work (Taylor, 2006). However, a majority of 11th grade students in Tennessee begin college careers in need of remedial classes (Frist, 2011). Additionally, in reviewing 2017 American College Test (ACT) results, 47% of high school graduates nation-wide met college readiness benchmarks, yet only 39% of Tennessee graduates were able to meet that same threshold (American College Test, 2017). By resolving the existing problem with the reading instruction for advanced learners, the possibility of college success increases because these students may become better equipped for future academic challenges.

The purpose of this program analysis was to determine whether the integration of differentiated instruction with the use of technology impacted reading scores for advanced sixth through eighth grade students. Chapter 2 provides greater discussion about the implications of differentiated instruction with empirical research shaped by a theoretical basis. Additional information about the study methodology is presented in Chapter 3.

# Chapter 2: Literature Review

Annual reading scores show a decline or stagnation on the annual reading assessment for the advanced population in the focus middle school of sixth through eighth grade learners. The purpose of this program analysis was to determine the effectiveness of differentiated instructional practices with the use of technology integration on reading scores for this advanced population. The literature review reveals current trends and implications for this sector of learners, especially on reading progress.

## Literature Search Strategy

Current search avenues for this study included Walden Library, Google Scholar and local libraries. The following relevant websites were also included in the research process: Department of Education, National Council of Teachers of English, Center for Comprehensive School Reform and Improvement, National Assessment of Educational Progress, and American College Testing. Additionally, the ERIC database, state websites, and other national educational resources were reviewed. These searches yielded references for educational trends, academic concerns, theories, academic resources, trends in technology, and discrepancies in subpopulations, school system analysis, and future concerns. This variety of information yielded a more focused study of differentiated instruction with the use of technology with a focus on advanced learners. Key search terms included in this literature review included *strategies to augment reading proficiency, differentiated instruction approaches, program analysis, online learning, multiple intelligences,* and *technology.*

## Literature Review Related to Key Concepts and Variables

### Instructional Needs

There are several factors that may be causing the lack of proficient scores for advanced learners in reading. Twenty-first century learners tend to want to independently pursue learning in knowledge-centered, contemporary classrooms (Tomlinson, 2015). Thus, educators must help students identify their unique talents and then create situations where they can be successful. Students come with innate curiosity that is to be cultivated in a way that promotes further learning and academic development; this occurs when the environment is solidified in quality instructional standards and clearly assigned tasks that allow for differences that are not only accepted but well expected (Doubet & Hockett, 2016).

Additionally, lack of interest and effort tends to be connected to lack of differentiation that is necessary for students' learning needs in reading (Little et al., 2014). A survey of elementary and secondary students revealed that students prefer that instructors spend less time in direct whole-group lecture, address students' specific learning needs, individualize instruction, offer choice, and establish interest through quality questions (Doubet & Hockett, 2016). This focus is necessary for continual success for the highest achieving students (Watts et al., 2012), which can allow them to work as productive and ethical members of society (Thompson et al., 2010).

Increasing the quality of education for learners can also improve the nation's status as a world leader (Hanushek & Woessmann, 2012); however, public education lacks consistent reading advancement on state tests. Dr. Candice McQueen, Tennessee

Commissioner of Education, described stagnate reading performance as an ethical and moral dilemma (Tatter, 2015). These performance outcomes have consequences for both students and school systems. Therefore, the Department of Education is promoting federal initiatives to investigate higher-order reading activities to improve comprehension skills.

It is important to review current academic practices to assess the existing status of public education in America (Vinovskis, 2015). For example, educators are expected to maintain enriching instruction and academic achievement in ongoing assessments, although resources for doing so are limited. Furthermore, it is expected that school systems across the nation hire teachers with expertise in delivering content knowledge as well as implementing reform measures to promote solid readers in lower grades to alleviate costs and increase in dropouts in the higher grades (Fiester, 2010), yet there is a shortage in resources when it comes to diversified academic needs of learners (Finn & Wright, 2015). There is a conflict in communities of practice regarding best methods to determine pathways to success (Dobbs et al., 2016). The lack of educational reform and funding also continues to be an ongoing area of contention in the institution of education (Vinovskis, 2015).

Despite demands for educational reform, high stakes testing does not ensure accountability, and America does not appear to nurture advanced learners (Finn & Wright, 2015). Additionally, when considering prior implications of No Child Left Behind, public school systems possess little motivation to ensure the highest learners are encouraged to acquire highest level of academic potential (Finn & Wright, 2015).

Although the nation has transitioned to Every Student Succeeds Act era, the institutional capacities continue to struggle (McGuinn, 2015). Furthermore, evidence suggests that public school systems have not only neglected advanced learners but have also cut funding of programs and projects for these learners (Department of Education, 2017).

Current educational practices are insufficient in adhering to the various skill sets and learning profiles of students while adhering to program practices and expectations (Callahan et al., 2015). Moreover, there is a need for responsive and fair testing to address this lack of reading proficiency in the middle grades (Jennings & Lauen, 2016). The theoretical framework behind standardized testing suggests that it addresses the dominant culture, which does not address other learners' needs (Hernandez & Warne, 2015). The 2015 Tennessee Achievement Report revealed that for one specific Tennessee district, White students comprised the greatest percentage of the population, and the students in this subgroup also scored a greater percentage in advanced reading than the overall school average (Tennessee Department of Education, 2016). The inability to offer diversified instruction does not resolve the individualized instructional challenge (Wan, 2016).

**Educational Productivity**

Research indicates that a majority of advanced students are not challenged or engaged in the regular education classroom; these students also deal with wasted classroom time while teachers are instructing the low and middle learners (Cleaver, 2012). In reviewing a case study of vocabulary development, findings show that learners do not prefer or retain learning that involves illustrations, semantics, or other memory

strategies; students tend to value and grow from self-learning that entails contextual evidence and independent reliance on reference resources (Tang et al., 2016). Additionally, independent reading advances a student's vocabulary while expanding background knowledge and furthering comprehension of text (Whitten et al., 2016). Further implications reveal that computerized instruction with vocabulary components allow for quality acquisition of new vocabulary (Shabani, 2014). It is also beneficial to provide students the space, training, practice, and responsibility of attending to new vocabulary words and acquiring meaning independently (Gallagher & Anderson, 2016). This is a common practice of the Achieve 3000 one-to-one computer-based program as presently implemented for the focus district in Tennessee.

How students differ is relevant and impacts future learning and outcomes (Dijkstra et al., 2016), as students identified as advanced learners face unique challenges in public school settings. Understanding instructional needs and fostering interest and ability are significant (Bates et al., 2016). Teachers of these advanced learners may struggle with a lack of support, knowledge, and resources that are required to educate this population of students (VanTassel-Baska & Stambaugh, 2012). For Tennessee, 85% of school funding is tied to performance outcomes, including the number of students completing courses, credentials, and degrees (Pratt, 2017). Therefore, middle school expectations are significant for preparing students for a successful transition to high school and postsecondary success.

