IMPROVING THE ACADEMIC ACHIEVEMENT OF UNDERPERFORMING GIFTED STUDENTS IN ELEMENTARY SCHOOL

By

Leslie Knight Hayes

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Director of Dissertation: Dr. R. Martin Reardon
Department of Educational Leadership

Teachers are responsible for growing students academically, intellectually and socially in North Carolina. Teachers receive various levels of AIG training during their time spent pursuing their education degrees. Not all teachers are prepared to meet the unique needs of gifted students. Most gifted students at Eastern North Carolina (ENC) School are excelling, but some of them are not reaching their full potential. Research suggests that the underperformance of gifted students may be counteracted when students are ability grouped and provided with differentiated instruction.

According to the Statistical Analysis System (SAS) Education Value-Added Assessment System (EVAAS), gifted students at ENC School achieved -2.89 points below the growth they were supposed to achieve overall in the 2021-2022 school year. The 2021-2022 school year was not an outlier year because a portion of gifted students have historically underachieved on benchmark assessments and End of Grade assessments. The goal of my study was to increase overall academic success of gifted students in math and reading at ENC School. This study employed a mixed-methods approach, combining quantitative and qualitative data to provide a comprehensive analysis of instructional impacts. Using EVAAS data, focus group responses, teacher surveys and student surveys were collected and analyzed to determine if ability grouping and differentiated instruction positively impacted students' achievement and goal valuation. This

study utilized goal valuation, a key component of the Achievement Orientation Model, which examines the extent to which students perceive academic tasks as meaningful and valuable. The Plan Do Study Act design was also followed. Nineteen Grade 4, 18 Grade 5 and 21 Grade 6 students at ENC School participated in my study.

Findings indicate that differentiation and ability grouping had a positive effect on goal valuation and achievement outcomes. As a result of this study, previously underperforming gifted students valued tasks in reading and math. The majority of gifted students also demonstrated better results academically. These findings have important implications for educators and administrators who want to enhance learning for gifted students. Schools may benefit from implementing differentiated instruction and flexible ability grouping.

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A Dissertation

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Leslie Knight Hayes

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Director of Dissertation: R. Martin Reardon, PhD
Dissertation Committee Members:
Karen Jones, PhD
Travis Lewis, EdD
Matthew Cheeseman, EdD
Steve Lassiter, EdD

DEDICATION

I would like to dedicate my dissertation work to my family who have encouraged me along the way. To my husband, Nicholas “Trey” Hayes, thank you for your unwavering support and encouragement. I will forever be grateful for all the moments you stepped in for our family when my dissertation work pulled me away.

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CHAPTER 1: INTRODUCTION

Gifted education programs vary widely in concept and implementation across the United States, as noted Rinn et al., (2022). Although federal law recognizes gifted students' unique needs according to NC General Statute - Chapter 115C Article 9B 2, it does not require specific provisions or requirements for serving these children. As a result, gifted education is a responsibility of the local education agency under the guidance of the state department of education and the quality of that education depends on leadership at the local school level. Leaving the delivery of gifted education services largely to the individual school leaders increases variability in the quality of services while prioritizing the importance of local control that takes context into account.

Teachers are responsible for growing gifted students academically, intellectually, and socially in North Carolina. As stipulated by the North Carolina Department of Public Instruction [NCDPI] (2023), Academically or Intellectually Gifted (AIG) students require differentiated educational services beyond those ordinarily provided by the regular educational program so they can fully take advantage of their gifts.

Rowan and Townsend (2016) suggest that teachers may not be adequately prepared to instruct gifted students. Their study produced data indicating that only 63.7% of the teachers polled felt prepared to teach students with a range of abilities.

Teachers receive various levels of AIG training during their time spent pursuing their education degrees. Some university programs provide a class on meeting the needs of gifted students while others provide less information or more. During their teaching careers the level of support also varies. Some districts provide some training while others provide frequent training.

Some districts provide gifted education training only to those that oversee the gifted program in each school (Hammerschmidt, 2017; Hofer, 2023).

According to Wai and Lovett (2021), the importance of meeting the academic needs of gifted students goes beyond the student. They highlight the benefits and potential for global societal innovation and flourishing stemming from gifted students receiving instruction that matches their talents. Although most gifted students excel academically (Obergriesser & Stoeger, 2015), some underachieve. Suboptimal learning environments, problematic peer relations, lack of personal motivation, and lack of differentiated learning materials lead to underachievement in gifted students. Such underachievement is problematic because exceptional human capital drives the global economy. For example, research shows that individuals identified by age 13 as possessing profound mathematical and verbal reasoning abilities develop into exceptional contributors in their respective fields (Kell et al., 2013).

A portion of our gifted population at Eastern North Carolina School (ENC), a pseudonym for the site of this study, historically underachieves on benchmark (formative) and End-of-Grade (summative) assessments. At the beginning of the 2023 school year, a portion of gifted students performed below grade level on the beginning of the year iReady diagnostic. Had this not been addressed, gifted students at ENC School may not meet their full potential, and society may not benefit from their intellectual capacity and curiosity. This study investigated the factors causing some gifted students to underperform and responded by implementing a possible intervention: differentiated instruction and ability grouping.

Background of Focus of Practice

Meeting gifted students' academic, social, and emotional needs provides them with the foundation needed to reach their full potential and, ultimately, positively contribute to society.

Wai and Lovett (2021) emphasized the importance of investing in fully developing gifted students, who will be primarily responsible for innovation across multiple fields of intellectual and creative initiatives in the future. The talents of gifted individuals can improve our lives in the most extraordinary ways because they have the ability to generate new ideas and innovation. The scientists who developed the coronavirus disease of 2019 (COVID-19) vaccine, Katalin Kariko, Ugur Sahin, Albert Bourla, and Ozlem Tureci, are current examples of gifted individuals drastically improving lives (Gelles, 2020). The discovery of the chlorination of water, smallpox eradication strategy, measles vaccine, penicillin, and multiple other examples similarly demonstrate contributions of gifted individuals to society. As such, a small cohort of around 100 scientists saved over 5.5 billion lives (Pinker, 2018).

Ziernwald et al. (2022) analyzed forty-nine studies and determined that differentiated instruction positively impacted high-achieving students' academic achievement and motivational-affective characteristics. Differentiation is defined as tailoring instruction to meet individual needs (Tomlinson, 2015). Ability grouping has been described to counteract problematic peer relations. In regular education settings with students not identified as gifted, gifted students often lack opportunities for adequate emotional acknowledgment (Miedijensky, 2018). However, when gifted students were grouped with other gifted students, they reported stronger relationships, increased motivation, and less social stigma surrounding their giftedness (Redding & Grissom, 2021). This study was needed to understand better if differentiation and ability grouping would encourage the success of gifted students, so they maximize their potential by positively contributing to society.

Context of Study

During the study, ENC School had 954 students in Grades pre-k through 8. Of those, 19%, 179 students, were identified as gifted students. ENC School District uses the Multiple Criteria Indicator (MCI) to determine who qualifies. The formula for ID is MCI total score (363 points) = (Aptitude (doubled) + Achievement (math and reading) + Grades). Students that demonstrate high achievement in math or reading on End of Grade testing or a nationally normed achievement test + grades can qualify for differentiated instruction in that identified area by the AIG teacher. MCI Total Score (183 points) = (Aptitude + Achievement (math or reading) + Grade) Most identification occurs at the end of the 3rd grade year. However, all students are monitored for giftedness until they reach high school. The Statistical Analysis System (SAS, 2023) Education Value-Added Assessment System (EVAAS) has the following three categories of growth data: exceeds expected growth, meets expected growth and does not meet expected growth (see Table 1). According to EVAAS, gifted students at ENC School achieved - 2.89 points below the growth they were supposed to achieve overall during the 2021-2022 school year. Gifted students at ENC School achieved 1.99 above the growth they were expected to achieve during the 2022-2023 school year (see Table 2). District comparison data for the 2021-2022 school year and 2022-2023 school year showed that many schools struggle with growing gifted students (see Table 3). In math, at ENC School, during the 2021-2022 school year, gifted students performed -2.23 points below the growth they were expected to achieve (see Table 4). In reading, during that same year, gifted students performed -1.8 below expected growth (see Table 4). Subgroup data for the 2022-2023 school year showed growth improved from 2021-2022 to 2022-2023, but only to the met category, not the exceeded category which is always the goal.

Table 1

EVAAS Growth Levels

Growth Level	Growth Definition
Exceeds Expected Growth	Significant evidence the students made more growth than expected (2 or greater)
Meets Expected Growth	Evidence the students made growth as expected (between -2 and 2)
Does Not Meet Expected Growth	Significant evidence the students made less growth than expected (less than -2)

Table 2

EVAAS Data for AIG Subgroup Overall at ENC School

Subgroup	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
AIG	-0.40	n/a	n/a	-2.89	1.99

Table 3

2021-22 and 22-23 School Performance Growth for Academically and Intellectually Gifted Students

Name	21-22	22-23
School 1	Met -1.65	Met .73
School 2	N/A	Met -0.99
School 3	Met -0.60	Met 0.46
School 4	Met -0.18	Met 1.32
School 5	N/A	N/A
School 6	N/A	N/A
School 7	Exceeded 2.28	Met -1.89
School 8	Met -0.43	Not Met -3.53
ENC School	Not Met -2.89	Met 1.99
School 9	Not Met -0.55	Met -0.99
School 10	N/A	N/A
School 11	Not Met -2.71	Not Met -2.03
School 12	Exceeded 2.85	Met 0.46

Table 3 (continued)

Name	21-22	22-23
School 13	Met 0.13	Met 0.30
School 14	Exceeded 4.26	Met 0.98
School 15	Met -0.22	Met -0.26
School 16	Met 1.04	Met -0.43
School 17	Met -0.61	Not Met -2.04
School 18	N/A	N/A
School 19	Exceeded 2.23	Exceeded 3.98
School 20	Exceeded 2.80	Met 1.91
School 21	N/A	N/A
School 22	N/A	Met 0.83
School 23	N/A	N/A
School 24	N/A	N/A
School 25	N/A	N/A
School 26	Met 0.38	Met 1.70
School 27	Not Met -3.05	Not Met -2.54
School 28	N/A	N/A

Table 3 (continued)

Name	21-22	22-23
School 29	Exceeded 2.16	Met 0.38
School 30	N/A	N/A
School 31	N/A	Not Met -3.21
School 32	N/A	N/A
School 33	N/A	N/A
School 34	Met -1.72	Not Met -3.60
School 35	N/A	N/A
School 36	Met 1.32	Met 0.61
School 37	Met 1.33	Met 1.49

Table 4

AIG Growth at ENC School by Grade 2021-2022

Grade	Reading	Math
4th	-3.28	-0.07
5th	-0.75	-4.96
6th	-2.33	-0.26
7th	1.06	0.19
8th	0.71	0.14
Overall	-1.80	-2.40

Gifted students achieved 1.99, which is meeting growth, overall during the 2022-2023 grade level. Gifted students scored 1.22 and met expected growth in reading. Gifted students scored 1.51 and met expected growth in math. The school did not meet the goal of exceeding growth expectations. Although, the gifted subgroup improved their performance from the previous year, they did not exceed growth which is the desired goal (see Table 5). In September of 2023, gifted students completed a beginning of the year iReady diagnostic assessment. A portion of gifted students underperformed. In reading, 19% of Grade 4 students, 27% of Grade 5 students and 17% of Grade 6 students scored below grade level. In math, 6% of Grade 4 students, 3% of Grade 5 students and 2% of Grade 6 students scored below grade level.

According NCDPI (2023), End of Grade (EOG) tests report four achievement levels (i.e., Not Proficient, Level 3, Level 4, and Level 5). Schools are given grades ranging from A-F based on their performance in North Carolina. This is determined by a formula combining student achievement (80%) and student growth (20%) to assess accountability. Student test scores drive the report card outcome. Students who score Not Proficient on an EOG demonstrate an inconsistent understanding of grade-level content standards and will need support. Students who score a Level 3 indicate a sufficient understanding of grade-level content standards though some support may be needed for them to interact with the content the following year. Students that achieve a Level 4 exemplify a thorough understanding of grade-level content standards and are on track for career and college. Finally, students that score a Level 5 demonstrate a comprehensive understanding of grade-level content standards, are on track for career and college and are prepared for advanced content the following year. High-stakes End-of-Grade testing places insurmountable pressure on classroom teachers. Teachers often concentrate on

Table 5

AIG Growth at ENC School by Grade 2022-2023

Grade	Reading	Math
4th	.17	-.35
5th	-.83	-1.58
6th	.92	4.09
7th	2.22	-1.21
8th	-.34	2.83
Overall	1.22	1.51

meeting the needs of average-ability and lower-ability students while underestimating the needs of gifted students (Ntamu & Oyo-Ita, 2022). As a result, inequities may exist, contributing to the underachievement of gifted students. There was evidence of this at ENC School. Lesson plans indicated that most activities developed by the teachers at ENC school supported grade-level and below-grade-level-students. During the Covid Pandemic teachers were not prepared to teach virtually and were consumed with navigating virtual learning tools and student needs and not always intentional about meeting the needs of gifted students (Guilbault & McCormick, 2021).

The instruction provided by the majority of teachers leads non-gifted students to meet or exceed expectations. Every subgroup, with the exception of gifted students, met or exceeded growth according to EVAAS during the 2021-2022 school year. During the 2023-2023 school year, the gifted subgroup met growth, but did not reach the goal of exceeding. Not all teachers' instruction led to gifted students meeting or exceeding expectations. The goal of the study was to balance the educational needs of gifted students compared to their non-identified peers through ability grouping and differentiated instruction, positively impacting goal valuation leading to an increased number of gifted students scoring at or above grade level on the end of year iReady diagnostic assessment.

Statement of the Problem of Practice

The goal of my study was to increase the overall academic success of gifted students in math and reading at ENC School. I planned to do this by grouping them by ability levels and providing them with differentiated instruction. I also hoped to increase their motivation and the value they place on their learning.

Level 3 is passing on the EOG tests and Levels 4 and 5 are considered college and career ready. Although most gifted students at ENC School earn a proficient score on EOG tests, not all

scored at Level 4 or 5 during the 2021-2022 school year. The following percent of gifted students scored a Level 4 or 5 on the EOG test in reading: 84.6% in Grade 4, 90.3% in Grade 5, 63.4% in Grade 6, 85.7% in Grade 7 and 83.3% in Grade 8. Math EOG test data indicated scores more aligned with student ability. In Grades 4 through 8, more than 95% of gifted students scored a Level 4 or 5 (see Table 6). During the 2021-2022 school year ENC School, according to EVAAS, the gifted student subgroup did not meet expectations in math and reading. The following percent of gifted students scored a Level 4 or 5 on the EOG tests in reading: 91.7% in Grade 4,79.4% in Grade 5, 90.5% in Grade 6, 85.4% in Grade 7 and 74.3%in Grade 8. Math EOG test data indicated scores more aligned with student ability. In Grades 4 through 8, more than 95% of gifted students scored a Level 4 or 5 (see Table 7). According to EVAAS, the gifted student subgroup met growth in math and reading at ENC School during the 2022-2023 school year. Research shows that some gifted students underachieve due to various factors, including suboptimal learning environments, problematic peer relations, lack of personal motivation, and lack of differentiated learning materials (Obergriesser & Stoeger, 2015).