**Individualization**

Current struggles with reading comprehension are potentially due to the lack of individualized reading instruction that adheres to various students' personalized academic needs with regard to reading levels and needs (Wijekumar et al., 2017). For example, McCarty et al. (2016) explained that not only do students fail to stay engaged when the instruction is not relevant, but dropout rates increase when instruction is lacking in quality. For the middle school setting, student frustrations in ELA classes tend to be with text that is too complex (Wijekumar et al., 2017). Present and future classrooms require innovative strategies for student empowerment (Van Wyk, 2017). For example, web-based reading instruction provides a supplement to the ELA curriculum while allowing for differentiated activities and comprehension support (Wijekumar et al., 2017). According to recent research, this instruction promotes student success when the instruction is delivered with rigorous and relevant lessons (Callaway, 2015).

Although there is currently a conflict in public education for what constitutes quality instruction, researchers and policy makers are exploring quality teaching practices like Bill and Melinda Gates' Measures of Effective Teaching for reaching all learners' academic needs such as in the middle school population (Conklin, 2014). Educational practices are developing to maximize learning by modifying teaching methods (Nicolae, 2014). Consequently, differentiated instructional approaches have recently received attention as a possible strategy to mitigate reading deficiencies. It is important to enhance individualized reading instruction by providing opportunities to explore leveled text, match online instruction to the needs of middle school readers, and examine digital

components that support diversified academic growth in the general classroom setting (Bates et al., 2016).

**Reading Instruction**

Innovative treatment can be the primary antidote to move students over the condition of stagnate reading achievement that is the delicate generalization in public education today (Gonzalez, 2017). Although students in elementary settings are making progress, this is not evident overall in middle school settings and beyond (Cantrell et al., 2016). Elementary teachers tend to be more intentional with differentiated instruction, but older students do not as frequently have opportunities for this (Doubet & Hockett, 2017). Critical reading skills as described by college readiness constitute disciplinary literacy and a skill set for reading text that differs from that of secondary education; therefore, appropriate strategies for textual engagement and curricular enhancement are fundamental (But et al., 2017). Furthermore, college students continue to need sufficient access to quality text-based reading material, a setting conducive to time devoted to individualized reading, and overall support from all invested stakeholders (Flink, 2017).

There is a necessity for consistent, intentional instruction that devotes time to high quality reading programs, individualized learning and computer-assisted instruction (Cantrell et al., 2016). Students need increased exposure and practice with individually-appropriate text complexity to build stamina and avoid stagnation, which correlates to learners' academic advancement (Fisher & Frey, 2016). However, it is important to determine how to get and keep readers improving their skills (Fisher & Frey, 2016). In a typical classroom setting, conventional instruction tends to be most beneficial to average

learners while others can gain advantages from computer-based reading instruction when such instruction includes clear, consistent lessons with leveled enhancement and informational text (Fenty et al., 2015). Contrary to traditional, routine reading lessons, various types of reading support adhere to individualized students' instructional needs and yields academic growth and reading advancement (Fisher & Frey, 2016). For instance, Day (2015) found that extensive reading constitutes a variety of reading material with text selection based on interest and reading level with an individualized approach for development and progress.

**Differentiated Instruction**

Differentiated instruction helps meet the academic needs of diverse learners (Tomlinson, 2015). The basic principles of differentiated instruction include helping students learn by connecting interests, experiences, and curriculum. Lack of autonomy produces a lack of motivation and thereby academic progress (Hobbs & Dofs, 2017). It is essential that learners are empowered to understand how they learn through acquisition of instructional strategies for learning and opportunities for successful learning either collectively or independently (Hobbs & Dofs, 2017). It further benefits advanced learners because they can be motivated beyond their academic level of comfort with differentiated strategies. One way to ensure instruction that reaches advanced learners is practicing a tiered model for its ability to enhance students' interest, engagement, and individual skill sets (Aliakbari & Haghighi, 2014).

**Methods of Diversified Learning**

It is relevant to explore the need to find an appropriate way of evaluating achievement gains through autonomous learning (Hobbs & Dofs, 2017). Analyzing the process by which students facilitate their own individualized learning is a recurring educational exploration. In addition, students encompass diverse levels, backgrounds, interests, and instructional needs while they are expected to master same grade-level standards (Siam & Al-Natour, 2016). Recent studies show how the development of strategies can be made easier by integrating technology (Yot-Dominguez & Marcelo, 2017). These studies continue to gather meaningful information about technology integration for the use of independent learning (Yot-Dominguez & Marcelo, 2017). Thereby, computer-based learning is a vital resource to be embedded in conjunction with the overall curriculum in a method that enhances quality instruction (Cook, 2005).

It has been proposed that differentiated instruction more richly engages students in their learning, provides for constant growth and development, and allows for a stimulating and exciting classroom (Taff et al, 2012). A peer intervention is an example of differentiated instruction that can be achieved by offering suggestions for peer assistances including tutoring experiences, small group sessions, and dialogue experiences (Nguyen, 2013). Researchers maintained that such practices are effective because they provide meaning and understanding that is acquired from sharing and learning with peers. According to a recent study, differentiated instructional practices solidified student engagement in classroom instruction, improved participation in lesson activities, and increased learning of skills and concepts (Duquette, 2016).

Research on brain-based investigations supported this postulate as it has been shown that understanding increases as a result of explaining concepts presented. Nichols et al. concluded that collaboration promotes vocabulary because communicating vocabulary with peers brings the print to life and facilitates interactive reading and discussion to improve vocabulary skills. Indeed, when looking to inspire and challenge learners, utilizing quality communication and questioning techniques are found to be beneficial (Gray, 2012). Although many researchers suggest that it is essential to mix and match a variety of instructional techniques to reach all students and keep them engaged, there is a lack of empirical research on the efficacy of such approaches (Oh, 2012).

According to Rosenshine (2012), cognitive development and game-like practices are processes that work well together to stimulate growth. It has been suggested that when strategies like collaborative learning and differentiated instruction are integrated, the brain responds to the positive stimulation and learning occurs. According to Howard Gardner's theory of multiple intelligences, success can be attainable for diversified students by numerous means; this theory institutes the principles of differentiated instruction in that various paths lead to success (Ahvan and Pour, 2015). Robert Gagne also explains that one key aspect of cognition is understanding there are individual pathways to guide learning and thinking (Botty & Shahrill, 2014).

When effective thinking and learning is established through a learning range from basic to synthesis; cognition is the principal point (King, Erickson & Sebranek, 2012). Offering quality education with innovative practices is lacking, and public education is

weighted down with reliance on uniformity and centralized education systems by way of universal standards. And in doing so, there is the risk of lowering the educational bar of progress and achievement (Card & Giuliano, 2015). Powers (2014) exemplifies that instead of teachers routinely presenting information and materials, students should actually be engaging in the exploration of learning through their own individual pursuit of knowledge. Powers (2014) explained that students should be thoroughly challenged to grow as learners through real-world connections, independent discovery, input and choice in learning the content.

According to recent research, it is a reasonable expectation that modern teachers appropriately amend instruction based on learners' academic inclinations and profile (Joseph & et al., 2013). When considering strategies to support the needs of advanced learners, the implications of Universal Design for Learning illustrated the need for technology, diversity, and social interaction (Center for Applied Special Technology, 2017). The Universal Design for Learning constitutes multiple learning avenues to accommodate classroom diversity based on the claim that student diversity is as various as our DNA (Center for Applied Special Technology, 2017). Although some indicate that differentiated instruction and technological components are essential in designing learning for all students, in order to avoid the pitfall of neglecting the advanced learner; there is paucity for research on the impact of differential learning approaches with advanced learners. While there is current implementation of the Achieve 3000 online program to address the needs of advanced learners in this deidentified district, this

program analysis will help to negate the gap in practice with regards to efficacy and online learning (Stack, 2015).

Based on theory and research, it is a requisite that teachers consistently and vigorously address curriculum and instruction in response to student readiness, interest, and learning profile (Tomlinson, 2015). With technology integration as a catalyst for differentiated instruction, advanced students may benefit from the opportunity to make academic progress that can be measured on standardized tests in the area of reading; however, there is limited empirical evidence to support this claim. It is essential that reading gaps be addressed and that students acquire requisite skills for the workplace. Offering various modes to learning may help prepare our students for their futures (Ahvan and Pour, 2015); however, ongoing research is vital to determine how to best respond to the needs of advanced learners.

**Student Interest**

One very basic and ongoing component of education is maintaining student interest. Interest reading provided through choice promotes further reading and exploration that branches out into other cores subjects like science and history. This continues to broaden a student's vocabulary, background, interest and thereby comprehension (Whitten et al., 2016). Additionally, the incorporation of technology to heighten the instructional content presented in a traditional classroom setting can provide a fresh approach to achieving the learning goals of enhancing reading comprehension skills in that technology integration tends to allow for a more enjoyable learning experience for today's students (Ochao & Ramriez, 2016). Furthermore, Ness (2017)

found that students are actually requesting more technology integration to help make reading instruction more engaging for learners. When there is higher engagement with reading instruction, the subsequent outcome is thereby higher reading achievement (Laverick, 2014).

**Advanced Learners**

Underachievement, defined as an inconsistency in instructional outcomes between academic performance and ability, surfaces as a common thread of concern with regards to the subgroup population of advanced learners (Karaduman, 2013). Overall, there are societal implications and consequences when such students are not reaching their full potential (Esparza et al., 2014). A few factors that contributing to this underachievement include lack of differentiated instruction, lack of individualized learning opportunities and lack of quality instruction reaching the academic needs of these students (Karaduman, 2013).

While there is a strong transition across the nation to richly embed common standards, even such standards remain insufficient in regard to the task of challenging the most advanced learners (Ash, 2013). Advanced learners are a valuable commodity in need of educational resources dedicated to moving this population upward with the core goal of negating the trend of remaining disengaged from school (Esparza et al., 2014).

**Supplemental Instruction**

Even in today's realm of public education, reading still remains as the most elusive and fundamental instructional skill students must master (Keyes et al., 2017). Today's practitioners hold the essential task of continuously helping students grow as

critical thinkers and readers (McElhone, 2015). The process of allowing students to diversify learning through the incorporation of technology integration, promotes critical thinking and reasoning skills in that time management, choice, interest and instructional expectations are factors learners must consider and navigate while working independently to accomplish learning goals **(**Ochao & Ramriez, 2016). There is a possibility of increasing reading achievement by equipping teachers with efficient technology and professional development for proper usage to help further promote reading comprehension (Keyes et al., 2017).

**Alternative Classroom**

While there are currently numerous fields or pilot studies for technological developments world-wide regarding reading comprehension, feedback and instruction are next level demands of these findings (Pascual & Guevara, 2017). There is a necessary instructional component for utilizing class time to teach, model and practice the current reality of reading digital text (Saldana, 2013). There is a strong charge from those invested in public education to continue navigating beyond class settings and standards that deem rote and scripted practices (Ash, 2013). It is pivotal for a teacher's instructional stance to be that of one which prioritizes progressive instructional effectiveness (McElhone, 2015). Enhancing classroom practices with digital means, immediately allows for the ready incorporation of authentic literature with rich diversity in text (Moller & Ferguson, 2015).

In considering alternative instructional methods for the traditional classroom, Pascual and Guevara (2017), found that by utilizing automated reading technology

students made positive strides in reading comprehension. For example, by allowing students to discover their own areas of needed reading improvement as opposed to teacher-suggested improvements, instructs an effective strategy for increasing reading adeptness (Laverick, 2015). Ability to provide a greater array of text choice, opportunity to interact with digital text in various modes, time to explore more targeted diverse literature are promising aspects of digital learning with regards to promoting reading comprehension for today's learners (Moller & Ferguson, 2015).

**Effective Practices**

There are aspects of the traditional classroom settings that hold a tendency to resist change (McElhone, 2015). Ochao and Ramierz (2016) shared that while significant benefits exist for instructional technologies, obstacles abide as well when infrastructures fail, teachers are not provided with adequate training on proper use and implementation of the technological resources, flawed technical support, maintaining the use of outdated worksheets and workbooks, or there continues to be an over reliance on a teacher-centered approached. Opportunities for individualized exploration, growth and progress tend to be more limited in the traditional classroom setting.

While students are allowed the opportunity to read aloud on a regular basis, seldom are they able to reflect on where they are and how they are progressing as individual readers; therefore, the technological incorporation of iPads for video recording capacities provided means for students to review and manage their individual progress (Ness, 2017). It is important to note the need to maintain availability and ongoing access when navigating the ongoing trend of technology integration in the traditional classroom

setting for the purpose of solid reading comprehension practices (Moller & Ferguson, 2015). Technology-enhanced teaching techniques yield positive instruction and assessment support in several ways from family access to resources to ongoing learning with engagement (Laverick, 2014).

### Future Implications

Types of texts and methods for reading have changed considerably in recent years (Moller & Ferguson, 2015). With the rise of various mobile learning devices for all age brackets beginning at even kindergarten, instruction through the use of technology integration is expanding at such a rapid rate, it can be challenging to maintain relevance (Saldana, 2013). In considering further expectations of today's learners, college and career readiness constitutes an ability to not only read but also comprehend a range of texts, including informational texts across content areas independently and proficiently (Ritchey et al., 2017). Yet, while reading comprehension remains a critical component of the reading process, today's learners endure the struggle with it, and teachers remain at a loss in securing it in their teaching (Klapwijk, 2015).

## Summary

The literature review revealed various gaps in the research on augmenting reading proficiency for advanced learners. In the current description of the literature, information on reading proficiency, the lack of proficiency in public education, advanced learner and gender differences was addressed. Information on strategies to increase reading ability, including differential instruction approaches and their impact on reading in advanced learners was also provided. The purpose of this program analysis of the Achieve 3000

program was to determine the effectiveness of differentiated instructional practices with the use of technology on reading scores for advanced sixth through eighth grade learners. Additional information about the study methodology is presented in section three of the study.