Additionally, in regular education settings with students not identified as gifted, gifted students often lack opportunities for adequate emotional acknowledgment (Miedijensky, 2018). Further, problematic peer relationships played a significant role in the underachievement of gifted students (Desmet & Pereira, 2021). Desmet and Pereira (2021) reported that gifted students fail to develop self-regulation skills due to the absence of intellectually stimulating learning experiences some encounter in elementary school. This lack of development is exacerbated by teachers paying the most attention to the needs of average-ability students and lower-ability students, minimizing the needs of gifted students (Ntamu & Oyo-Ita, 2022).

Table 6

AIG Students at ENC School Scoring Level 4 or 5 on 2021-2022 End of Grade Assessments

Grade	Math	Reading
4th	>95%	84.6%
5th	>95%	90.3%
6th	>95%	63.4%
7th	>95%	85.7%
8th	>95%	83.3%

Table 7

AIG Students at ENC School Scoring Level 4 or 5 on 2022-2023 End of Grade Assessments

Grade	Math	Reading
4th	>95%	91.7%
5th	>95%	79.4%
6th	>95%	90.5%
7th	>95%	85.4%
8th	>95%	74.3%

Inequitable attention makes gifted students bored due to the absence of challenging tasks and instruction. This speaks to the need for differentiation to be provided.

Plucker and Callahan (2020a) stated that flexible ability grouping was the most effective strategy for promoting advanced learning. Nevertheless, grouping students by ability has been controversial in American public education (Vergon, 2023). Ability grouping experienced a rise in popularity that coincided with the introduction of intelligence testing into public education in the early 20th century. However, in the 1960s, ability grouping came under fire because, in some instances, it functioned as a de facto form of racial segregation, separating white students from their African American peers, who often suffered from academic deficiencies due to poverty and discrimination.

The Achievement Orientation Model (AOM) indicates that students' feelings regarding self-efficacy, the tasks they value, and their beliefs about the environmental support they receive determine their willingness to self-regulate and achieve. According to AOM, a critical belief for high achievement in gifted students is that they are self-efficacious. The efficacious idea must accompany a growth mindset and a willingness to develop those talents. In addition to acknowledging they have the skills to be successful, students must also appreciate tasks and find them significant before they engage. Environmental perceptions are another significant component of the AOM. Gifted students put effort into areas where they feel they can succeed and believe they are supported (Siegle et al., 2017).

A portion of our gifted population at ENC School historically underachieves on benchmark assessments and End-of-Grade assessments. This study investigated the factors causing some gifted students to underperform and responded by implementing a possible intervention.

Study Guiding Questions

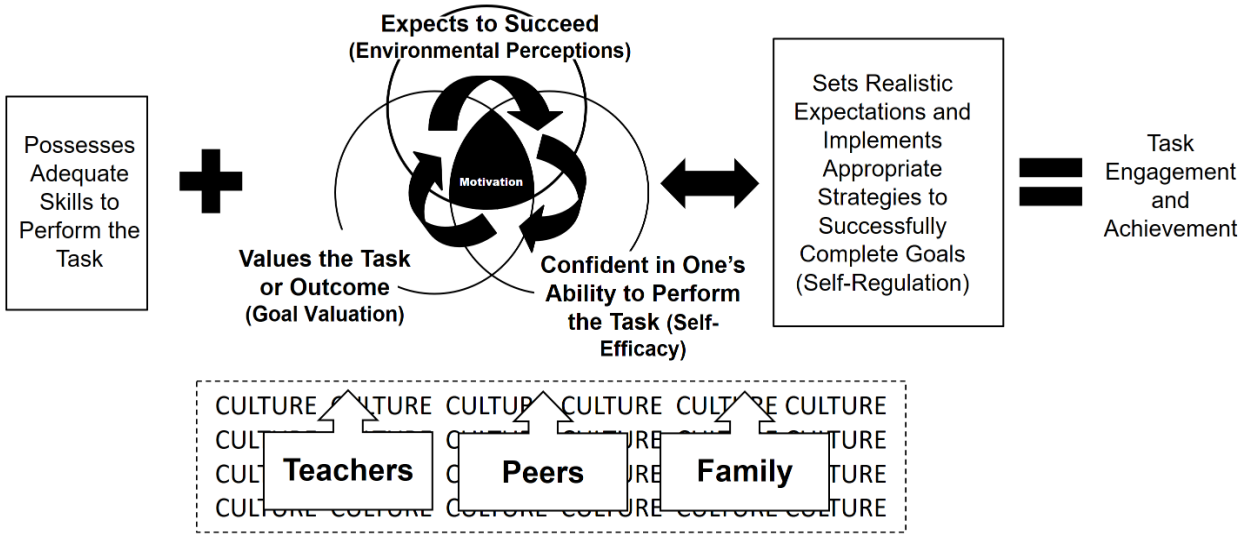
The questions guiding my study are as follows:

1. What influence will ability grouping and differentiated instruction have on goal valuation for gifted students at ENC School in reading and mathematics in Grades 4, 5, and 6?
2. What is the relationship between changes in goal valuation and achievement outcomes in reading and mathematics for gifted students at ENC School in Grades 4, 5, and 6?
3. How do teachers perceive the impact of ability grouping and differentiated instruction in reading and mathematics on gifted students at ENC School in Grades 4, 5, and 6?

Overview of Study

This study utilized an explanatory-sequential, mixed methods design grounded in improvement science (Mertler, 2021). A mixed methods approach includes at least one quantitative and one qualitative component in a single study and they build on one another (Mertler, 2021). I decided to utilize a mixed methods design after discovering that one type of data source would not be sufficient. According to Mertler (2021), a mixed methods design should be used when a study aims to enhance understanding by embedding two types of data. I used the Achievement Orientation Model design to answer the guiding questions of the study (Siegle et al., 2017; see Figure 1).

As shown in Figure 2, my study consisted of a Plan-Do-Study-Act (PDSA) cycle (*PDSA cycle - The W. Edwards Deming Institute*, 2023). The Plan phase of the cycle involved gathering participate in my study. In addition, I laid out and refined the details of my intervention, garnered and analyzing data on which to base my evaluation of the ability of students whom I invited to



Note. (Siegle et al., 2017).

Figure 1. AOM conceptual model.

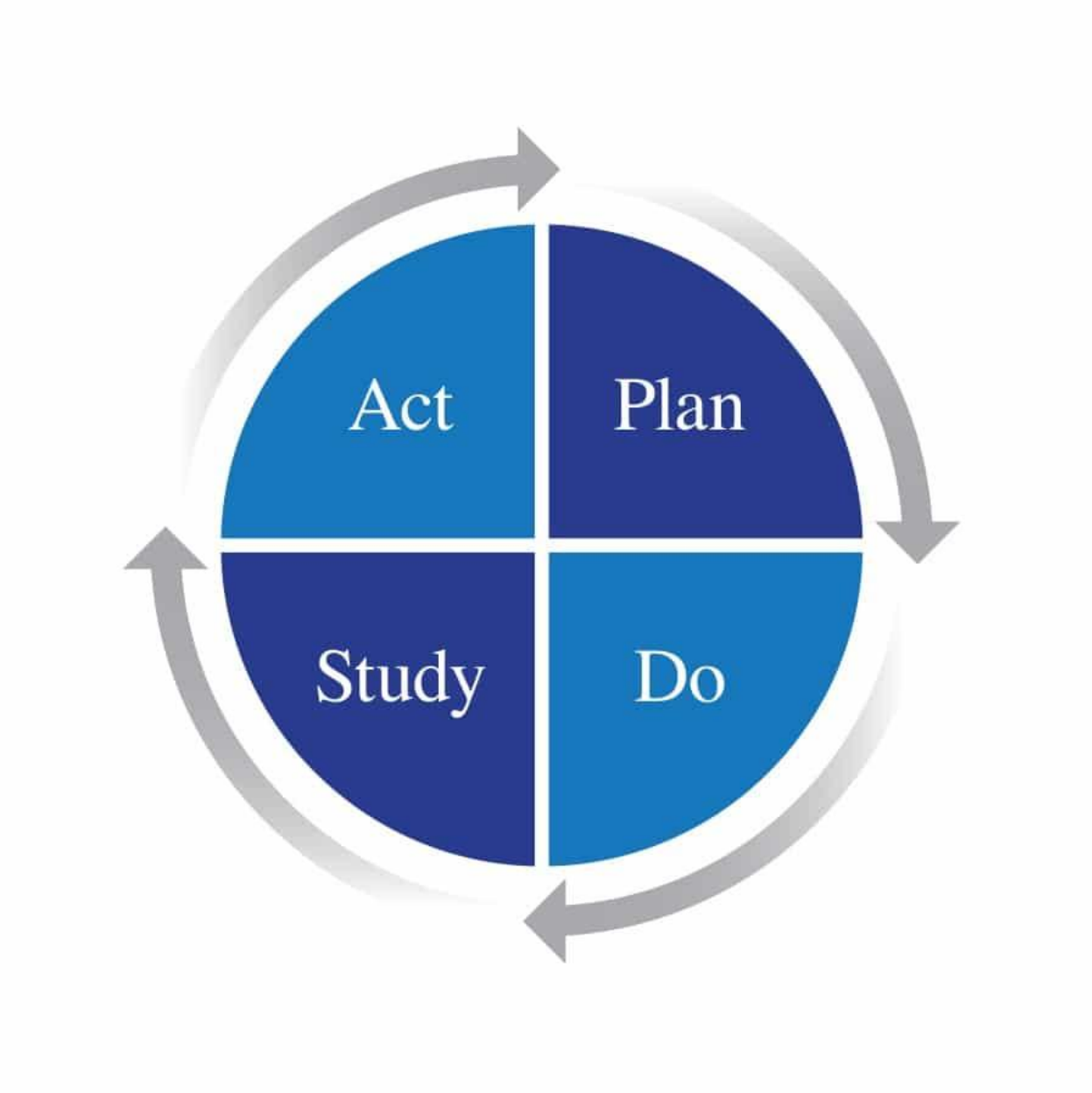


Figure 2. Plan Do Study Act design.

support from teachers and students and collaboratively established attainable goals. In the subsequent Do phase of the cycle, I made professional development available to the participating teachers and closely followed their implementation of my intervention. In the Study phase of the cycle, I collected and analyze the data, assessed to what extent the initial goals were attained and contemplated what adjustments might have made a difference for the participants—both teachers and students. The final Act phase involved further data gathering and analysis of feedback from teachers, and students oriented to making decisions about the adoption, adaptation, or abandonment of the intervention that I initiated.

Study Partners

I worked with study partners at the school and district levels to strengthen the academic achievement of gifted students at ENC School. At the school level, general education teachers, AIG program teachers, the instructional coach, and administrative team members formed the study team to collaborate on data collection and analysis. At the district level, the Director of the AIG program served as a study partner. His role in the study was to serve as a thought partner.

Conceptual Framework

According to Siegle et al. (2017), the Achievement Orientation Model (AOM) grounds individuals' self-perceptions in three areas: self-efficacy, goal valuation, and environmental perceptions. These areas interact to guide students to self-regulate their behaviors and subsequently engage and achieve. Additionally, cultural and societal values influence students' attitudes toward self-efficacy, goal valuation, environmental perceptions, and their ability to self-regulate through students' interactions with their peers, parents, and teachers. The intensity of gifted students' positivity in the three areas need not be equally strong. However, it must be positive for the student to succeed. The AOM is an ideal model for this study because the

components have been proven to be linked to the underachievement of gifted students (Siegle et al., 2017). Although all components support gifted students in some way, for this study I focused solely on goal valuation. I determined the effects of ability grouping and differentiation on goal valuation, and the effects of positive goal valuation on student achievement outcomes.

Definition of Key Terms

Several key terms are referred to throughout this study and are defined as follows:

Ability Grouping – in the United States the separation of elementary and secondary students into classrooms or courses of instruction according to their actual or perceived ability levels (Feuchter & Preckel, 2022).

Academically and Intellectually Gifted (AIG) – students perform or show the potential to perform at substantially high levels of accomplishment when compared with others of their age, experiences or environment (NCDPI, 2023).

Accountability Model –the process of evaluating school performance on the basis of student performance measures (NCDPI, 2023).

Achievement Orientation Model (AOM) – The Achievement Orientation Model suggests that developing talent is a choice influenced by three key factors: self-efficacy, goal valuation, and environmental perceptions. These factors shape motivation and work with self-regulation to foster engagement and achievement (Dixson et al., 2021).

Differentiation – tailoring instruction to meet individual student needs (Tomlinson, 2015).

End of Grade (EOG) – tests designed to measure student performance on the goals, objectives, and grade-level competencies specified in the North Carolina Standard Course of Study (NCDPI, 2023).

Education Value-Added Assessment System (EVAAS) – for K-12 is a customized software system available to all North Carolina school districts. EVAAS provides North Carolina's educators with tools to improve student learning and to reflect and improve on their own effectiveness (NCDPI, 2023).

Enrichment – Enrichment pedagogy enable students to experience advanced-level learning, critical and creative thinking and problem solving, and the motivation to pursue rigorous and rewarding work (Reis et al., 2021).

Expected Growth – Growth expectation is based on the average amount of academic growth for all students across the state (EdNC, 2023).

Flexible Ability Grouping – provides opportunities for students to be part of many different groups based on their readiness, interest, or learning style. These groups may be homogenous or heterogenous. They may be student-selected or teacher-selected. Group assignments may be purposeful or random. Groups may work together for a day or a month. Flexible grouping also provides opportunities for independent work (NCDPI, 2023).

iReady Diagnostic – an adaptive assessment that adjusts its questions to suit your student's needs. Each item a student sees is individualized based on their answer to the previous question (Curriculum Associates, 2023).

iReady Personalized Instruction – provides students with lessons based on their individual skill level and needs (Curriculum Associates, 2023).

Plan-Do-Study-Act (PDSA) – The PDSA Cycle (Plan-Do-Study-Act) is a systematic process for gaining valuable learning and knowledge for the continual improvement of a product, process, or service (*PDSA cycle - The W. Edwards Deming Institute*, 2023).

Underachiever – an incongruence between potential (usually as measured by IQ) and performance (especially in daily school work and/or grades) (Seeley, 2004).

Walkthrough – Walkthroughs are an informal, nonevaluative measure for collecting valuable information to inform improvement efforts (Westcott, 2010).

Assumptions

Several assumptions were made to advance this study. Firstly, it was assumed that the participants involved in data collection and implementing the potential intervention were fully committed to the study. This commitment was based on their role as educators and their expressed interest in identifying an intervention that could positively impact the underperformance of gifted students. It was assumed that the participants willingly chose to participate in the study, indicating their motivation to contribute to the research. Their voluntary participation reflected their dedication to addressing the issue at hand. The participants possess a sufficient understanding of the questions in the surveys and interviews. They were expected to comprehend the scope of the study and provide accurate and meaningful responses within the context of their professional expertise. Moreover, it was assumed that the participants would answer questions solely within the domain of their profession, ensuring that the data collected aligned with the specific focus of the study and contributed to its overall objectives. The sample of gifted students selected for this study represented the broader gifted population at ENC School. By achieving representativeness, the study was able to draw more reliable and generalizable conclusions that could be applied to similar contexts.