# Chapter 3: Research Method

The purpose of this program analysis of the Achieve 3000 program was to determine the effectiveness of differentiated instructional practices with the use of technology on Lexile growth reading scores for advanced sixth through eighth grade learners. The results from the research provide information on strategies to augment reading scores of advanced students. The outcome from the study involves the use of differentiated instructional practices (use of technology) to complete assigned individualized reading tasks.

The focus of this program analysis was guided by consideration of trends and concerns in the educational system regarding varied degrees of literary exposures, reading levels, learning styles, academic needs, interests, and experiences. I explored the academic implications of a technology-integrated Achieve 3000 program (differentiated instruction method) for advanced learners. The essential question was Can differentiated instructional methods with the use of technology integration impact Lexile growth reading scores for advanced sixth through eighth grade students? The results indicate the benefit of continued use of individualized reading instruction with technology.

The overall profile for this district includes nearly 150 administrators, approximately 2,600 teachers, and nearly 38,200 pupils of about 6% Hispanic and 6% African American, roughly 7%Asian, and slightly over 81% White population (Tennessee Department of Education, 2018). The area of reading also maintains a Tennessee Value-Added Assessment System (TVAAS) Composite of 1 whereas the math is the highest possible level of 5 (Tennessee Department of Education, 2015).

In this district, most middle school ELA classes operate by hourly classes with 60-minute language arts classes five times per week; classroom teachers are responsible for classroom instruction based on state standards. With approximately 400 students per grade level, students are dispersed across core subject classes per grade, and teachers are expected to provide similar core instruction based on their weekly professional learning communities' meetings. Teachers are also afforded time to analyze test data during Power Monday time slots. This district strategically designed Power Mondays within the annual school calendar by allowing students to arrive at school 1 hour later on most Mondays.

## Design and Approach

A quantitative research approach was employed for the current program analysis. As is the basis of this program analysis, a quantitative research method is appropriate when examining the relationship or differences between variables (Creswell, 2009). The variables in this study included the key independent variable of fixed time versus the key dependent variable of Lexile reading score. The dependent variable of Lexile reading levels was determined from a universal screener of non-fiction reading; the Achieve 3000 LevelSet represents the universal screener that measures reading comprehension of nonfiction text and formulates Lexile level based on correct responses (http://www.achieve3000.com/).

An ex post facto quasi-experimental research design with a pretest/posttest design was employed for this study. Pretest-posttest designs are commonly used in educational and behavioral research in natural settings with typically intact groups (Levi & Ellis,

2011). An ex post facto design is appropriate to test correlational relationships (Simon & Goes, 2011). Although there is a lack of random assignment that limits generalization (Simon & Goes, 2011), the quasi-experimental design was most suitable in that both a pretest and posttest were included to solidify the study. Additionally, in considering maturation or normal reading development over the span of one school year, it is noted that expected Lexile growth for sixth through eighth ranges from 75 to 100 Lexile growth in reading (http://www.achieve3000.com/). Because the data were previously collected, the design for this study is both relevant and sufficient (Simon & Goes, 2011). The comparison for this study included Achieve 3000 Lexile scores from September 2017 to June 2018 to identify student progress. It is a common expectation to collect paired observations of a pretest and posttest to perform a statistical trial to calculate an average change in scores (Hedberg & Ayers, 2015). To support validity and reliability, gains or losses were determined at the conclusion of the study and reported in the findings. Additionally, as a test effect factor that while the same group of students did see the pre/post assessment, the questions and passages were different for the pre/post assessment as a determination of Lexile growth, and final findings will be shared with schools and districts of like settings. This met the purpose of this program analysis of the Achieve 3000 program to determine the effectiveness of differentiated instructional practices with the use of technology on Lexile growth reading scores for advanced sixth through eighth grade learners.

## Setting and Sample

The population consisted of 120 total advanced learners for grades sixth through eighth for this particular middle school. Upon approval, access was granted to the testing data. The quasi-experimental design was chosen for this study because by regular operation of the school, all students were already exposed to the treatment without artificial settings or environment (see Creswell, 2014). The study took place within the context of the advanced learners' ELA classes; the sample number was determined by the total number of advanced learners by grade. Three factors were taken into consideration: the power of the study, the effect size of the study, and the level of significance.

Action steps were employed to ensure all students received the same intervention and that the intervention was appropriately implemented. For reliability regarding change in time (pre/post) and removal of outliers, the literacy coach provided the same training and a clear set of expected norms for all teachers across all three grades. Additionally, all students and families were informed of this district-wide expectation of quality and consistent implementation. Furthermore, the final findings included the same students for Time 1 and Time 2 with the removal of one outlier with both the beginning of the year and end of the year.

G*Power is a computer program designed to calculate sample sizes for a wide variety of statistical methods (Erdfelder, Faul, & Buchner, 1996). G*Power was used to run a post-hoc power analysis to compute the achieved power. The effect size for the sample was: 1.0272549 and the power was: 1.00. The advanced learners were recognized as advanced in correlation to STAR data and the state achievement test's criteria for cut

scores of the four brackets: advanced, proficient, basic, and below basic. The Reporting Categories Performance Index on the state's public website for the district identifies advanced learners based on a score of 88% or higher assuming 100 test items on state achievement tests (Tennessee Department of Education, 2015).

## Treatment

All classes participated in the Achieve 3000 Levelset pretest, and all student groups participated in the Achieve 3000 Levelset posttest as part of their regularly scheduled testing. On the conclusion of the posttest and study, all teachers will receive information on the outcome of the program analysis.

Prior to participating, all aspects of the study were approved by the Walden University Institutional Review Board (IRB). The participants' test scores remained confidential and the names were removed from the test scores and a unique identification number was assigned to the participants prior to accessing of score data. Collected data were stored in a secure setting including a locked filing system and a disk of content added to the locked filing system.

As the first year of full implementation, advanced learners across all classrooms in grades sixth through eighth participated in the technology-enhanced differentiated instructional program as part of the program analysis. There was a 1-hour instruction session delivered by the literacy coach, prior to implementation. During the instruction session, the program components were reviewed, and expectation guidelines were disseminated to all students (see Appendix A). Students were informed of the secondary expectations and the deliverables required (see Appendix B). Next, the teacher

implemented and supervised the manipulation. Following program completion, all students were administered the second reading posttest.

Data from both the fall and spring pre and post reading assessments were accessed from the assessment databases. The databases calculated the Lexile growth scores, and the scores of the participating children were released to the researcher. A unique identification number coding procedure was utilized so that the data were not identifiable by student name.

All students completed the assessment (Achieve 3000 Level Set) early in the first semester (pretest) and then again at the end of the second semester (posttest). Data were filtered to include only the students completing both assessments at both testing intervals; those not completing the assessment were not included in the data findings.

There were four language arts teachers per grade level. Each grade level teacher has four classes. While each teacher had a classroom makeup of average and advanced learners, the advanced learners were the sample in the study. Of the total students in the study, 39 were sixth graders, 42 students were seventh graders, and 38 students were eighth graders. All classroom instructors were offered guidance and training on the Achieve 3000 program expectations and guidelines and given information on the timeline and program dynamics. Following the previously-established building level data collection process, all stakeholders in the district were provided results and implications of findings on the program and its implementation to ensure all students receive the possible benefits of the individualized program.

## Instrumentation and Materials

Upon permission from the school district and Walden IRB, the pre/post academic achievement data were retrieved from Achieve 3000. This resource is employed by the district as means to tracking student growth within one academic school year. Achieve 3000 addresses informational reading of nonfiction content; the LevelSet assessment was given each semester in every middle school classroom in the district. As an online differentiated nonfiction reading and writing program tailored to each student's individual reading level, this district recognizes Achieve 3000 as a valid and reliable instructional instrument for middle school students.

The middle school students in this district were assessed several times throughout the academic school year. The state annual testing falls at the conclusion of the academic school year while the Achieve 3000 LevelSet is administered both at the beginning and at the end of the academic year. Group test scores of advanced learners in the study were retrieved from the district's state website, and pre/post reading data were drawn from Achieve 3000 progress reports. Scores from the website were collected once before and once after treatment. The LevelSet test occurred during language arts classes over a one-hour period while teachers closely monitored the testing.

Achieve 3000 is supported in evidence by experimental and quasi-experimental research studies and considered in the research community to provide strong and effective evidence (http://www.achieve3000.com/). This district used the Achieve 3000 LevelSet to test students upon entry into each grade for grades six through nine. The results were used for placement purposes and determination of reading levels. Achieve

3000 program tracks growth in student achievement through a meta-metrics system employed to determine and track Lexile reading levels (http://www.achieve3000.com/). This reading program enables teachers to individualize reading instruction by monitoring each student's progress, individual goals, and inspiring confidence (McLean, 2012).

Each week students navigated through nonfiction selections based on individualized reading levels as determined by the initial LevelSet. Classroom teachers guided learners through the poll question to foster interest, discussion, learning, and growth. To complete the assignment, students were instructed on its purpose by receiving a lesson checklist (see Appendix A) as well as a Thought Question rubric (see Appendix B). Students were carefully and strictly apprised of the five phases of each lesson, including the following steps:

1. Step I Poll Question
2. Step II Read the article
3. Step III Review essential vocabulary
4. Step IV Eight-question assessment
5. Step V Thought Question

The checklist included a rubric for teacher and learner goals and objectives for students to maintain a listing of their progress. This occurred within the context of the students' classrooms. Students were given four hours of class time per month for the duration of the academic school year. All students were provided access to computer use during this time.

## Data Collection and Analysis

After Lexile growth scores were collected, access was granted. The data were downloaded into the Statistical Package for the Social Sciences (SPSS). Descriptive analysis of Lexile growth scores from each of the two Achieve 3000 LevelSet assessment (pretest, posttest) was calculated and reported. Inferential analyses consisting of a paired samples *t*-test was conducted to determine change in reading score between the pre and posttest assessments. This program analysis reviewed the independent variable, the Achieve 3000 differentiated reading instructional program and the dependent variable, LevelSet Lexile reading growth levels. Achieve 3000 represented the independent variable as the differentiated reading instruction program. The dependent variable for the study represented LevelSet Lexile levels with a range of 0-1600. This school year's data were collected at the conclusion of this academic year with time as an independent variable. The dependent variable of initial and final Lexile scores was collected.

In order to address Research Question One, does the method of technology-enhanced differentiated instruction through the use of Achieve 3000 impact Lexile growth reading scores in advanced middle grade learners, a paired samples *t*-test was conducted with time as the independent variable and Lexile growth scores as the dependent variable with a range of 0-1600. Time is the independent variable, and it was measured as Time 1 (pretest) and Time 2 (posttest). It was predicted there would be a significant difference in Lexile growth scores based on technology-enhanced differentiated instructional methods. It is a key component of the Achieve 3000 program that advanced learners excel with the technology-enhanced online platform catered to

challenging text at individualized levels to maximize significant reading performance (http://www.achieve3000.com/).

In order to answer Research Question Two, does Lexile growth differ by grade for sixth through eighth grade learners in technology-enhanced differentiated instruction through the implementation of Achieve 3000, a paired samples *t*-test was conducted with fixed time as the independent variable and reading Lexile level as the dependent variable. Lexile levels analysis of literature comprehension, complexity of informational text, and acquisition of vocabulary usage. Analysis was measured by comparing pre/post progression of Lexile levels. It was predicted that there would be a significant difference in Lexile levels based on technology-enhanced differentiated instruction; embedded reading material with stretch articles is predicted to yield this significant Lexile progress. To address academic need and progression within various reading Lexile levels, the Achieve 3000 program incorporates stretch articles designed two grade levels above individual Lexile levels with cross-curriculum informational text and vocabulary paired with writing platforms (http://www.achieve3000.com/).

## Protection of Participants' Rights

Prior to participating, all aspects of the study obtained approval by the Walden University IRB, and an informal agreement was established with the selected district via email. The IRB approval number for this study is 06-19-18-0141387. The participants' test scores remained strictly confidential and the names were removed from the test scores and a unique identification number were assigned to the participants prior to accessing of score data. To provide fidelity with implementation of the Achieve3000

program, teachers maintained the district-wide expectation of weekly activity completion with the ongoing goal of students scoring 75% or higher on the multiple-choice activity. Collected data remained stored in a secure setting including a locked filing system and a disk of content added to the locked filing system.

The risk to the participants was minimal in the program analysis. All testing (pre and posttest measures) was conducted as a regular part of the students' educational curriculum, and no additional testing procedures were required for participation in the study. The implementation of the program was considered minimal risk, as students at this level participated as part of their regular classroom activities and caused no harm or discomfort greater than that typically encountered in daily structured educational activities. Moreover, there was no identifying information collected from any of the students. The program is considered a benefit to the students who receive the individualized educational material and use of technology. Therefore, the results of the study may be beneficial in augmenting future educational outcomes; therefore, it is assumed the benefits outweighed the risks. Finally, all secondary schools in the district can expect to annually be provided with ongoing information, materials, and training for participation in the program.

# Chapter 4: Results

The purpose of this program analysis of the Achieve 3000 program was to determine the effectiveness of differentiated instructional practices with the use of technology on Lexile growth reading scores for advanced sixth through eighth grade learners. This path of inquiry included two key questions:

Research Question 1: Does the method of technology-enhanced differentiated instruction through Achieve 3000 impact Lexile growth reading scores for advanced sixth through eighth students?

$H_0$1: There is no impact on Lexile growth reading scores for advanced sixth through eighth students based on the method of technology-enhanced differentiated instruction through Achieve 3000.