Scope and Delimitations

This study analyzed the data of the gifted students in Grades 4, 5 and 6 at ENC school. ENC School has the following subgroups in two or more grade levels in the areas of math and

reading: academically gifted, Black, White, Hispanic, economically disadvantaged, English students, and students with disabilities. This study focused exclusively on gifted students because that was the only subgroup that did not meet or exceed expectations during the 21-22 school year based on EVAAS data. This subgroup met growth during the 22-23 school year but did not exceed growth. Also, grades were limited to 4, 5 and 6 because data indicated underperformance of gifted students was more apparent in those grades compared to the others. When education provided in Grades 3 -5 does not offer sufficient challenge or opportunities to acquire study skills, gifted students may have difficulty in Grades 6-8 (Barbier et al., 2019). Research by Barbier et al. (2019) indicates a low preference for Self-Regulated Learning (SRL) strategies among intellectually gifted students.

Gifted students tend to do well in school during early elementary grades without using learning strategies or self-regulating their learning and therefore fail to realize the benefit of such strategies. Gifted students often face the risk of underachievement as they progress into the upper elementary and middle school grades, particularly when they encounter more challenging content. Focusing the study specifically on these grades enabled a deeper exploration of the factors contributing to underperformance in this critical period. To maintain a manageable scope and facilitate comprehensive research, the study concentrated on three specific grades. This narrower focus allowed for more in-depth analysis of the dynamics and potential interventions within those grades, providing valuable insights into the challenges faced by gifted students during this crucial academic phase. While district-level data and state-level data have been utilized as points of comparison, it is important to note that the intervention in this study will exclusively be implemented at ENC School. By limiting the intervention to a specific school, it becomes possible to examine the specific contextual factors, school policies, and instructional

practices that may contribute to underachievement among gifted students in that particular setting. This focused approach enhanced the study's ability to generate targeted recommendations and interventions tailored to the unique circumstances of ENC School.

Limitations

This study was subjected to several limitations that should be acknowledged. Firstly, the study did not account for all the variables present in each classroom where gifted students received instruction. Factors such as class size and time of day varied math and reading instruction were provided, potentially influenced the outcomes observed. The teachers who provided instruction in this study have differing levels of experience, which could have introduced variability in their instructional practices and student outcomes. Teacher experience ranged from a teacher in their second year to a teacher in her twenty ninth year. This variation was considered when interpreting the findings. It was important to acknowledge that as the supervisor to the participants, there was a potential for response bias. Participants may have felt obligated to respond to questions in a manner they perceived as aligning with expectations or desired outcomes. This bias was taken into account when analyzing data and interpreting results. Data collection for this study was limited to general education teachers of Grades 4, 5, and 6, as well as gifted program teachers who provided instruction to gifted students in those same grades. The exclusion of other stakeholders, such as parents, may have limited the comprehensive understanding of the complex factors impacting underperformance among gifted students. It is important to recognize that educators have traditionally been conditioned to prioritize proficiency and may not uniformly value the importance of gifted students meeting or exceeding expected growth outcomes. This differing emphasis on performance may impact the perspectives and approaches of the study participants, influencing the results obtained. By acknowledging

these limitations, the study can be more accurately contextualized, and its findings can be interpreted with caution, considering the potential impact of these factors on the observed outcomes.

Significance of Study

Regarding improving conditions for gifted students at ENC, this study was significant as we hoped to see gifted students exceed expected outcomes by grouping them with like ability peers and providing them with differentiated instruction. Data indicated that gifted students at ENC school were underperforming on benchmark and End-of-Grade assessments. Furthermore, historical data revealed that the 2021-2022 school year was not an outlier, and the school has struggled to meet the needs of gifted students in the past. Research suggests that a lack of intellectually challenging learning materials leads to underachievement in gifted students. Forty-nine studies determined that differentiated instruction positively influenced high-achieving students' academic achievement and motivational-affective characteristics (Ziernwald et al., 2022). This study is significant because underachievement by gifted students is a problem that could have detrimental outcomes for society. The talents of gifted individuals can improve our lives in the most remarkable ways because they can generate new ideas and innovation.

Advancing Equity and Social Justice

This study addressed equity and social justice by bringing the needs of gifted students to the forefront. Teachers typically focus on meeting the needs of average-ability and lower-ability students while underestimating the needs of gifted students (Ntamu & Oyo-Ita, 2022). Unfortunately for students and teachers, some students are significantly far from grade level expectations. At ENC School, the majority of teachers are graded based on students' performance on EOG tests. They receive an EVAAS score for students exceeding, meeting or

not meeting the expected growth. This may cause teachers to feel pressured to devote more time and energy into students who need have not yet mastered the content. This leads to inequity and contributes to the underachievement of gifted students. This study implemented differentiated instruction and ability grouping to address this inequity. These strategies led to a learning environment that provided a blend of the appropriate level of challenge and support. Gifted students were given the environment and instruction needed to reach their maximum learning potential. The goal of this study was to promote a more equitable educational experience for every student.

Advances in Practice

This study made a difference in the instruction provided to gifted students by bringing awareness to the areas of opportunity in the instruction provided to gifted students. Teachers and school staff looked at EOG, iReady, and EVAAS data to find out that gifted students are not performing as well as they should. Teachers received research-based strategies to better support their gifted students. This helped improve student achievement. This study is very applicable because it was conducted in Grades 4, 5 and 6. There are a large number of schools in the same district as ENC School who also have Grades 4, 5 and 6. Some of which also have underperforming gifted students. Beyond the district, there is compelling data indicating that surrounding districts have also struggled to meet the needs of their gifted students. This suggests that the information gained from this study could be relevant to other schools outside the district.

Summary

Gifted students were ability grouped and received differentiated instruction that is aligned with their academic needs in an effort to prevent them from underachieving. This focus of practice was of utmost importance because of what society stood to lose if some gifted students

failed to achieve. Society depends on the talents and gifts of gifted students because they can improve our lives in the most extraordinary ways by generating new ideas and innovation.

Nineteen percent of ENC School's population were gifted students under one of five categories of giftedness (Academically and Intellectually Gifted, Academically Gifted, Intellectually Gifted, Academically Gifted in Math, and Academically Gifted in Reading). Starting in Grade 3, identified students received at least two hours per week and, at most, five hours per week at the elementary level. Once a student is in middle school, they received forty-five minutes daily. Students were also provided enrichment in grades 1st – 3rd through a "Go Grow" program that provided all students with opportunities to think critically. After whole class enrichment lessons took place, students who met certain criteria were invited to participate in more in depth enrichment activities. Unfortunately, there is a history of gifted students at ENC School underperforming on End-of-Grade assessments leading to negative growth according to EVAAS. This tendency does not align with the district trend that routinely shows gifted students exceeding growth.

This study aspired to improve achievement outcomes for the gifted students at ENC School by ability grouping students and providing them with differentiated instruction. The study questions allowed me to explore the effects ability grouping and differentiation had on gifted students that have underperformed in the past. They also allowed me to determine how teachers perceived the impact of ability grouping and differentiation on student outcomes. I worked with study partners at the school and district levels to strengthen the academic achievement of gifted students at ENC School. The Achievement Orientation Model was used as the theoretical framework for this study. Assumptions and limitations were identified. This study focused on gifted students because they are the only subgroup at ENC School that did not meet or exceed

expectations during the 2021-2022 school year based on EVAAS data. Also, the study did not include Grades 3, 7 and 8 because data indicates that the underperformance of gifted students was more prominent in upper elementary, and Grade 6. The study focused solely on Grades 4, 5, and 6.

For many years an educator's worth has been tied to their student's test scores. Unfortunately for gifted students, much of a teacher's time is dedicated to tailoring instruction so that those below and on grade level are prepared for summative assessments. Less time is spent ensuring gifted students receive the enrichment they need. This study desired to make a difference in the instruction provided to gifted students at ENC School. It brought attention to the unsuitability of the previous education provided to gifted students. As a result, the school's teachers changed their pedagogy to meet their gifted students' needs more effectively.

CHAPTER 2: REVIEW OF LITERATURE

A portion of our gifted population at Eastern North Carolina School (ENC) historically underachieves on benchmark and End-of-Grade assessments. Many studies point to one or more factors, including suboptimal learning environments, problematic peer relations, lack of personal motivation, and lack of differentiated learning causing gifted students to underperform (Hornstra et al., 2020; Miedijensky, 2018; Obergriesser & Stoeger, 2015). This chapter explores optimal learning environments, peer relations among students, student motivation, and academically challenging instruction. The following programming for gifted students is also studied in this chapter: acceleration, ability grouping, enrichment, and differentiation.

Had this problem not been addressed, this group of gifted students may not have met their full potential and society may not benefit from their gifts in the future. Meeting gifted students' academic, social, and emotional needs provides them with the foundation needed to reach their full potential and, ultimately, positively contribute to society (Wai & Lovett, 2021). This study investigated the factors causing some gifted students to underperform and responded by implementing a possible solution: differentiated instruction and ability grouping. The Achievement Orientation Model (AOM) and Plan, Do, Study, Act (PDSA) cycles were used in this explanatory-sequential, mixed methods design grounded in improvement science (Mertler, 2021).

Conceptual Framework

According to Siegle et al. (2017), the Achievement Orientation Model (AOM) grounds individuals' self-perceptions in self-efficacy, goal valuation, and environmental perceptions. The beliefs and values students harbor toward themselves, given tasks, and achievement can influence what tasks students seek and whether they can acquire them. These areas direct

students to self-regulate their behaviors and engage and achieve. Further, cultural and societal values influence students' attitudes toward self-efficacy, goal valuation, environmental perceptions, and their ability to self-regulate through students' interactions with their peers, parents, and teachers. Siegle emphasized that the intensity of gifted students' positivity in the three areas need not be equally strong. However, it must be optimistic for the student to succeed. Students with high self-efficacy are likelier to show a growth mindset. Having a growth mindset positively affects students' achievement process. Students' perceptions of the supportive nature of their environment can also lead to differences in achievement. Students must believe that putting forth effort is a good use of time and energy and believe they have the skills to do well and value the task at hand.

Underperforming Gifted Students

Gifted students are often expected to be academically successful and high achievers. Although most gifted students excel academically (Obergriesser & Stoeger, 2015), a proportion of gifted students underachieve due to a variety of factors that I will proceed to discuss, including suboptimal learning environments, problematic peer relations, lack of personal motivation, and lack of intellectually challenging learning materials. Slightly more than one-fourth (28%) of gifted students underachieve. Obergriesser and Stoeger (2015) studied a group of Grade 4 students that were identified as being gifted by scoring in the 90th percentile or higher on Raven's Standard Progressive Matrices (SPM)—a nonverbal test of "observation skills and clear-thinking ability" (para. 1). Out of that group of gifted students, 28% met Obergriesser and Stoeger's definition of underachieving, which was scoring a grade point average that was less than or equal to one standard deviation below their standardized cognitive ability score on

Raven's SPM. To begin, I will outline the features of optimal learning environments designed to cater to the unique requirements of gifted students.

Optimal Learning Environments

Several characteristics of a gifted student's environment are critical to their academic, social, and emotional success. In the context of my study, I proposed that learning contexts that are characterized by the presence of critical characteristics constituted optimal learning environments.

One major characteristic of an optimal learning environment is emotional support. Several characteristics of a gifted student's environment are critical to their academic, social, and emotional success. In regular education settings in which students are not identified as gifted, gifted students often lack opportunities for adequate emotional acknowledgment (Miedijensky, 2018). Such emotional acknowledgment in a gifted students' development is no less significant than the intellectual aspect. Accordingly, gifted students' emotions and the interaction between their emotions and intellect require greater attention. Research indicates that enrollment in enrichment programs positively impacts both gifted students' academic achievement and socioemotional development.

A second characteristic of an optimal learning environment for gifted students is relatedness. According to Hornstra et al. (2020), teachers of gifted students must be intentional to ensure gifted students experienced relatedness when being taught in a regular education setting with students not identified as gifted. Hornstra et al. defined relatedness as the desire to feel connected to others and experience a sense of belonging. They suggested that relatedness was associated with gifted students' precocity—which is itself a characteristic of some gifted students (Lubinski & Benbow, 2021). Precocity in students has been described as intellectual abilities that

give rise to academic achievements that are atypical of a student's chronological age. Intellectual precocity is an area of promise in developmental potential or preparedness (Lubinski & Benbow, 2021). The upshot, Hornstra et al. suggested, was that gifted students are prone to experiencing difficulty relating to peers, teachers, and others, due to problems stemming from their precocity.

Changing the emphasis to consider the instructional content, Lee et al. (2021) emphasized a third characteristic of optimal learning environments: Educators of gifted students must create classroom environments that are reflective and adaptive in nature and support the use of critical thinking skills. In this same vein, Rinn et al. (2020) earlier declared that successful teachers of gifted students selected, adapted, or created a variety of differentiated curricula that incorporated advanced, conceptually challenging, in-depth, distinctive, and complex content.

In the same vein, Ziadat et al. (2020) cataloged many misconceptions regarding gifted students, including the misconception that they can succeed regardless of their learning environment. They highlighted earlier findings that suggested that gifted students should not be placed in learning environments with students who were not identified as gifted and expected to be successful. Instead, Ziadat et al. (2020) declared that gifted students must be taught in a way that enabled their unique learning styles to play a role in molding the learning environment in which they received instruction.

Along the same lines, Deringöl and Davasligil (2020) concluded that education environment requirements for gifted students differed from their peers who were not identified as gifted. Their research found that the test scores of gifted students in Grade 5 on the Mathematics Attitude Scale developed by Baykul (1990) increased when teachers provided them with a differentiated mathematics program. In contrast, the scores of members of a group of equally gifted students who did not receive the differentiated program decreased—with the difference at

the end of their study amounting to gains for the experimental group that received the differentiated mathematics program and a regression for the control group that did not receive the differentiated mathematics program. Deringöl and Davasligil (2020) concluded that this result signified the importance of an optimal learning environment for gifted students in mathematics.

My survey of the literature related to the characteristics of a learning environment conducive to the development of gifted students leads me to suggest that the absence of such an educational setting hinders their academic achievement. However, in addition to the observable characteristics of conducive learning environments, interpersonal factors also play a major role in enabling or hindering gifted students from realizing their potential.

Peer Relations Among Students

According to Desmet and Pereira (2021), peer relationships played a significant role in modulating the achievement of gifted students. They reported the majority of participants in their study involving middle school and high school-aged students, indicated that they encountered problematic peer relationships that hindered their academic achievement. Their participants discussed how they were victimized by bullying and earnestly desired to fit in with underachieving students. Their desire for acceptance played out as they were habitually distracted by higher social status peers. One participant indicated it was more important for them to interact with friends in class than to pay attention to the learning tasks.

Desmet and Pereira's (2021) findings aligned with Gottlieb's (2020) earlier findings that some gifted students deliberately underachieve to prevent standing out from their peers and to insulate themselves socially. Gottlieb reported it was common for some gifted students to focus less on academics and more on their relationships with peers as they moved through adolescence.

Gottlieb's findings were supported by the research of Farmer et al. (2019), who highlighted the irony of their finding that the need to please peers increased during adolescence as academic demands also rose. A logical response of such findings that some schools have implemented was validated by the work of Redding and Grissom (2021), who found that when gifted students were grouped with gifted students, they reported stronger relationships, increased motivation, and less social stigma surrounding their giftedness. Peer grouping to enhance the educational environment for gifted students is easier to sustain in the long term if students are physically present to each other.

Student Motivation

According to Gubbles et al. (2014), student motivation increased when gifted students were allowed to participate in a program with peers who were also gifted. Researchers used The Dutch School Attitude Questionnaire to determine motivation levels. Motivation decreased in the control group and remained stable in students in the experimental group. Their work proved that participation in an enrichment program prevented students from losing motivation in elementary school. They researched 37 students Grade 5 and Grade 6 that participated in an enrichment pull-out program during the mornings. Motivation was measured by The Dutch School Attitude Questionnaire. Similarly, as I highlighted above, Desmet and Pereira (2021) reported that elementary school student participants in their study claimed that they failed to develop self-regulation skills due to the absence of intellectually stimulating learning experiences.