$H_a$1: There is an impact on Lexile growth reading scores for advanced sixth through eighth students based on the method of technology-enhanced differentiated instruction through Achieve 3000.

Research Question 2: Does Lexile growth differ by grade for sixth through eighth grade learners in technology-enhanced differentiated instruction through the implementation of Achieve 3000?

$H_0$2: There is no difference in Lexile growth for sixth through eighth grade learners based on technology-enhanced differentiated instruction through the implementation of Achieve3000.

$H_a2$: There is a significant difference in Lexile growth for sixth through eighth grade learners in technology-enhanced differentiated instruction through the implementation of Achieve3000.

This chapter provides a summary of the data collection, analysis, and results that answered the two research questions for the Achieve 3000 program in this middle school setting.

## Research Tools and Analysis

The data analysis for this study was conducted using data from Achieve 3000 pretest and posttest LevelSet Lexile growth data. These data included Lexile scores from 120 students in grades 6 through 8. After Lexile growth scores were collected, access was granted. The data were downloaded into the Statistical Package for the Social Sciences (SPSS). The pre/posttest scores remained confidential with assigned unique identification numbers. Teachers maintained the expected goal of two activities per week with the ongoing goal of students scoring 75% or higher on the multiple-choice activity. Collected data remained in a secure setting including a locked filing system and a disk of content added to the locked filing system.

Descriptive analysis of Lexile growth scores from each of the two Achieve 3000 LevelSet assessment (pretest, posttest) was calculated and reported. First, descriptive analyses were run to understand the overall characteristics of the sample including mean scores and standard deviations on the pretest and posttest as well as the number of students in each grade level and the pretest and posttest scores for each grade level. Following the descriptive analysis, it was noted that there was one eighth grade outlier

with the lowest score of four standard deviations below the mean on the pretest and posttest. Based on the analysis of the outlier, this student was taken out of the remaining analyses.

Inferential analyses consisting of a paired samples *t* test was conducted to determine change in reading score between the pre and posttest assessments. This program analysis includes the independent variable, the Achieve 3000 differentiated reading instructional program and the dependent variable, LevelSet Lexile reading growth levels. Achieve 3000 represents the independent variable as the differentiated reading instruction program. The dependent variable for the study represents LevelSet Lexile levels with a range of 0-1600.

To address Research Question 1, a paired samples *t* test was conducted with time as the independent variable and Lexile growth scores as the dependent variable with a range of 0-1600. Time is the independent variable, and it was measured as Time 1 (pretest) and Time 2 (posttest). It was predicted and confirmed that there would be a significant difference in Lexile growth scores based on technology-enhanced differentiated instructional methods. It is a key component of the Achieve 3000 program that advanced learners excel with the technology-enhanced online platform catered to challenging text at individualized levels to maximize significant reading performance (http://www.achieve3000.com/).

To answer Research Question 2, a mixed design ANOVA was used to examine the effects of both time and grade on students' Lexile score post intervention.

## Nonnormal Distribution of Data

Data are to be normally distributed for data analysis when employing a *t* test and an ANOVA, which were the analyses used in this study. The Shapiro-Wilk test was used to test the sample for normality. The Shapiro-Wilk test was appropriate for the study due to the number of participants and reliability of testing correlation between corresponding scores and the data (Ghasemi & Zahediasl, 2012). Moreover, the Shapiro-Wilk test has been shown to have the most power of all tests of normality (Yap & Sim, 2011). The Shapiro-Wilk test was used to test for normality of the pre- and post-test scores of both the full sample and for each grade level. The results demonstrated that the data were not on a normal curve.

As shown in Table 3, the results of the Shapiro-Wilk normality test for the full sample were significant both for the pre- and post-test Lexile scores. When looking at the sample at each grade level, the results of the Shapiro-Wilk test were also significant for all but two grade levels on the pretest. The sixth-grade pretest Lexile scores prior to intervention and following intervention all three grade levels posttest Lexile scores were all nonnormal distributions because $p < .05$. As displayed below in Table 3, the two normal distributions are the seventh and eighth grade pretest Lexile scores because $p > .05$.

Table 3

*Shapiro-Wilks Results for Full Sample and Each Grade Level Lexile Scores Pre- and Post-Intervention*

| | Full Sample | | | Sixth grade | | | Seventh grade | | | Eighth grade | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stat | Df | Sig | Stat | Df | Sig | Stat | Df | Sig | Stat | Df | Sig |
| Pre | .976 | 119 | .031* | .874 | 39 | .000* | .986 | 42 | .888 | .976 | 38 | .564 |
| post | .897 | 119 | .000* | .897 | 39 | .002* | .936 | 42 | .021* | .815 | 38 | .000* |

*Note.* *Denotes significant result (i.e., that data is not on a normal curve)

Although the data in this sample are not on a normal curve as reported by the Shapiro-Wilks test of normality, there are reasons to continue with the analysis utilizing the *t* test and ANOVA to address the research questions in this study. First, the sample size in this study was 120 students which is a large enough sample to use inferential statistics and control for type 1 error, even when the distribution is not normal (Ghasemi & Zahediasl, 2012). Second, both the *t*-test and ANOVA analyses are robust statistical tests and can be utilized effectively and accurately even when the normality assumption has been violated (Ghasemi & Zahediasl, 2012). Thus, the analysis of these will still provide accurate findings utilizing these two statistical tests. The results of that analysis are presented next.

## Results

In regard to Research Question One, the first step was to determine the descriptive statistics for the entire sample of sixth through eighth grade students, including the mean and standard deviation of the Lexile scores on both the pre and posttest. The total original sample included 120 students all with pre and post scores. Grade level totals per

grade included 39 sixth graders, 42 seventh graders and 38 eighth graders. On the pretest, the scores ranged from 785 to 1595 with a mean of 1307.67 (*SD* = 147.82). On the posttest, the scores ranged from 1105 to 1600 with a mean of 1492.67 (*SD* = 102.87). Students increased their Lexile scores on the posttest by 185 points. The Achieve 3000 program currently maxes out at 1600 Lexile level. The findings show that a few students were able to reach this maximum capacity. It is notable recommendation for the program to expand its capacity to further grow the advanced population of learners.

A paired samples *t*-test was used to determine whether the difference between the pretest and posttest mean scores was statistically significant. The results of the *t*-test demonstrated that the difference was statistically significant ($t = 18.69$, $df = 119$, $p = .000$). Thus, the students performed significantly higher on the posttest.

However, further analysis of the individual scores demonstrated that the lowest score on the pretest and posttest (785 and 1105 respectively) belonged to the same advanced student who was in the eighth grade. This appeared to be an outlier as it was nearly four standard deviations below the mean on both the pretest and posttest for this advanced student. Thus, this outlier was removed from the sample and the analysis was re-run. The removal of the outlier made the distribution of scores closer to a normal curve.