Siegle et al. (2017) found that students' goal valuation—a strong precursor of motivation—correlated more with their self-regulation than their self-efficacy. Self-regulation was defined as setting realistic expectations and implementing appropriate strategies to successfully complete tasks. On the other hand, self-efficacy was defined as believing one can

accomplish a task. Consequently, as self-regulation is essential to achievement, interventions may be more effective if they raise goal valuation. To do that, teachers need to understand what aspects underpin students' goal valuation. In the Siegle et al. study, helping underachieving gifted students find meaning in their schoolwork contributed to reversing their underachievement.

Lack of motivation is apt to manifest itself in procrastination. Hence, procrastination has been found to contribute to the underachievement of gifted students. For example, Desmet et al. (2020) conducted a study involving four gifted girls who were underachieving. They discovered that their participants' academic achievement was disrupted when they encountered a sudden elevation in curricular demands because they did not have the self-regulation skills needed to persevere. Researchers on underachieving gifted middle school students have commonly identified lack of motivation as a major factor leading to achievement results that were out of line with ability levels (Barbier et al., 2019; Redding & Grissom, 2021).

Academically Challenging Instruction

Teachers have been characterized as hyper-focused on meeting the needs of average-ability students and lower-ability students, while overlooking the needs of gifted students. This leads to gifted students becoming bored due to the lack of exposure to challenging tasks and instruction (Ntamu & Oyo-Ita, 2022). According to Szymanski (2021), gifted students take advanced courses to reduce boredom and access intellectually stimulating experiences.

Rinn et al. (2020) collected instructional data on gifted students from all 50 states and the District of Columbia. Forty-nine states indicated they provided a lengthy list of gifted and talented services in their states that included: differentiation in the general education classroom, self-contained classrooms, continuous progress/self-paced learning, cluster classrooms, resource

rooms, magnet schools, independent study, acceleration, cluster classrooms, International Baccalaureate courses, virtual classroom/coursework/school options, regional math/science or performing arts schools, mentorships, Advanced Placement courses, dual enrollment options, regional math/science or performing arts school enrollment, and mastery-based learning. Although many types of programming were listed, states indicated that differentiation in the regular education classroom was the most frequently used programming option to support gifted students at both elementary and middle school levels. Rinn et al. (2020) also found that most states relied heavily on Advanced Placement courses to meet the needs of their gifted students at the high school level. They discovered that most schools did not formally differentiate between programming used for students not identified as gifted and programming used for gifted students until Grade 4, leading to gifted students experiencing boredom.

According to Novak and Weber (2018), teacher preparation programs might not sufficiently prepare teachers to meet the needs of gifted students in the regular education classroom. They emphasized that time and energy should be spent on training teachers to address the needs of gifted students, both within the traditional classroom and in specialized programs. Tolar (2021) agreed with Novak and Weber that teachers were underprepared to fulfill the needs of gifted students and that most teaching programs contained a limited amount of content related to teaching gifted students. They found school district offerings rarely considered knowledge gaps and the learning needs of educators who would be benefited by being knowledgeable about providing diverse and tiered instruction for gifted and talented students.

Highlighting the importance of offering an appropriate level of challenge, Desmet and Pereira (2021) found that participants reported boredom was a key factor in their underachievement. Deringöl and Davasligil (2020) characterized gifted students as disliking

having to practice things they already knew. Unfortunately, Deringöl and Davasligil (2020) found that teachers tended to review previously taught content multiple times so that average and below-average students could achieve proficiency. This led gifted students to experience boredom and potentially led them to disengage from their learning (see also Ntamu & Oyo-Ita, 2022).

It's important to recognize that the regular classroom environment may not fully meet the needs of gifted students. It is possible that teachers may not provide tasks that are challenging enough for gifted students. This can be due to various reasons, such as a teaching philosophy that prioritizes the needs of average students known as "teaching to the middle." As Tolar (2021) points out, this can be particularly detrimental to the progress of gifted students. By holding them back until the rest of the class is ready to move on, they may not receive the level of challenge that they require to thrive. This can lead to feelings of boredom and disengagement, which can impact their overall performance.

A more recent comprehensive approach to dealing with underachieving gifted students was proposed by Siegle et al. (2017). They deplored that underachieving gifted students failed to realize their potential, resulting in a loss of talent that deprived society of potential contributions and limited students' future opportunities. Underachievement also impeded students' ability to achieve self-actualization and experience intellectual fulfillment. Siegle et al. utilized the Achievement Orientation Model to explore how meaningfulness, self-efficacy, environmental perception, and self-regulation impacted underachievement in gifted students. Before proceeding with my discussion of the Siegle et al. model, I will segue into a discussion, at a more general level of programming, for gifted students.

Programming for Gifted Students

This section of my review examines the programming that has been customarily utilized for gifted students. According to Preckel et al. (2019), the widely-used, age-based stairstep educational structure failed to consider gifted children's development and academic needs. For instance, gifted students have been found to benefit from being accepted by their intellectual peers and having friends with whom they share common interests, sentiments, creativity, and complex ideas. However, without appropriate programming, their options for close friends are limited. According to Wai and Benbow (2021), research has indicated that acceleration (the two basic types are subject-based and age-based—to be discussed shortly) is one of the most effective interventions for gifted students, followed by peer grouping and learning-resource enrichment. Worrell et al. (2019) and Post (2022) agreed with the programming options designated by Wai and Benbow and included curricular differentiation.

Acceleration: The General Concept

Gifted students who participate in acceleration programs are more successful academically, both short-term and long-term, than gifted students who do not participate in acceleration programs. Students who participated in acceleration programs went on to surpass their peers in their performance on standardized achievement tests, achieved higher grades, and attended more prestigious universities or colleges. According to Worrell et al. (2019), such accelerated students have achieved well in school, maintained what they learned, and have been found to be well-prepared for future academic endeavors.

Although research has supported the use of acceleration in general (Dare & Nowicki, 2020), the extent to which acceleration will result in an identified students' social alienation from age-peers who have not been identified as gifted is an issue that presents the greatest concern to

parents, educators, and students themselves (Lupkowski-Shoplik et al., 2018). According to Leung et al. (2020), a child's social skills and maturity are less of a factor for subject-based or content-based acceleration. However, educators should consider a child's social skills and maturity when determining if a child is a good candidate for grade-based acceleration. In this regard, it is important to note that Dare and Nowicki (2020) found that people who were accelerated expressed favorable opinions regarding opportunities to accelerate and highlighted that their social experiences were mainly positive. However, a small number of participants reflected on less positive social experiences such as jealously toward the accelerated student from their non-accelerated peers.

Assouline et al. (2015) characterized acceleration as students moving through the traditional curriculum faster than typical and designated two categories of acceleration: content-based acceleration and grade-based acceleration. I begin by discussing content-based acceleration and will then move to discussing grade-based acceleration.

Content-Based Acceleration

Content-based acceleration is itself an overarching concept that subsumes learning interventions such as subject-based acceleration, curriculum compacting, concurrent or dual enrollment, credit by examination or prior experience, Advanced Placement courses, and International Baccalaureate courses (Lupkowski-Shoplik et al., 2018; Post, 2022). To avoid hopelessly muddying the waters, I will discuss the literature on the overarching concept prior to taking each of the subsumed interventions in order.

Assouline et al. (2015) conceptualized content-based acceleration as involving gifted students being allowed to bypass the typical progression of content mastery and skills in one subject in which they had demonstrated significant advancement or proficiency. Thus, subject-

based acceleration allows students to move more quickly through the content without specific curriculum changes. Allowing gifted students to participate in subject-based acceleration can avoid their having to practice previously mastered skills, work on nondemanding tasks, and revisit content they have already mastered.

According to Livers et al. (2018), curriculum compacting is an acceleration practice that circumvents content that gifted students have previously learned and provides them with more challenging learning materials presented at a quicker pace that matches their knowledge and abilities. During the Livers et al. study, gifted students embraced the competitive atmosphere and thoroughly enjoyed curriculum compacting because the pace was faster than what they experienced in the regular classroom. Staff involved in the Livers et al. study reported curriculum compacting had positively affected their students and became an essential part of their enrichment program. Livers et al. found that gifted students who experienced curriculum compacting achieved significant gains academically and reportedly enjoyed school more. Implementing curriculum compacting created a challenging learning environment for students that allowed them to expand learning beyond the confines of the grade-level curriculum. Curriculum compacting also created opportunities for enrichment, acceleration, and an increase in the complexity of content, encouraged creativity, and the devising of original products. According to James (2018), a modified academic environment succeeded in reversing underachievement in gifted students. James argued that the absence of curricular modifications could be the best explanation for the underachievement of gifted students. Curriculum compacting provided constant engagement and opportunities to practice higher-order learning. As a result, James saw an incline in students' academic performance in most subject areas, especially math. Curriculum compacting helps prevent students from becoming

underachievers—an unfortunate outcome encountered by many gifted and talented students when faced with content below their academic threshold (James, 2018) —and allows teachers to celebrate gifted students' knowledge and abilities.

Ryu et al. (2024) defined dual enrollment programs as students enrolling in college courses before high school graduation. An et al. (2019) have suggested that students who participated in dual enrollment have a higher probability of entering college directly after high school and earning a degree. Lile et al. (2018) reported benefits to students participating in a dual enrollment program, including learning the role of a college student and the layout of college coursework and programs. In addition, students sharpened their skills, such as effective note-taking and personal responsibility for task completion. Lile et al. pointed out that students who took classes on a college campus while still taking classes on a high school campus identified less as college students than those who only took courses on a college campus. Students that only took classes on a college campus also reported experiencing more personal growth.

According to Southerland and Fairchild (1984), credit by examination or prior experience involves a school awarding a student credit for a course—even though they have not completed it—based on their exam score or the experience they have acquired through work or life. Gentle-Genitty (2022) defined prior learning as any learning from one space converted for use in another space. Gentle-Genitty reported the most common forms of accepted examination and experience included portfolios, recommendations based on corporate or military, college reviews, and exams. However, a defined process for all universities has yet to be established, so inequities occur.

The Advanced Placement (AP) program has offered an opportunity for students to gain college credit and acquire college-ready skills in high school (Kolluri, 2018). Initially, the

curriculum was intended for high-ability and high-achieving students at premier private schools. However, the reach of the AP program has expanded since its inception to serve more students, and public school students have had access to Advanced Placement courses for several years. The rate AP courses are accessed has increased significantly since 1994 (Kolluri, 2018). In 1994 only 14.9% of high school students graduated with AP course credits, but by 2013, more than 39% of students had graduated with AP course credits. AP courses provide students with several benefits. They can earn college credit and stand out in college admissions because these courses are known for their academic challenge (Kolluri, 2018).

International Baccalaureate (IB) schools are recognized for offering specialized educational programs authorized by the IB organization (Assouline et al., 2015). The IB, a nonprofit group, has been providing educational programs worldwide for fifty years (Dickson et al., 2018). It was originally created to give a respected school credential for families who move between countries. The IB strives to offer a comprehensive education that fosters students' values, academic abilities, and subject knowledge. Students have reported many benefits from this program in their academic performance, thinking skills, and emotional development. According to Dickson et al., the IB programs are meeting their objectives of providing a rigorous, student-centered, and study-based learning framework that develops students' critical thinking, analytical skills, and content mastery across various disciplines. At the same time, they unveiled challenges organized into three interrelated areas. First, students and teachers reported stress and anxiety related to high workload demands. Second, studies showed that some teachers and students required substantial support to realize the benefits of an IB program. Third, it is sometimes challenging to align the aims and approaches of IB programs with national curriculum standards or assessments, education authorities' emphases, and stakeholder or cultural

expectations. Students who graduate from an IB high school may obtain advanced standing at certain universities worldwide if they perform well on specific IB exams. Plucker and Callahan (2020b) stated that students favorably rated their participation in both Advanced Placement courses and International Baccalaureate courses. In addition, students reported that they appreciated the lack of boredom they experienced in these courses compared to regular education courses.

Grade-Based Acceleration

According to Wai and Benbow (2021), grade-based acceleration is one of the most effective interventions for gifted students, followed by grouping and enrichment. Grade-based acceleration includes three options: whole grade acceleration, early admission to kindergarten, or early college admission.

Assouline et al. (2015) defined whole-grade acceleration or "grade-skipping" when a student is given a grade-level placement ahead of chronological-age peers. Whole-grade acceleration converts to radical acceleration if students advance two or more grades than their chronological peers. Assouline et al. identified positive effects on academic and social performance for accelerated students who skip a grade or advance in a specific subject area compared to their peers. Based on their research, Dare and Nowicki (2020) assert that whole-grade acceleration is an excellent option for gifted students. Most of the gifted students who participated in whole-grade acceleration expressed positive opinions on opportunities to accelerate while highlighting the individual nature of their experiences. Participants indicated that social experiences were mainly positive. However, some participants reflected on less positive social experiences. They noted that students participating in whole-grade acceleration need adequate support while transitioning to the higher grade. Most participants in their study

did not consider being younger than classmates as a barrier to forming relationships. Although being the last to reach age-related milestones emphasized age differences, it did not have a lasting impact. Some considered attending college before their chronologically aged peers a critical benefit of whole-grade acceleration.

Plucker and Callahan (2020a) support early admittance to kindergarten and point out that allowing children to demonstrate academic and social readiness by facilitating their early entrance to kindergarten gives them an opportunity to experience a more suitable match between what they are learning in school and what they are ready to learn.

According to Assouline et al. (2015), there are several early college options available to students, and the effect of early college is positive and provides development and growth opportunities for students. The options available include residential academies with their advanced curriculum, residential academies offering early entrance to college, and early college high school.

Ability Grouping

Plucker and Callahan (2020a) defined two types of ability grouping; ability grouping and flexible ability grouping. Ability grouping entails dividing classes, schools, or districts into smaller groups based on students' ability levels. Flexible ability grouping can change as student abilities and needs change. They found that flexible ability grouping in one classroom was the most effective strategy for promoting advanced learning. Ability grouping leads to positive outcomes for gifted students (Feuchter & Preckel, 2022; Preckel et al., 2019). According to Preckel et al. (2019), all gifted students should have access to ability grouping due to the approach's effectiveness in meeting the needs of gifted students. Ability grouping significantly and positively impacts gifted students’ achievement development. Teachers find ability grouping

advantageous because they have prior knowledge of the potential of their students. Their research showed ability grouping led to gifted students achieving more significant academic gains over time when compared to gifted students that did not participate in an ability grouping model.

Enrichment

Reis et al. (2021) identified several types of enrichment models, including interest-based learning pedagogy, differentiation and curriculum compacting, project-based learning, open-ended choice and creative productivity. Reis et al. defined interest-based learning pedagogy as teaching methods that responded to students' academic strengths and interests. According to the Schoolwide Enrichment Model or SEM (Renzulli & Reis, 1985), students' talents, strengths, and interests need to be identified and developed to provide enrichment and talent development opportunities.

Reis et al. (2021) determined curriculum needs to be differentiated and compacted to eliminate work students have already mastered and maximize instructional time. While this may well qualify under the rubric of differentiation, I will address differentiation in greater detail in a subsequent section. Compacting includes content acceleration for students who can cover regular curriculum material faster and accelerated content essential for an advanced project or additional depth or complexity in content. Compacting enables classroom teachers to modify the regular curriculum by eliminating parts of previously mastered content when students demonstrate content strengths in particular areas. The research conducted by Reis et al. (1998) on compacting found that 50–75% of academically talented students' regular curriculum can be eliminated or streamlined to avoid duplication of previously mastered work while ensuring mastery and simultaneously substituting more appropriately challenging activities.