Removal of the outlier changed the descriptive statistics of the sample. In particular, it reduced the standard deviation slightly, making the mean a better representation of the sample. This also made for a more normal curve. The total sample without the outlier included 119 students. On the pretest, the scores ranged from 905 to

1595 with a mean of 1312.06 (*SD* = 140.36). On the posttest, the scores ranged from 1245 to 1600 with a mean of 1495.67 (*SD* = 96.89). Students increased their Lexile scores on the posttest by 183.61 points.

A paired samples *t*-test was re-run used to determine whether the difference between the pre and posttest mean scores was statistically significant after the removal of the outlier. The results of the *t*-test without the outlier were very similar to the initial *t*-test. They demonstrated that the difference was statistically significant ($t = 18.55$, $df = 118$, $p = .000$). Thus, the students performed significantly higher on the posttest. Therefore, I reject the null hypothesis based on the above findings.

The results for Research Question Two explore the pretest and posttest results for each of the grade levels. In order to fully address Research Question Two, analyses to examine the effects of grade and time as well as any interaction between these two variables were conducted. Specifically, a 2x3 mixed design ANOVA was utilized to further unpack whether grade had any effect on students' post-intervention Lexile score. This included the within subject's variable of time (pre-post test score) and the between subjects variable of grade (sixth, seventh, and eighth grade).

The results of the mixed design ANOVA showed several statistically significant results. Therefore, I reject the null hypothesis based on the above findings. First, as noted below in Table 4, the main effect of time (pre-post) was significant ($F(1, 116) = 566.38$, $p = .000$). Students scored higher following participation in the Achieve 3000 program. The eighth grade had a mean gain of 149.87 with sixth grade at 279.88 mean gain and seventh grade at 125.48 mean gain.

Table 4

*Results of Mixed Design ANOVA*

| Effect | *F* | *Df* | *p-value* |
|---|---|---|---|
| Main effect time | 566.38 | 1, 116 | .000 |
| Main effect grade | 9.92 | 2, 116 | .000 |
| Interaction Effect | 38.04 | 2, 116 | .000 |

Table 4 demonstrates that the main effect for grade was also significant ($F(2, 116) = 9.92$, $p = .000$). Tukey post-hoc analyses demonstrated that the sixth-grade students' post scores ($M = 1494.62$, $SD = 93.33$) were significantly lower than the eighth-grade students' post scores ($M = 1531.58$, $SD = 81.86$) and that the seventh-grade students' post scores ($M = 1464.88$, $SD = 103.59$) were significantly lower than the eighth-grade students' post scores ($M = 1531.58$, $SD = 81.86$). There was no difference between the sixth grade ($M = 1494.62$, $SD = 93.33$) and seventh grade ($M = 1464.88$, $SD = 103.59$) post scores. In addition, as evident in both Table 7 and Figure 1, a significant time by grade interaction was present ($F(2, 116) = 38.04$, $p = .000$). Thus, students' scores on the posttest depend on the grade they are in and students in the sixth grade showed higher increases in Lexile score following the intervention than both the seventh and eighth grade students.

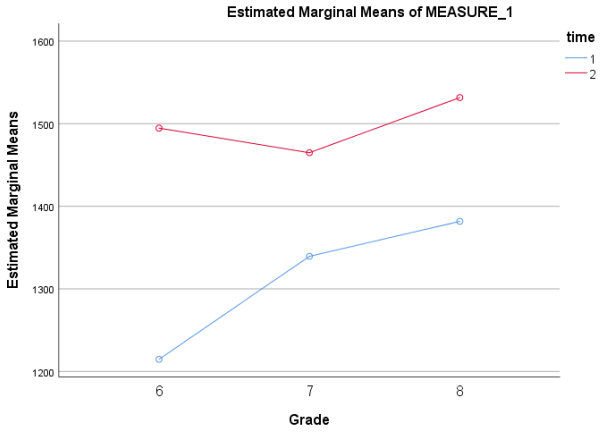


*Figure 1*. Marginal means in comparison of grade and time.

Next is the comparison of the scores across grade level to see the main effects of each of the independent variables (time: pre/post and grade level: 6, 7, and 8) as well as any interaction effects. These analyses were all run without the outlier noted above.

First, descriptive statistics were calculated to examine the number of students at each grade level as well as the mean scores for each grade level. Table 5 shows these descriptive statistics. Each grade level increased in Lexile score from the pre to posttest. The sixth-grade students increased the most (279.88 mean gain) while the seventh-grade students increased the least (125.48 mean gain). The eighth grade had a mean gain of 149.87.

Table 5

*Number of Students Pre- and Post-Lexile Scores by Grade Level*

| Grade level | *N = 119* | Pretest Mean (SD) | Posttest Mean (SD) |
|---|---|---|---|
| 6 | 39 | 1214.74 (133.07) | 1494.62 (93.33) |
| 7 | 42 | 1339.40 (129.04) | 1464.88 (103.59) |
| 8 | 38 | 1381.71 (101.88) | 1531.58 (81.86) |

A paired samples *t*-test was used to determine whether the increases in Lexile scores from the pretest to posttest were statistically significant for each grade level. The results of the *t*-test included in Table 6 demonstrated that for all three grades, the increase in students' scores following the intervention was statistically significant.

Table 6

*Paired Samples T-test Results for Each Grade Level*

| Grade level | *T* | *Df* | *p-value* |
|---|---|---|---|
| 6 | 14.41 | 38 | .000 |
| 7 | 12.54 | 41 | .000 |
| 8 | 17.60 | 37 | .000 |

## Summary

The findings reveal that the sixth grade through eighth grade students demonstrated measurable progress in Lexile gains as evidenced by the results of the pre/post assessments. It is expected that students will make an average Lexile gain of 75 – 100 (http://www.achieve3000.com/). With the outcome of this study, students actually increased their Lexile levels by an average of 183.61 points. The findings also exemplify the least growth with seventh grade advanced learners with the average gain of 125.48 and the greatest growth with sixth grade advanced learners with the average gain of 279.88. Overall, students exemplify significant progress following participation in the differentiated, technology-based program of Achieve 3000.

# Chapter 5: Discussion, Conclusions, and Recommendations

## Introduction

The purpose of this program analysis of the Achieve 3000 program was to determine the effectiveness of differentiated instructional practices with the use of technology on Lexile growth reading scores for advanced sixth through eighth grade students. This program analysis is significant in addressing this gap in practice by providing evidence to better understand the effectiveness of differentiated instruction with technology integration on reading proficiency of advanced learners. Additionally, the findings can lead to positive social change by indicating that concise and consistent implementation of technological components through differentiated instruction yields significant growth outcomes for sixth through eighth grade middles school students.