Reis et al. (2021) defined project-based learning as an individual or small group of students who can conduct research, pursue interests, and create original products to address personally relevant real problems which do not have preexisting or unique solutions. These projects drive change or make further contributions.

Reis et al. (2021) encouraged open-ended and choice assignments to be provided, including homework and class assignments. Further, offering choices for enrichment learning, such as in enrichment clusters determined by students, in which the creation of a product or service occurs.

Differentiation

Tomlinson (2015) defined differentiation as a multifaceted approach that includes a positive learning environment, strong curriculum, formative assessment, instruction that responds to student needs, and classroom management that balances predictability and flexibility concerning teaching and learning.

Tomlinson and Allan (2000), Pozas et al. (2019), and Taylor (2015) identified three main areas of differentiation: content, process, product. Teachers can vary the level of complexity in the content to differentiate learning. Differentiating process implies that teachers change the learning activities based on students' interests or learning preferences. While all students have similar content to master, they may choose from a collection of activities or processes that are of interest to them or that address their diverse learning styles. Differentiating product means that students have a choice in how they show what they have learned.

Ziernwald et al. (2022) analyzed forty-nine studies and determined that differentiated instruction positively impacted high-achieving students' academic achievement and motivational-affective characteristics. Nevertheless, there were substantial dissimilar elements

between and within studies. For example, teachers commonly did not use differentiated instruction for gifted students proactively or regularly. However, teachers and gifted students viewed differentiated instruction as valuable for promoting gifted students.

Positive Learning Environment

According to Tomlinson (2015), educators must offer each student a positive, safe, challenging, and supportive learning atmosphere to promote gifted student success and the success of students not identified as gifted. To create this environment, Tomlinson reported that teachers had to demonstrate respect, trust, optimism, and intentionality. Tomlinson defined respect as believing every student is able, valuable, and responsible. She described trust as working collaboratively with students to ensure that learning is engaging and that the learning process is as important as the product of education. Tomlinson defined optimism as students getting an unmistakable message that they have the potential necessary to learn what is required. Finally, she described intentionality as designing every step of the lesson to invite every student to learn and succeed. As explained by Tomlinson, this type of environment encouraged students to invest in their learning.

Robust Curriculum

Tomlinson (2015) described a strong curriculum as one that provides a meaning-rich curriculum designed to engage students and built around clearly articulated learning goals known to teachers and students. According to Miedijensky (2018), a curriculum should provide opportunities for optimal levels of learning. In addition, the curriculum must accommodate the gifted students' needs and allow for accelerated and enriched learning. Therefore, the curriculum for the gifted must be carefully planned, written down, executed, and assessed to maximize the potential effect.

Formative Assessment

Tomlinson (2015) claimed persistent formative assessment usage led to clarity for the teacher and students regarding their understanding of learning goals. In addition, formative assessments provided teachers with the information needed to develop instructional next steps and address student differences in readiness, interest, and learning style. Tomlinson stated that formative assessment with quality feedback to students is among the practices that resulted in the highest gains in student achievement. According to Kreamer et al. (2020), formative assessments were used during their research to differentiate resources by readiness, promoting learning for advanced primary-aged students.

Responsive Instruction

Tomlinson (2015) stated that responsive instruction ensures consistent growth for each student. Gibbs (2023) claimed that demonstrating a commitment to responsive teaching as a practice is crucial to the success of differentiated learning experiences. Therefore, it is necessary to create a responsive learning environment to ensure gifted students experience learning opportunities that are high-quality and engaging. Overall, Gibbs' data indicated that teachers that are responsive to the diversity of student abilities include pedagogies such as creating learning activities to maximize learning opportunities for all students, pre-planning lessons, and gathering student data to inform teachers' understanding and capability to plan for student readiness differences, using scaffolded formative and summative assessment, engineering flexible learning groups, and utilizing adaptable teaching processes that support all students.

Classroom Management

Tomlinson (2015) stated that classroom management involves teachers creating and implementing classroom management routines that support predictability and flexibility.

According to the American Psychological Association (2023), even though gifted students are advanced in academic areas, like non-identified gifted students, they may demonstrate challenging behaviors within classrooms and often for similar causes. Therefore, educators must know students' backgrounds, ability levels, strengths, and weaknesses. Teachers can support gifted students' behavior in the classroom by using appropriate differentiation strategies and providing gifted students with more desirable learning options, resulting in better classroom behavior and more favorable learning outcomes.

Content

Differentiating content allows students to study content that matches their ability, learning needs and interest. Examples of differentiating content are varied reading levels, compacting, and tiered assignments.

Product

Differentiating product gives students an opportunity to share their learning in various ways. Students get to demonstrate their learning based on their learning preferences, strengths and interests. Choice boards are an example of differentiated products.

Process

Differentiating process provides students with various approaches, strategies and support to meet their individual learning styles and preferences. Flexible grouping, tiered assignments and learning contracts are examples of differentiated processes.

Achievement Orientation Model

As I indicated already, it is imperative that I return to the Siegle et al. (2017) model. According to Siegle et al. (2017), the Achievement Orientation Model (AOM) claims that gifted students' self-efficacy, goal valuation, and environmental perceptions interact to motivate

students to self-regulate their behaviors and subsequently engage and achieve. Students achieve when they possess positive affect in self-efficacy, goal valuation, and environmental perceptions. They described self-efficacy as students' belief in their ability to reach specific goals successfully. Siegle et al. claimed that self-efficacy impacts the activities students select, how much effort they expend on the activities they select, how tenacious they are in the face of difficulties, and the inherent difficulty of their goals.

Secondly, students goal valuation is the value they ascribe to and meaningfulness they place on tasks and goals. According to Siegle et al. (2017), there are various reasons students find tasks meaningful, including identifying themselves as someone who does well in school, believing that completing school tasks is an essential part of their journey to their careers, tweaking the student's interest, and being able to apply their new learning instantly. Given optimal conditions, students whose interests and goals are integrated into the curriculum display greater motivation and use self-regulatory strategies more often. Thirdly, Siegle et al. (2017) described students' environmental perceptions as their perceptions of the supportive nature of their environment.

In terms of the AOM, if any one of the three components (self-efficacy, goal valuation, and environmental perceptions) is absent, achievement may falter due to students diminished motivation to self-regulate.

Identification and Service Delivery

The topic of identification is itself a significant topic. However, for this study, I focused on the process used by the Eastern North Carolina School District. According to their Academically and Intellectually Gifted Plan, students are identified in Grade 3 for one of five categories: Academically and Intellectually Gifted, Academically Gifted, Intellectually Gifted,

Academically Gifted in Math, and Academically Gifted in Reading. Multiple data points are used, including Cognitive Abilities Test (CogAt), End-of-Grade assessment scores and grades.

In Grades 4 and 5, students identified as Academically and Intellectually Gifted or Academically Gifted receive 5 hours of enrichment per week. In Grades 6 through 8, identified students participate in a year-long enrichment course. Grades 4 and 5 students identified as Intellectually Gifted, Academically Gifted in Math, or Academically Gifted in Reading receive 2 hours of enrichment per week. Students in Grades 6 through 8 identified as Intellectually Gifted, Academically Gifted in Math, or Academically Gifted in Reading participate in one semester of an enrichment course. The plan also supports students who show promise of being gifted with a Go Grow program, but implementation varies from school to school.

Teacher Perceptions

Hammerschmidt (2017) found that teachers desire to work with and educate students of all abilities in their classroom and they believe they have a direct impact on students. She also discovered 94% of the participants in her study felt that gifted students are not challenged in the classroom and confirmed they do not teach gifted students differently. Another theme that surfaced from Hammerschmidt's work was the idea that there is a lack of teacher preparation aligned to gifted student needs.

Summary

Gifted students are expected to excel academically. However, a portion of the gifted population at Eastern North Carolina School (ENC) has historically underperformed on benchmark and End-of-Grade assessments. The Achievement Orientation Model (AOM) suggests that individuals' self-perceptions are influenced by their self-efficacy, goal valuation,

and environmental perceptions. Therefore, students' beliefs and values regarding themselves, tasks, and achievement can affect what tasks they seek and whether they can achieve them.

Several key factors contribute to the academic, social, and emotional success of gifted students. An optimal learning environment for gifted students should have emotional support and foster relatedness. Additionally, teachers of gifted students should create classroom environments that promote critical thinking skills and are reflective and adaptive in nature. To achieve this, teachers should select, adapt, or create differentiated curricula incorporating advanced, conceptually challenging, in-depth, and complex content.

CHAPTER 3: METHODS OF STUDY

In this study, my study partners and I strived to improve achievement outcomes for the gifted students at ENC School by ability grouping students based on their math End-of-Grade (EOG) assessment score and iReady diagnostic score in mathematics in Grades 4, 5, and 6. Further, I provided students with an enhanced learning experience drawn from the extensive research of Tomlinson (2015). The following key aspects were highlighted by Tomlinson: differentiated content, differentiated process, and differentiated product. In this chapter, I addressed the study questions related to the intervention that I believed would alleviate the problem of practice: gifted students underperforming in mathematics and reading according to the EOG assessments for math and reading and the math and reading iReady diagnostic.

Study Guiding Questions

The questions that guided my study are as follows:

1. What influence will ability grouping and differentiated instruction have on goal valuation for gifted students at ENC School in reading and mathematics in Grades 4, 5, and 6?

   Goal valuation was measured before and after differentiated instruction and ability grouping were implemented. Students' goal valuation was measured with a survey (McCoach & Newton, personal communication, June 1, 2023). Differentiated instruction was measured by a teacher observation protocol. Students were grouped for classes based on ability.

2. What is the relationship between changes in goal valuation and achievement outcomes in reading and mathematics for gifted students at ENC School in Grades 4, 5, and 6? Achievement was measured by comparing iReady results from the

beginning of the year, before differentiation, to results at the end of the year, after differentiation had been introduced.

3. How do teachers perceive the impact of ability grouping and differentiated instruction in reading and mathematics on gifted students at ENC School in Grades 4, 5, and 6? A focus group determined teachers' perceptions of the impact of ability grouping and differentiated instruction on gifted students in reading and mathematics.

The first guiding question sought to determine how implementing ability grouping and differentiated math and reading instruction would affect goal valuation for gifted students at ENC School in Grades 4, 5, and 6. According to Brigandi et al. (2019), there is a relationship between student participation in enrichment activities while grouped with other gifted students and goal valuation. According to Tomlinson (2015), educators must offer each student a positive, safe, challenging, and supportive learning atmosphere to promote gifted student success and the success of students not identified as gifted. As explained by Tomlinson, a differentiated approach encourages students to invest in their learning. According to Siegle et al. (2017), there are various reasons students find tasks meaningful, including piquing the students' interest and enabling them to apply their new learning instantly. Therefore, the professional development provided to teachers will teach them how to create engaging learning opportunities that promote curiosity and allow for immediate application of knowledge.

The second guiding question was to discern what the relationship is between changes in goal valuation and achievement in reading and mathematics for gifted students. Siegel et al. (2017) found that adopting the Achievement Orientation Model (AOM) resulted in students' perceiving their activity as meaningful, being more likely to stay motivated, and to perceiving

learning as enjoyable. Helping underachieving gifted students find meaning in their schoolwork contributes to reversing their underachievement (Siegle et al., 2017).

Finally, the third guiding question addressed how teachers perceive the impact of ability grouping and differentiation in reading and mathematics on gifted students. Teacher perception was determined by their participation in a focus group. A focus group of six individuals creates a comfortable environment that encourages meaningful conversations, as participants tend to build on each other's comments (Mertler, 2021).

Study Design and Rationale

My study investigated the factors causing some gifted students to underperform and responded by implementing a possible solution. My aim was to improve achievement outcomes for the gifted students at ENC School by ability grouping students and providing them with differentiated instruction that included differentiated content, process and product.

My study utilized an explanatory-sequential, mixed methods design grounded in improvement science (Mertler, 2021). I used the AOM (Siegle et al., 2017) to frame my study in support of answering the guiding questions. The AOM is suitable because it encompasses the possible solutions I planned to implement and is grounded in research. As shown in Figure 3, I designed my study around a single Plan-Do-Study-Act (PDSA; *PDSA cycle - The W. Edwards Deming Institute*, 2023). The extensive collaboration involved in my study is illustrated in Table 8.

Context of the Study

ENC School is one of six schools that follows a Kindergarten through Grade 8 model in an eastern North Carolina district. In addition, a North Carolina Pre-K program operates within

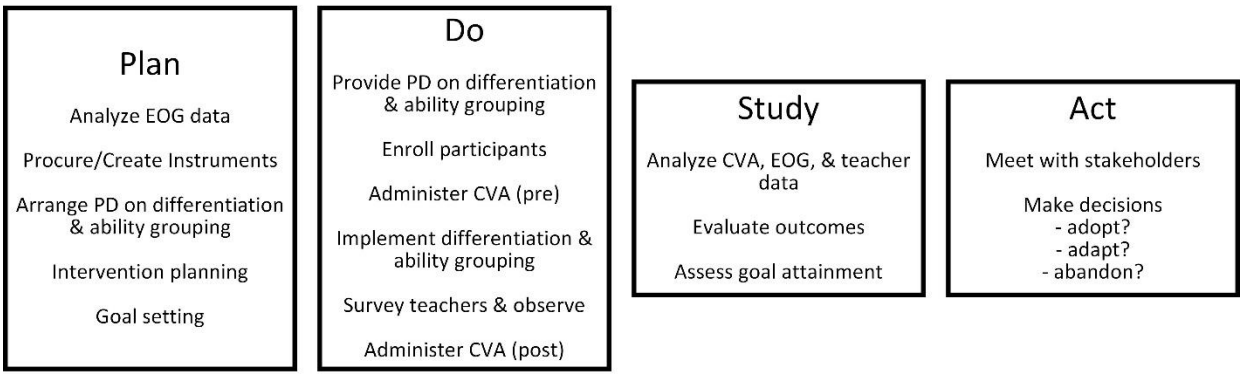


Figure 3. Study design.

Table 8

Study Partner Roles

Study Partner	School or District Level	Role in Study	Frequency of Collaboration
Scholarly Practitioner	School	Oversee the study and facilitate data collection and analysis for students in Grades 4, 5 and 6.	I will meet with AIG teachers up to three times, with Grade 4, 5 and 6 teachers with their grade level colleagues up to four times, and up to two times with district staff and school leadership.
Academically and Intellectually Gifted program Teachers (2)	School	Collaborate on professional development on the topic of differentiation for students in Grades 4, 5, and 6. Collaborate on findings of the study.	These teachers and I will meet up to three times.
Grade 4 Teachers (4), Grade 5 Teachers (4), Grade 6 Teachers (4)	School	Participate in differentiation professional development. Implement differentiated instruction in Grade 4, 5, and 6 respectively.	These teachers and I will meet up to four times in a group with other teachers of students in Grade 4, 5, and 6 respectively. They will also participate in a focus group at the conclusion of the study.
Instructional Coach and Assistant Principal	School	Collaborate on findings from the study.	These members of the leadership team and I will meet with the other members of the team up to two times.
Director of the Academically and Intellectually Gifted program	District	Collaborate with AIG teachers and me on findings.	This district staff member and I will collaborate up to two times.

the school building. During the study, ENC School had 954 students. Of those students, 19%, or 179, have been identified as gifted students. Students are identified in Grade 3 for one of five possible gifted areas: Academically and Intellectually Gifted, Academically Gifted, Intellectually Gifted, Academically Gifted in Math, and Academically Gifted in Reading. Identification occurs through the use of multiple data points, including the Cognitive Abilities Test (CogAt), End-of-Grade (EOG) assessment scores and grades in school. The amount of enrichment services students receive is based on their performance in these three data points. Enrichment refers to enriched, strength based instructional approaches that teachers use to engage students (Reis et al., 2021). ENC School employs two full-time gifted education teachers. Students who show promise of giftedness are provided with enrichment starting in Grade 1. This is determined by ratings collected by the elementary gifted education teacher. She provides lessons to every Grade 1 and Grade 2 class and observes students' interactions with the content. Students that excel are invited to continue learning about the concept. Once students are officially identified in Grade 3, they receive between two and five hours per week of enrichment at the elementary level. Once a student is in middle school, they receive 45 minutes daily. Most gifted identifications take place at the end of their Grade 3 year, once EOG assessments are completed. Some students are identified as gifted in K-2 if evaluated for another purpose, i.e., early admittance to kindergarten. During the study, at ENC School, 19% of students were identified as gifted. Among them, Grade 3 had six gifted students, Grade 4 had 31, Grade 5 had 29, Grade 6 had 34, Grade 7 had 42, and Grade 8 had 41.

In 2022 gifted students did not meet expected growth at ENC School, according to the Statistical Analysis System (SAS) Education Value-Added Assessment System (EVAAS). The average amount of academic growth for all students across the state is how expected growth is

determined. The average amount of academic growth for all students in that school or district determines the growth levels for a district or school. Growth ratings are determined based on the index score and where it falls in the -2 to +2 range. The index score is the growth measure divided by the standard error. The growth measure is students' growth calculation for that particular group (SAS, 2023). EVAAS examines the impact of teachers, schools, and districts on their students' learning in courses, grades, and subject areas. Gifted students achieved 2.89 points below their expected growth overall. In the area of math, gifted students performed 2.23 points below expected growth. In the area of reading, gifted students performed 1.8 points below expected growth. This was not the first time in the school's history that gifted students have underperformed on End-of-Grade assessments. Gifted students met growth, 1.99 overall during the 2022-2023 grade level, but did not reach the goal of exceeding growth expectations. This study focused on math and reading data.

At the district level in 2022, gifted students exceeded expected growth on Math End-of-Grade assessments, scoring 3.53 above expected growth, and did not meet growth on the Reading End-of-Grade assessment, scoring 3.45 below expected growth. The district is composed of thirty-seven schools. Twenty-two schools reported growth data from elementary to high school level for Academically and intellectually Gifted students, and 18 met or exceeded growth in the area of gifted students. Out of those 18, six schools exceeded growth. ENC School is one of only four schools that did not meet growth in the gifted student subgroup.

This study served to create an equitable learning environment for gifted students. The goal was to move teachers away from concentrating only on meeting the needs of average-ability and lower-ability students. This study aspired to balance the educational needs of gifted students compared to their non-identified peers, positively impacting the number of underachieving gifted

students making growth on iReady math and reading diagnostic assessments. Past this study I desired to see underperforming gifted students exceeding expected growth based on End-of-Grade assessment data.

Study Partners

The staff involved in this study at ENC School included a gifted education teacher for elementary and middle school, four teachers each from Grades 4, 5, and 6, an Instructional Coach, an Assistant Principal, and the Director of the Academically and Intellectually Gifted program. The gifted education teachers and I worked together on analyzing data for students in Grades 4 to 6. We planned and provided professional development on differentiation for these teachers, who then implemented the techniques in their classrooms. I collected information about their teaching methods before and after the training. The Instructional Coach, Assistant Principal, and I reviewed End of Grade test data to group students by ability. Additionally, we analyzed student survey data to see how ability grouping and differentiation affected their goals. The Director of the Academically and Intellectually Gifted program assisted me with this study.

Ethical Considerations

I completed the Collaborative Institutional Training Initiative (CITI) Certification (March 1, 2023) before initiating my study in fall 2023. The CITI program is a course covering the historical development of protections in place for people participating in studies and current information on regulatory and ethical issues. I participated and successfully completed the following modules: Belmont Report and Its Principles, History and Ethical Principles, Defining Research with Human Subjects, The Federal Regulations Assessing Risk, Informed Consent, Privacy and Confidentiality, Research with Prisoners, Research with Children, Research in Public Elementary and Secondary Schools, International Research, Internet-Based Research, and

Vulnerable Subjects - Research Involving Workers/Employees. The objective of these CITI modules provided me with a solid understanding of confidentiality and privacy concerning the study's participants.

Completion of CITI qualified me to submit my study for Institutional Review Board (IRB) approval from East Carolina University. Prior to IRB approval, I shared the study with the Eastern North Carolina School District's superintendent and formally requested approval to conduct my study. In conjunction with the approval from the superintendent, the IRB approval ensured my study adhered to policies and procedures governing research and ethical treatment of human subjects (see Appendix A).

Throughout my study, I encountered many ethical dimensions of leadership, such as role clarification, ethical guidance, and integrity (Metwally et al., 2019). During the orientation I held for participants, they were informed that pseudonyms would be used and made aware of the processes and procedures that would be used. I clarified each participant's role and asked questions in a group setting to give opportunity for sharing of questions. Participants were also invited to email myself any questions they might have after orientation. Informed consent was obtained, and participants' parents/guardians were assured confidentiality would be maintained (see Appendix B). The orientation addressed the advantages, tasks, and time commitments. Assent was obtained for students participating in the study (see Appendix C). Throughout the process, the professors at East Carolina University provided guidance and answered all questions I had along the way. In addition, guidance was provided by district-level staff. I committed to completing my study rooted in integrity. By inviting teachers who expressed an interest in better meeting the needs of gifted students prior to hearing about the study, I had confidence that they

would be committed to finding solutions to the problem of practice of underperforming gifted students.

I stored all data in Google Drive on a secure two-step verification server made available by Pitt County Schools (PCS). I had access to the raw data. Study partners and participants had access to data paired with pseudonyms. Hard copies are housed in a locked filing cabinet in my office. Keys to the cabinet are held solely by me. All data will be kept for five years and then destroyed.

Study Procedures

The Plan phase of my PDSA cycle set the stage for all three study questions. Planning involved my study partners and me determining what data would be used in the study and the data selected. We analyzed iReady data to determine which gifted students were underperforming. I grouped students based on their gifted identification and previous math achievement according to EOG and iReady diagnostic scores. EVAAS predictor scores were used as a reference to determine if students met, exceeded or did not meet growth. These data were studied to identify any trends that existed. The study partners and I discussed and determined the specifics of the interventions to implement. We predicted what would happen due to the professional development on differentiation and grouping of students by ability on student achievement outcomes. Teachers responded to a survey on their use of differentiation before and after receiving professional development on that topic. AIG teachers and I created the professional development and provided it to the teachers participating in the study. During the Do phase, teachers who agreed to participate in my study received professional development in the area of differentiation. They were offered ongoing support from AIG teachers and administration as they implemented differentiation in their instruction. Data was collected using

a checklist to determine the frequency of differentiation implementation. The Study phase consisted of data analysis and adjustments. During the Study phase, we compared predictions to actual results. The Act phase required my study partners and I to analyze post-implementation data and determine if we wanted to adopt, adapt, or abandon our intervention.

Plan Phase

My study partners and I collaborated to determine the data that will help identify underperforming gifted students. We considered iReady diagnostic, End of Grade Assessment and Education Value-Added Assessment System. We created a spreadsheet to house student achievement data iReady diagnostics.

My collaborative study partners and I analyzed teachers' EVAAS data from the previous year to determine which grade levels had the most underperforming gifted students. We analyzed EOG and iReady data to determine which gifted students were underperforming. We looked for trends and tailored our intervention to the trends identified.

Teachers were selected to receive an invitation to participate in the study based on their need and desire to provide gifted students with the instruction and environment needed to combat underperformance. Teachers who participated assessed themselves with a rating scale identifying their perspective and implementation of differentiation prior to receiving professional development on the topic.

The Plan phase is directly related to Study Question 1 because my study partners and I gathered the baseline data needed to determine the effectiveness of differentiation on goal valuation and ultimately on student achievement. Also, students were ability grouped based on gifted identification and math data during this phase. When the data from the Plan phase was compared to the outcome data during the Act phase, we were able to determine if differentiation

and ability grouping positively impacted goal valuation. Data collection in the Plan phase also allowed my study partners and me to determine if enhanced goal valuation influenced achievement outcomes when compared to outcome data considered in the Act phase.

Description of Participants and Recruitment Strategies

EVAAS data was analyzed to determine possible participants. Four teachers per grade from Grades 4, 5, and 6 at ENC School were ultimately selected. My study partners and I invited teachers to an orientation to discuss the focus of practice, analyze their data, and determine their level of interest. I asked teachers that had expressed a passion for supporting the growth of gifted students to participate in this study. I am aware that ENC teachers have indicated they have a strong desire to improve the growth of their gifted students based on the reflection forms they submitted based on the 2021-2022 school year, so I anticipated that teachers would want to participate. Underperforming gifted students in the classes of the selected teachers were invited to participate in this study. I grouped students based on math ability and previous math achievement according to EOG and iReady diagnostic scores.

Instrumentation

I used data from observations and rating scales to determine the effectiveness of implementing ability grouping and differentiation on achievement outcomes for gifted students (see Table 9). Data used to determine effectiveness included iReady data in math and reading. The teachers completed a checklist to report their use of differentiation strategies.

Pilot Study/Baseline Data Collection

I used a pilot study to strengthen the data collection documents and processes. Colleagues in the education field assessed the following: student surveys, observation tool, teacher checklist and the teacher self-rating scale. The observation tool, teacher checklist and the teacher self-

Table 9

Study Matrix of Instrumentation, Purpose, Study Question or Action, and Study Phase

Instrumentation	Purpose	Study Question or Action	PDSA Phase
Roster Creator Software	Ability group students based on gifted identification, math ability and previous achievement.	• Is the student identified as gifted in math or reading? • Has the student exceeded grade level expectations on an EOG or diagnostic in the area of math and reading?	Plan
Student Survey Pre- and Post-Teacher Professional Development on Differentiation	Determine student goal valuation pre- and post-staff PD on differentiation.	• The student survey will identify the way students feel about their instruction prior to and following differentiation professional development being provided.	Plan & Study
Teacher Checklist (Completed monthly by participants)	Determine what differentiation strategies are being utilized by teacher participants.	• Observational self-checklist to determine what differentiation strategies are being utilized by teacher participants.	Study
Pre- and Post-Professional Development on Differentiation Feedback Rating Scale	Teachers will rate their knowledge and ability to implement differentiation	• Teacher self-evaluation rating scale to determine the extent instruction is being tailored to meet individual student needs.	Plan & Do
iReady analysis spreadsheet	Analyze post-implementation data to determine whether findings suggest adopting, adapting or abandoning.	• Are gifted students meeting or exceeding growth expectations in math and reading according to iReady?	Act

rating scales were adapted based on feedback. No changes were made to the student surveys. Throughout the pilot study, study partners provided guidance and feedback. I met with the Director of Gifted Education, classroom teachers, and leadership team members during the pilot study. The teachers involved in the pilot study did not participate in the study. However, the Director of Gifted Education provided feedback on the student surveys, observation tool, and the teacher self-rating scale and will serve in a guidance capacity at the end of the study. The pilot study took place at ENC School during the summer of 2023. I recruited participants in June of 2023; the pilot study occurred that same month.

Data Analysis

Data was collected using purposive sampling. The teachers selected had not instructed students who had exceeded growth for the gifted subgroup recently, according to EVAAS, or they had indicated a desire to improve outcomes for gifted students based on the EVAAS reflection document they completed for the 2021-2022 school year or they indicated that the growth of gifted students is a focus area for their professional learning community. I selected students identified as gifted students with a history of underperforming. My study partners and I placed EOG and iReady data from the previous year in a spreadsheet. The EOG data was color coded to indicate if the student met (equal to the expected outcome), exceeded (higher than expected outcome), or did not meet growth (lower than expected outcome) in the areas of math and reading. iReady data was also be color coded to indicate if the student "Did Not Meet" expectations (below grade level), "Met" expectations (on grade level), or "Exceeded" expectations (above grade level). Roster Creator Software was used to determine class placement for gifted students. I grouped students based on gifted identification, math ability and previous math achievement according to EOG and iReady diagnostic scores. Student surveys (see

Appendix D and E) were used to determine student goal valuation in math and reading. A teacher checklist (see Appendix I) was used to report teacher usage of differentiation strategies. Percentages and color-coded charts were created. The teacher checklist tool collected data on the frequency of (a) differentiated content strategies, (b) differentiated process strategies, and (c) differentiated product strategies. In addition to collecting data with the observation tool, teachers completed pre- and post-professional development feedback rating scales (see Appendix G). The rating scale determined the extent of implementation of differentiation by measuring of (a) differentiated content, (b) differentiated process, and (c) differentiated product.

Summary of Plan Phase

In the Plan phase, I collected the baseline data needed to determine the effectiveness of ability grouping and differentiation. To determine a baseline, my colleagues and I used teacher rating scales and student surveys completed before professional development. In addition, we compared prior student achievement outcomes to end-of-study outcomes to measure the effectiveness of interventions. In the Do phase, participants were provided with the tools to give gifted students an opportunity to meet or exceed expectations according to end of year iReady diagnostic data.

Do Phase

I created a pre-professional development rating scale and collaborated on the creation of professional development with our Academically and Intellectually Gifted program teachers on the topic of differentiation. I also created a teacher checklist form during this phase to gather differentiation implementation data.

Teacher participants received professional development created by our Academically and Intellectually Gifted program teachers and I on the topic of differentiation and subsequently

implemented differentiation in their classrooms. The teacher checklist form mentioned above was used to gather data on differentiation implementation. Teachers completed a post-professional development rating scale. Students completed a goal valuation survey before and after their teacher participated in professional development on differentiation. At the end of the study, my partners and I conduct a focus group to determine if differentiation strategies and ability grouping were the most influential factors in student achievement.

My study partners and I analyzed data to determine the effectiveness of the professional development on teacher understanding and confidence in implementing differentiated instructional strategies. We will also analyze the goal valuation survey completed by students after their teacher participated in professional development on differentiation.

Study Approach/Intervention

After a thorough review of baseline data and discussions with my study partners, my intention was to implement ability grouping and differentiation as possible solutions to the underperformance of gifted students' problem of practice. Ability grouping and differentiation have benefited gifted students and led to positive achievement outcomes (Tomlinson, 2015; Vergon, 2023). Therefore, I planned to implement both methods as interventions for the underperformance of gifted students at ENC School. As the principal of ENC School, I am responsible for scheduling each student. Therefore, I was able to implement one of the interventions, which is ability grouping. The second intervention, differentiated instruction, was implemented by classroom teachers after completing differentiation professional development. The elementary and middle grades AIG teachers at ENC School collaborated with me on the development of differentiated professional development. During the pilot study I studied and

reflected on the efficiency of the student surveys and rating scales. All verbal and written feedback was taken into consideration to strengthen the study.