## Interpretation of the Findings

Computer-based instruction can be beneficial in increasing meaningful text interaction and reading progress (Fenty et al., 2015). Students in this setting engaged in weekly nonfiction selections based on individualized reading levels as determined by the initial LevelSet for the computer-based reading program, Achieve 3000. With routine and consistent training from the building level literacy coach, teachers instructed learners with weekly readings through poll questions for setting the lesson's objectives, inquiry, and discussion for the ultimate goal of potential growth. For each week's assignment, teachers navigated students through the weekly lesson checklist (see Appendix A) and Thought Question rubric (see Appendix B). It remained a regular expectation for learners to complete the 5-phase lesson:

- Step I Poll Question
- Step II Read the article
- Step III Review essential vocabulary
- Step IV Eight-question assessment
- Step V Thought Question

An additional aspect of each week's lesson included ongoing tracking of learning and weekly performance with each passage and assignment. Each week's lesson was completed during class time. Through the academic school year, weekly lessons consisted of approximately four hours of instructional class time each month. The literacy coach coordinated computer carts for each grade team throughout the school year, and all students were consistently provided regular, efficient computer access during this time.

Outcomes of this study show that sixth through eighth students performed significantly higher on the Achieve 3000 posttest after weekly systematic, explicit instruction through the computer-based Achieve 3000 program. The results of a *t*-test demonstrated that the difference between pre- and post-test mean scores was statistically significant. Thus, the students performed significantly higher on the posttest at a total Lexile increase of 183.61 across all three grades.

The second area of focus related to the results of the pretest and posttest for each grade level as compared across the grades. The key independent variables included both time and grade. Descriptive statistics facilitated an examination of students and the mean

scores for each grade. Additionally, the paired samples *t*-test was used to determine significance of increases in scores from the pre- to post-test.

A mixed design was employed due to two different independent variables—one within and one between subjects. The mixed design ANOVA accommodated for these two different types of variables. The mixed design allows for analysis of repeated measures while comparing within and between variables (Kim, 2014), thus enabling the comparison between participants across grades for the pre/post scores. For the study in this particular district, the findings reveal that sixth-grade advanced learners provided the greatest Lexile gains. Although sixth grade students yielded the greatest growth, their Lexile levels were lower than those of the seventh and eighth grade students. Maturation and student engagement may be contributing factors. Although the focus of the study was specific, such factors outside the focus of the study provide opportunity for additional research studies.

Based on scientific research, this Achieve 3000 program provides individualized instruction for engaging students at their instructional levels based on the pretests and challenging students through routine literacy lessons (http://www.achieve3000.com/). Recent instructional trends reveal that computer-assisted instruction is surfacing as a resource for targeting ongoing, quality reading instruction (Fenty et al., 2015). This program analysis of the Achieve 3000 program exemplifies that regular attention to differentiated reading instruction and opportunity through technology integration can yield positive reading gains for advanced learners in similar instructional settings.

Limitations of the study included size, instructors, and demographics. While the study primarily focused on the advanced population of each grade, additional research can be conducted to explore similar findings for struggling readers in similar school district settings. Secondly, the findings show that sixth grade students held the most dramatic growth. Further studies may yield insight into the varying dynamics in grades and instructors with regards to teaching style and common delivery of instruction. With regards to the greatest Lexile gain with sixth grade advanced learners, one additional area of exploration incudes reading and younger learners. The question remains as to whether reading growth is greater based on grade. The overall result of the findings shows that the program significantly benefits advanced learners. Additional research can be conducted to review if results are similar for struggling learners. This yields the subsequent exploration as to what similarities and differences exist between the two groups (i.e. growth mindset, competitiveness, etc.) Furthermore, while it was not a factor for the study, subsequent information can be derived from demographical information, as well. Economic status, cultural patterns and cultural barriers are key components that potentially hold the capacity to greatly impact academic success for students (Sanders, 2017).

## Implications for Social Change

While the problem presently exists that a significant proportion of students who score advanced in reading are either stagnate or decreasing in percentiles on the annual state reading assessments for this particular setting, there was a need to investigate implications of the Achieve 3000 program for its capacity to potentially address the

issues of lack of reading growth for advanced learners. As exemplified in the body of this research, this particular district is comprised of a substantial number of advanced learners and a lower proportion of struggling readers. Also, as previously expressed, the decreasing percentiles on the state reading achievement test for advanced middle school students for this deidentified district is noteworthy because middle grades are that last chance students have to solidify instructional ground before transitioning into high school. Therefore, by addressing this gap in practice of ongoing reading progress with advanced learners, improvement can be made to increase overall reading progress for students in like settings.

For this particular district it is worthwhile to continue with the initiative of utilizing the computer-based reading program of Achieve 3000 for the regular, routine expectation of an ELA instructional lesson differentiated based on Lexile level. This differentiated program allowed advanced learners the opportunity and resource to individually excel in the area of reading when provided weekly instructional time in ELA class as demonstrated in this particular setting. Based on the findings, the differentiated computer-based reading program allowed for significant Lexile growth. While the program initially presented the ability to help struggling readers grow, these findings confirm the same capacity for advanced learners, as well.

## Recommendations for Action

Engaging in this doctoral research study has been both rewarding and challenging. The knowledge, insight and skill set acquired will continue to provide ongoing benefits. Additionally, by focusing on the advanced learner a pathway of information and interest

is piqued for continuous exploration. In a district that is significantly saturated with this specific demographic, this is an area of importance and cycling review. The district remains motivated in seeking different avenues to expand learning by way of differentiation, technology integration and rigorous text. Professional development, ongoing modeling by district leaders and instructional coaches and further solidification of implementation of Achieve 3000 with rich, complete fidelity will remain key targets for the district.

## Recommendations for Further Study

While the annual state assessment scores are not currently available for reporting, the gains with the Achieve 3000 program for this group of students lend itself to conclude that there should be increases to the annual state assessment scores. Because the results of this study do indicate that the Achieve 3000 program made a significant statistical difference in reading achievement, this provides foundational information that can be used to further improve reading progress for advanced students. Additionally, because of the significantly positive outcomes, the information can be used in solidifying implementation guidelines. Additionally, this study provides a baseline for other schools, districts and researchers to monitor the competency of reading programs in addressing the needs of advanced students in the general education setting. Schools and districts should continue to explore the Achieve 3000 reading program and further implement quality instructional practices to maximize support to advanced students.

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Appendix A: Independent Guidelines for Students

Step I Poll Question

Step II Read the article

Step III Review essential vocabulary

Step IV Eight-question assessment

Step V Thought Question

I. Response to the poll question:

_____

_____

II. Annotations to the article:

_____

III. List of essential vocabulary and contextual meaning:

_____

IV. Eight-question assessment:

Starting date - _____ Concluding date - _____

Date Score Student's initials Teacher's initials

_____

_____

_____

_____

_____

V. Thought Question:

Written response (3 paragraphs, double-spaced, 12 pt, Times font.

# Appendix B: Thought Question Rubric

Introductory Paragraph (25 pts)

___ Includes three key points as referenced in the text

___ Three to five sentences

___ Quality vocabulary

___ Free of errors

___ Includes one phrase/clause

Body

___ Refers to key concepts as referenced in the text

___ Six to eight sentences

___ Quality vocabulary

___ Free of errors

___ Good use of transitional/introductory terms

Conclusion

___ Refers back to key introductory points

___ Three to five sentences

___ Quality vocabulary

___ Free of errors

___ Includes one phrase/clause