Summary of Do Phase

The Do phase informed the overall study by providing the data needed to determine if the professional development provided impacted the instructional practices of the participants. This data collection was crucial because it directly aligned with question one, which aimed to identify differentiated instruction's influence on goal valuation for gifted students at ENC School in Grades 4, 5, and 6. During Phase II, my study partners and I also surveyed students to determine if ability grouping and differentiated learning practices led to enhanced goal valuation. The checklist was used to report the frequency of specific differentiation strategies being implemented. During Phase III, adjustments were made based on data collected in Phase II. Study partners also compared results to predictions made in Phase I.

Study Phase

The Study phase was the next to last phase of my study. It connected most directly to Study Question 1. My study partners and I analyzed data, adjusted support as needed and compared our predictions to results. During the Study phase, students completed a survey, so we could gather data on goal valuation. The teacher checklist allowed teachers to report specific differentiation strategies they were implementing. We also analyze the frequency of the following: (a) differentiated content, (b) differentiated process, and (c) differentiated product through the teacher self-rating scale.

Act Phase

During the Act phase, my study partners and I analyzed post-implementation data to determine whether findings suggested adopting, adapting or abandoning the interventions implemented.

Analysis of Approach

As a result of my study, changes were made to educational practice and processes. Student achievement outcomes indicated ability grouping and differentiation led to more gifted students meeting or exceeding expectations, so we adjusted our educational practice to include differentiation and we adjusted our educational processes to include flexible ability grouping for math and reading in grades 4, 5 and 6.

My analysis of my approach strategy compared pre-implementation data to post-implementation data during my study and I communicated those findings to participants, school leadership and ultimately all stakeholders. During the Plan phase, teachers completed a rating scale that indicated their use of differentiation prior to receiving professional development on the topic. Students also completed a survey, so we could gather baseline data regarding the value they placed on tasks they are given. During the Act phase, we analyzed post-implementation data to determine whether findings suggested adopting, adapting or abandoning.

Exploring the research related to underperforming gifted students and the Achievement Orientation Model afforded me the opportunity to expand my leadership capabilities. Throughout the study process, I maintained a journal to ensure I noted how my leadership was evolving based on the study phases.

Summary of Act Phase

During the Act phase, my study partners and I analyzed post-implementation data to decide whether we should adopt, adapt, or abandon the interventions that was implemented based on the findings. Our evaluation assessed whether gifted students are meeting, not meeting or exceeding expectations in math and reading, as per iReady.

Study Design Rigor

This study sought to be trustworthy and rigorous in my effort to improve achievement outcomes for gifted students in the area of mathematics and reading by implementing differentiation and ability grouping. The instruments used and the design followed yielded authentic results. I ensured trustworthiness and rigor by dissecting each instrumentation's credibility, transferability, reliability, and confirmability (Mertler, 2021).

I utilized an explanatory-sequential, mixed methods design grounded in improvement science (Mertler, 2021). I aligned my study with the Achievement Orientation Model (AOM) to answer the guiding questions of the study. The effectiveness of the AOM design has been well documented (Barbier et al., 2019; Siegle et al., 2017). I also followed the well-established PDSA model for improvement (Sagun & Prudente, 2021; Tichnor-Wagner et al., 2017).

I used a survey to determine student goal valuation. The student survey was composed of Likert style questions, so students could respond on a continuum (Mertler, 2021). I used a checklist to measure the frequency of specific differentiation strategies. Finally, iReady mathematics and reading diagnostics measured achievement. To strengthen the study, I allowed possible participants to opt-in instead of requiring participation. Voluntary participation ensured participants were equally passionate about determining what influence differentiation and ability

grouping have on goal valuation and how goal valuation influences achievement outcomes in mathematics and reading (Mertler, 2021).

My study aligned with the AOM and the PDSA model to make my study credible. Both provided my study with the structure needed to maintain credibility. To establish credibility, I included my study partners in designing differentiation use tools, surveys, and interview questions. I also debriefed peers at the conclusion of my study and provided participants' words in the final report. To ensure my study is transferable, I worked within school policies and procedures. The study's findings applied to other contexts, situations, and populations. My data collection methods are able to be utilized with different demographic groups and geographical locations. My study allows readers to focus solely on the results of ability grouping, differentiation, or a combination of both on the mathematics and reading achievement outcomes for gifted students.

To guarantee dependability, I included study partners in the analysis process. I also provided a detailed description of the research methods used and conducted a step-by-step duplication of the study to identify outcome similarities. To ensure conformability, I recorded data analysis sessions, and while playing back the recordings, I took notes regarding my feelings, biases, and insights. In addition, during data analysis sessions, I asked clarifying questions when needed.

Delimitations, Limitations, and Assumptions

My study is bounded contextually and intended to address underperforming gifted students at ENC School. It has transferable practical implications and relevance in comparative contexts but is not designed to be statistically generalizable. This study's delimitations include other underperforming subgroups, such as students of color, economically disadvantaged

students, and students with disabilities. However, at ENC School, the data for gifted students shows that gifted students are making less growth than any other subgroup. The following are additional delimitations that were considered when determining possible interventions but ultimately were not used: acceleration and curriculum compacting. This is a partial list of interventions my study partners and I could have implemented to address the issue of gifted students underperforming.

Limitations of this study include classroom variables, time constraints, the researcher's role, the emphasis placed on proficiency by the North Carolina Department of Instruction, and biases toward gifted students. The class size and time of day students receive instruction vary. The teachers who provided the instruction have different experience levels. I serve as the supervisor to the participants, which could also be a limitation since they may have felt obligated to answer a certain way. Another limitation is that educators are conditioned to focus on proficiency, so not all participants may value the importance of gifted students meeting or exceeding expectations. The final limitation is that some participants may hold certain biases toward gifted students believing they will master the content without tailoring instruction to their learning styles.

Several assumptions existed about this study. First, I assumed the data collected to group the students are error-free. Second, I assumed that participants collecting the data during each Phase of the study and those implementing the possible interventions are committed to the study. Furthermore, the participants are educators and have expressed an interest in identifying an intervention that will positively impact the underperformance of gifted students. Third, I assumed the participants would understand the survey questions and questions asked during interviews. Participants were given an opportunity to ask clarifying questions and the

participants only answered questions within the scope of their profession. Finally, I assumed the sample of gifted students is representative of the gifted population at ENC School. I worked closely with AIG teachers to determine student participants, so it is a group that is representative of the gifted population at ENC School.

Role of the Scholarly Practitioner

Through my role as the scholarly practitioner of the study, I ensured the study was grounded in research-based practices that supported the focus of practice. As principal of ENC School, I determined that the underachievement of gifted students significantly impacted the school's overall success. The subgroup of gifted students did not meet the expected growth determined by EVAAS at the conclusion of the 2021-2022 school year, causing the overall school performance grade to be affected. During the 2022-2023 school year, gifted students met growth, but did not reach the goal of exceeding growth expectations. The underperformance of gifted students also negatively impacted their education and could negatively impact their future education and educational opportunities. As the scholarly practitioner and principal of ENC School, I found this to be a worthy focus of practice. I worked closely with the staff for several months prior to the study beginning and gained their confidence. This is evident through professional learning community minutes and lesson plans. Based on conversations with me, teachers are adjusting their lesson plans to include opportunities for extension. During the study process, I kept a journal to track my leadership development based on the different study phases. Additionally, I reassured the participating teachers that they would not face any negative consequences as a result of providing honest answers during the study, despite being evaluated by me.

Summary

I studied underperforming gifted students, a point of concern in gifted education for quite some time now. The goal of this study was to find gifted students who were not performing well and to help them reach their full potential. After reviewing the literature, I identified two possible interventions: ability grouping and differentiation. The study focused on students and teachers in Grades 4-6. We closely monitored the implementation of these interventions, collected data, analyzed it, and evaluated the effectiveness with my study partners. In the upcoming Chapter 4, I shared the results of the study. Specifically, I provided details about the data that was gathered before and after the interventions were put into place.

CHAPTER 4: RESULTS

In this chapter, I will present my findings related to the intervention I implemented to address the following problem of practice: Gifted students underperforming according to the EVAAS and the math and reading iReady diagnostic assessments. In summary, I found that ability grouping and differentiated instruction influenced goal valuation and achievement outcomes in a positive way in math and reading for the students who participated. I implemented an explanatory-sequential, mixed methods design grounded in improvement science (Mertler, 2021), choosing this design because it gave me the opportunity to facilitate a detailed study of ability grouping and differentiation and capture both the effectiveness of the intervention I implemented and the experiences that drove improvements in achievement for the participating gifted students.

Plan

In alignment with my study design (see Figure 2), my research began with a planning phase during which I (a) analyzed existing data, (b) procured or created data gathering instruments, (c) arranged for professional development on differentiation and ability grouping, (d) planned for the intervention, and (e) set goals that I anticipated would be attained.

Demographics

Nineteen Grade 4, 18 Grade 5, and 21 Grade 6 students at ENC School participated in my study. Demographic data can be viewed in Table 10. Also, twelve teachers from Grade 4, Grade 5 and Grade 6 at ENC School participated in the study. An assistant principal and an instructional coach, along with two gifted education teachers and the Director of Gifted Education also provided perspective on my research.

Table 10

Student Race Data

Grade	Number of Students	M	F	W	B	BI	H
4	19	11	8	17	0	1	1
5	18	11	7	18	0	0	0
6	21	15	6	19	1	0	1

Note. F = female, M = male, W = White, B = Black, BI = Biracial, H = Hispanic.

Analysis of Existing Quantitative Assessment Data on ENC School Students

In my role as principal of ENC School, I collected and analyzed quantitative data (EVAAS and iReady data) to determine the areas of need and then determined in which grade levels teachers needed support to meet the needs of the gifted students. The previously included Table 4 showed the growth AIG students achieved during the 2021-2022 school year according to EVAAS data. During the 2021-2022 school year Grade 4, Grade 5, and Grade 6 showed negative growth. The previously included Table 5 showed the growth AIG students achieved during the 2022-2023 school year, according to EVAAS data. During the 2022-2023 school year the majority of the negative growth was also in Grade 4, Grade 5, and Grade 6. I analyzed middle-of-the-year (MOY) 2023-2024 iReady data to determine which Grade 4, Grade 5, and Grade 6 students were underperforming (see Tables 11, 12 and 13).

I analyzed math and reading EOG data of all gifted students in Grades 4 through 8 at ENC School. Out of those grades, based on EVAAS data, I determined underperforming gifted students were more prevalent in Grade 4, 5, and 6 than any other grades. I asked the parents of all gifted students in those grade levels for consent for them to participate in my study. After securing consent, I sought assent from the students. Out of 97 gifted students, 19 Grade 4, 18 Grade 5, and 21 Grade 6 students' parents agreed for their child or children to participate and those students agreed to participate as well. A total of 58 students participated in the study.

My first step involved placing them in classes based on their performance. Students who met two out of three of the following criteria were placed in the advanced math classes for Grade 6: (a) be considered as at the level of achievement typical of a student in the latter stages of Grade 5 according to iReady, (b) scoring at 90% or higher average in math, and (c) scoring a Level 4 or higher on the EOG. This criterion is established by the ENC School district for Grade

Table 11

2023-2024 Grade 4 iReady Math and Reading Data

Student ID	BOY Math	MOY Math	BOY Reading	MOY Reading
A	469	478	563	577
B	485	493	628	626
C	466	510	582	626
D	497	524	609	611
E	462*	482	566	591
F	506	508	592	615
G	485	492	567	571
H	468	584	553*	580
I	506	504	582	606
J	494	500	636	606
K	480	481	603	610
L	478	495	624	643
M	495	534	611	642
N	503	516	625	629
O	483	493	538*	578
P	515	523	533*	555
Q	468	492	596	606
R	474	493	585	596
S	463*	482	536*	575

Note. $N = 19$. * Score below grade level. “BOY” = beginning & “MOY” = middle of year.

Table 12

2023-2024 Grade 5 iReady Math and Reading Data

Student ID	BOY Math	MOY Math	BOY Reading	MOY Reading
T	489	503	606	634
U	500	526	630	636
V	506	521	600	635
W	515	529	579*	626
X	489	497	593	572
Y	493	523	570*	601
Z	483	505	571*	597
AA	484	494	585	600
BB	494	508	567*	609
CC	485	511	601	613
DD	491	496	585	585
EE	485	498	560*	597
FF	483	497	594	588
GG	478*	498	615	630
HH	511	522	581	595
II	511	508	642	634

Table 12 (continued)

Student ID	BOY Math	MOY Math	BOY Reading	MOY Reading
JJ	509	542	646	661
KK	520	532	597	637

Note. $N = 18$. * Score below grade level. "BOY" = beginning & "MOY" = middle of year.

Table 13

2023-2024 Grade 6 iReady Math and Reading Data

Student ID	BOY Math	MOY Math	BOY Reading	MOY Reading
LL	509	523	602	615
MM	503	525	597*	643
NN	524	538	636	635
OO	512	513	659	635
PP	504	535	633	642
QQ	545	597	612	638
RR	539	537	624	612
SS	525	506	617	622
TT	513	515	595*	603
UU	535	526	595*	625
VV	524	532	639	643
WW	523	535	651	659
XX	512	527	658	661
YY	513	512	608	624
ZZ	541	552	650	647
AAA	492*	500	606	636

Table 13 (continued)

Student ID	BOY Math	MOY Math	BOY Reading	MOY Reading
BBB	527	535	666	701
CCC	495	511	586*	640
DDD	509	523	679	654
EEE	496	524	627	622
FFF	513	549	658	673

Note. $N = 21$. * Score below grade level. "BOY" = beginning & "MOY" = middle of year.

6 Advanced Math classes. In Grade 4 and Grade 5, students who were identified as gifted were clustered. I utilized a program called Class Creator (https://www.classcreator.io/) to identify and place students in Grade 4 and Grade 5 classes, so that gifted students would be together in two clusters. Teachers operate in teams in Grade 4 and 5, with one teacher teaching science and math and the other teacher teaching social studies and English language arts. There are two teachers per team. Each team had one class with gifted students and one class without students identified as gifted. I analyzed the students' beginning-of-year iReady data and labeled them as "meeting," "exceeding," or "not meeting" expectations in the iReady program. "Meeting expectations" is equivalent to performing on grade level, "exceeding expectations" is equivalent to performing above grade level, and "not meeting expectations" is equivalent to performing below grade level.

I used Google Spreadsheets to document students' data. In Google Spreadsheets, I gave each student a pseudonym. Their name, pseudonym, race, gender and beginning of year iReady score was housed in one spreadsheet and EOG scores and grades were kept in a separate spreadsheet provided by the district and completed by the previous year's math teachers. In summary, my analysis of the data revealed that in math, in Grade 4, two out of the 19 students participating in the study underperformed at the beginning of the year on the iReady diagnostic, in Grade 5, one out of 18 students underperformed, and in Grade 6, one out of 21 students underperformed. In reading, in Grade 4, four out of 19 students underperformed; in Grade 5, five students out of 18 underperformed; and in Grade 6, four students out of 21 underperformed. Out of the total number of gifted students participating, 6.9% were underperforming in math and 22.4% were underperforming in reading according to the iReady beginning of year diagnostic.

Procuring and Creating Data Gathering Instruments

Several colleagues in the education field collaborated with me in constructing student survey instruments, a teacher self-assessment checklist, and a pre- and post- self-rating scale for teachers—in addition to other data gathering tools.

Teacher Self-Assessment Checklist

I decided against using the walkthrough instrument that I had initially intended to use (see Appendix F) because, as my colleagues verified, in practice, it proved to be too limiting and instead used a teacher assessment checklist (see Appendix I). This enabled me to gather more comprehensive data. The walkthrough instrument would have effectively limited data collection because it allowed for only 5 minutes per classroom per week.

I decided to request that the teachers complete a self-assessment checklist regarding their use of differentiation practices periodically (see Appendix J). The self-assessment instrument was adapted based on feedback from my study partners. I added a text field to the self-assessment instrument to allow teachers the flexibility to document differentiation strategies that were not listed. I also added the following after consulting with my study partners: apps for skills practice at varied levels of complexity (e.g., iReady), choice boards, personalized formative feedback, student interest activities and other strategies. The teacher self-assessment scale collected information on the use of differentiation strategies in the areas of content, process, and product. With respect to process, I gathered additional information to determine if the differentiation was based on students' interest, readiness, and/or learning profile.

The teacher assessment checklist allowed teachers to report every differentiation strategy they used. I am conscious of the trade-off in my opting to substitute the teachers' self-report data

for what would have been more dispassionate—although time-constrained data. This use of teachers' self-report data adds a new limitation to my study.

Class Value Assessment

In response to my inquiry, McCoach (personal communication, August 14, 2023) provided insight into the Class Value Assessment (CVA) and kindly gave me permission to use it. They confirmed that it was based on the work of Eccles et al. (1983) and Wigfield and Eccles (2002) on subjective task values. Wigfield and Eccles proposed that "individuals' expectancies for success and the value they have for succeeding are important determinants of their motivation to perform different achievement tasks, and their choices of which tasks to pursue" (p. 91). McCoach and Siegle (2001, 2003a) operationalized goal valuation as the extent to which students perceived achievement in school as important.

The CVA was closely modeled on the Goal Valuation Scale and validated by McCoach and Siegle (2002) and Newton (personal communication, June 6, 2023). Newton conducted an extensive search of the literature leading them to conclude that there were three main components of general task value: "interest in the task the person is performing, as well as the importance and utility of that task" (p. 4). Commenting on the CVA, Mc Coach (personal communication, August 14, 2023), stated that "the factor analyses worked well, and the reliabilites *[sic]* were good." Dedrick et al. (2014) defined the factor structure of an assessment instrument as representing "the theoretical dimensions underlying the instrument and the grouping of items that reflect these dimensions or factors" (p. 39). Mc Coach also provided the factor structure of the CVA—as shown in the first column in Table 14 and verified that Item 7, Item 11, and Item 15 were intentionally negatively worded. As Table 14 also shows, the syntax of the items remained constant for both language arts and math.

Table 14

Factor Structure of the CVA: Language Arts/Math

Subjective Task Value Factor	Items
Attainment	1. Doing well in language arts/math class makes me feel good about myself. 2. I feel that I must do well in language arts/math class. 3. It's personally important for me to do well in language arts/math class. 4. I need to do well in language arts/math class to please myself. 5. Doing well in language arts/math class gives me a sense of accomplishment. 6. I feel personal satisfaction from doing well in language arts/math class.
Intrinsic Value	7. *I am often bored in language arts/math class. 8. I find the content of language arts/math class interesting. 9. I like learning new things in language arts/math class. 10. I enjoy the activities that we do in language arts/math class. 11. *I find the content of language arts/math class boring. 12. I enjoy doing work in language arts/math. 13. Language arts/math class interests me. 14. I find it easy to pay attention in language arts/math class. 15. * I hate doing the work in language arts/math class.
Utility Value	16. Language arts/math class is necessary for achieving my future goals. 17. Language arts/math class has many "real world" applications. 18. The content of language arts/math class is useful. 19. Doing well in language arts/math class will help me with my future goals. 20. I am learning valuable information in language arts/math class. 21. I will definitely use the information taught in language arts/math class. 22. Language arts/math class will help me "get to where I want to go."

Note. * Indicates negatively worded item constituting fourth factor labeled "boredom".

McCoach et al. (2016) posed the question as to "whether agreeing to statements about negative behaviors or attitudes seemed to represent the polar opposite of disagreeing to statements about positive behaviors or attitudes" (p. 61). They pointed out that, instead of assuming that disagreeing with a positive statement indicates a negative orientation to the trait of interest, the most direct way of finding out whether a student ascribes a negative orientation to themselves is to ask a question that is worded negatively. Students' negative orientations to academic achievement are relevant to my study because, as McCoach et al. (2020) pointed out, such orientations are "one of the greatest risk factors for underachievement" (p. 62) in academic tasks—the situation that may be at the root of my problem of practice.

McCoach et al. (2016) also noted their concern about the potential for positive response bias in students' responses to an assessment that contains only positively worded questions. They referenced findings from studies that utilized the School Attitude Assessment Survey-Revised (McCoach & Siegle, 2003) especially in relation to the questions loading on the goal valuation factor which exhibited both a high mean and a low level of variability. Such potential positive response bias is pertinent in this case since, as I noted above, the CVA was derived from the Goal Valuation Scale (Newton, personal communication, June 6, 2023).

McCoach et al. (2016) adverted to the fact that the inclusion of negatively worded items within the same instrument as positively worded items has been found to result in one of two outcomes. First, the negatively worded items may constitute their own distinct factor or, second, they may introduce a method effect that results in adding "systematic variance to scores beyond what is attributable to variance in the substantive construct of interest" (McCoach et al., 2020, p. 63)—in my case, "class value." Following McCoach's (personal communication, August 14,

2023) advice, rather that reverse scoring Items 7, 11, and 15, I will consider them a fourth factor which I will label “boredom.”

Walkthrough Form

I created a Walkthrough Form (see Appendix F) to gather documentation of teachers who are participating in the study differentiating content, processes and products to determine if teachers were able to implement the new strategies they learned from the professional development session provided on differentiation. However, after collaborating with my study partners we chose to use a different type of instrument, Teacher Self-Assessment Checklist (see Appendix I), that would allow teachers to collect their own data. The walkthrough form would have limited data collection to 5 minutes once per week. We may or may not have witnessed differentiation taking place. The new instrument allowed teachers to report differentiation practices used.

Teacher Self Rating Scale

I created a Teacher Self-Rating Scale (see Appendix G) that gave teachers the opportunity to respond with never, rarely, sometimes or always to questions regarding differentiation implementation and student outcomes. This was given to teachers to complete pre and post intervention.

Focus Group Questions

Focus Group questions (see Appendix H) were created to gather information from teachers pre and post intervention. During the pre-intervention focus group session teachers were asked questions regarding students’ goal valuation, ability grouping and differentiation.

Digital Exit Ticket

The AIG teachers and I created a digital exit ticket (see Appendix K) to collect data from teachers after they participated in my professional development session on differentiation (see following section) to determine how they planned to implement the professional development. The digital exit ticket contained the following two questions:

1. How do you envision incorporating the differentiation techniques into your lesson plans or curriculum?
2. Are there any specific subjects or topics where you see immediate opportunities to apply what you've learned?

Although I did not initially plan on collecting these data as a part of my research, I anticipated that it would be useful both in my role as the principal of ENC and as input into my planning for the next steps regarding implementation.

Professional Development on Differentiation

I collaborated with two gifted education teachers, and we created a differentiation professional development session for all the teachers participating in the study. We created a 30 slide Google Slide Show (see Appendix L) presentation that provided information on the components of differentiation including resources that ENC school teachers have access to.

Planning for Intervention

I analyzed the current and historical data for all subgroups at ENC School. The Gifted Students subgroup was one of the subgroups that stood out because the group underperformed historically and during the 22-23 school year. I researched strategies used to combat underperformance in gifted students. Ability grouping and differentiation were among the strategies I studied. When considering how we could improve the performance of gifted students,

we considered many options, but I ultimately decided on ability grouping and differentiation. Students were ability grouped based on achievement data. In Grade 6, using criteria provided by the district, math classes were created. In Grade 6, gifted students were all clustered in two Advanced Math classes and they tracked with each other all day. In Grade 4 and Grade 5 Gifted students were clustered in two classes in each grade and they also tracked together all day. I collaborated with the AIG teachers on a differentiation professional development session that was provided to the Grade 4, Grade 5, and Grade 6 teachers. We met with each grade level separately.

Goal Setting

My goal for this study was for (a) gifted students to move from underperforming (not meeting expectations) to meeting or exceeding expectations, (b) goal valuation for reading and math to improve, and (c) teachers to strengthen their understanding of differentiation practices and begin to implement content, process, and product differentiation.

Do

In alignment with my study design (see Figure 3), in this second phase of my study, I (a) provided professional development on differentiation, (b) enrolled participants, (c) implemented my planned differentiation and ability grouping intervention, (c) surveyed teachers and gathered data regarding the effectiveness of my intervention, and (d) administered the CVA (both pre-intervention and post-intervention) to the participating students.

In January 2024, I entered the Do phase and started recruiting staff and students. I recruited teachers and staff by sharing my study goals and requesting that they participate. I recruited students by gathering Grade 4, Grade 5 and Grade 6 gifted students in the cafeteria and explaining to them that I was conducting a study in which I would like them to participate after

having first contacted their parents via letter to gain permission. The majority of the students agreed to participate in the study.

Professional Development on Differentiation

I conducted the professional development sessions during normally scheduled professional learning team time. One of the AIG teachers and I met with each grade level and conducted the professional development session in a one-hour timeframe. Teachers were given an opportunity to ask questions and encouraged to reach out to one of the AIG teachers following the professional development with any questions or if they needed support with implementation.

Participants

Grade 4, Grade 5, and Grade 6 teachers, two AIG teachers, an assistant principal, an instructional coach and the Director of Academically Gifted Students also agreed to participate in my study. Ninety-three percent of the adult participants were female and 7% were male. Thirteen percent of the participants were ages 25-34, 53% of the participants were ages 35-44, 27% of the participants were ages 45-54, and 7% of the participants were ages 55 and above. In addition, 58 students also agreed to participate in my study (see Table 10 for demographics).

Pre-Administration of CVA

I gathered students in the cafeteria to complete the Class Value Assessment for math and language arts. Students were instructed to bring their school issued Chromebook. Each student was sent a link for each assessment via email. No identifying data were gathered. Once all data were collected and analyzed I realized some students misunderstood the directions because some students only completed one survey. Looking back, I also wish I had collected grade level identification data for disaggregation purposes.

Implementation

Ability grouping took place at the beginning of the year. Students were placed in ability groups in August 2023. Differentiation professional development took place toward the end of January for Grade 5 teachers (January 31, 2023 at 10:30 AM) and Grade 6 teachers (January 31, 2024 at 11:40 AM) and early February for Grade 4 teachers (February 1, 2024 at 11:30 AM).

Data from Teachers

Teacher Self-Assessment Checklist

I provided teachers with the checklist following the professional development session on differentiation. They were asked to collect data monthly (February, March, April. and May) on their implementation practices. However, not all teachers submitted data that frequently. Teachers began collecting data with the Teacher Self-Assessment Checklist on February 22, 2024. The last entry was collected on May 1, 2024.

Teacher Self-Rating Scale

I provided the teachers with the Teacher Self-Rating Scale on January 31, 2024, and June 14, 2024. The Google form was shared via email both times.

Focus Groups

Focus groups met separately by grade level pre-intervention and all together via Zoom post-intervention. Pre-intervention, Grade 5 and Grade 6 teachers met on January 31, 2024, and Grade 4 teachers met on February 1, 2024. Post-intervention most teachers met via Zoom on June 19, 2024. Some teachers submitted their answers to the questions prior to the meeting because they could not attend the meeting on June 19, 2024.

Post-Administration of CVA

I administered the first round of CVA surveys in January 2024 in the cafeteria at ENC School. Students were instructed to bring their Chromebooks with them because the survey link had been sent to their email. I ensured confidentiality by not requiring students to provide any identifying information. In hindsight, this was a major error. My supposition was that all of the students would participate in both the pre- and post-intervention administration of the CVA enabling me to compare outcomes pre- and post-intervention. As it happened, end-of-year complexities intervened, and I was unable to obtain CVA surveys from many of the students. With no way of matching pre- and post-intervention responses, I am unable to conjecture about the changes in the students' perceptions of the value of the reading and math classes, but I have included a detailed consideration of the data in the following section.

Study

In alignment with my study design (see Figure 3), this study phase of my research began with the analysis of the CVA, the EOG data, and the teacher data. My analysis empowers my evaluation of the outcome—especially in the light of the goals I laid out at the end of my Plan phase.

Analysis of Exit Ticket

I asked teachers "How do you envision incorporating the differentiation techniques into your lesson plans or curriculum? One teacher shared, "I am eager to use some of the resources shared today from the websites and teacher toolbox from iReady, as well as information about tiered lessons, scaffolding, etc." Another teacher shared, "I'm excited to use learning contracts and compacting to help enrich my AIG students."

I also asked teachers “Are there any specific subjects or topics where you see immediate opportunities to apply what you've learned? Teachers reported they planned to differentiate instruction with social studies content, English Language Arts, and Math, and one teacher said, “This will work with any topic we are working on.” That same teacher reported she felt differentiation could be applied to her small groups in math at the teacher's table instead of using the same problems as the rest of the class, varying the support and difficulty depending on which group she worked with.

Teachers expressed excitement over the Teacher Toolbox component of iReady and said that they planned to pull resources from it to provide differentiated instruction during small groups. Additionally, one teacher shared, “I am going to work on scaffolding next week with my reading groups. We are actually writing persuasive essays, and I have already seen the unique needs of my groups at different levels. So, I plan to offer different levels of assistance to different groups, and back off as they get more comfortable writing on their own.”

Analysis of CVA

The analysis of the CVA data was conducted using JMP Pro 17 (https://www.jmp.com/en_us/home.html) with the assistance of my dissertation chair. I downloaded the students’ data from a Google Form and formatted them into the Word tables included below. For further analysis, the data in the Word tables was copied and pasted into a JMP Pro table where they were appropriately characterized, verified, and cleaned prior to processing.

Pre-Intervention CVA Analysis

In January 2024, 58 gifted students were given the Class Value Assessments (see Appendixes D and E) in the areas of math and reading to be completed online by responding to a

Google Form. Out of the 58 students, 56 completed the reading and there are 59 responses to the math indicating that one student took the survey twice. Table 10 shows the demographics of the participants. The results of the pre-intervention CVA surveys are shown in Table 15 (for math) and Table 16 (for reading).

Overall, there was a higher proportion of positive responses in math and lower engagement in reading. Students reported that doing well in math supported their personal goals and that they understood how it would benefit them in the future. However, some students reported difficulty being engaged and reported boredom. Students also recognized that doing well in reading was important. However, fewer students saw how it impacted their future or enjoyed learning the content.

Figure 4 shows the mean score for math (see the left-hand panel, $N = 59$) and language arts (see the right-hand panel, $N = 56$) on the seven-point scale for each of the 22 items of the CVA (shown as the individual points) classified by factor (the color of the points, as shown by the legend to the top right of each graph), the means of the factors (shown by the horizontal line in each factor), and the 95% confidence interval of each of the factor means (the shaded rectangle surrounding the horizontal line).

By inspection of Figure 4, participants considered Attainment the most important factor in both math and language arts (although a little more important for math), followed by Utility Value—which partly overlapped in the case of math. Intrinsic Value seems to occupy a "middling" role in the case of math, with Boredom notably less prominent. In the case of language arts, Boredom considerably overlaps with Intrinsic Value—surely an observation that warrants attention from the language arts teachers.

Table 15

Math Class Value Assessment Pre-Intervention

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
1. Doing well in math class makes me feel good about myself.	0 (0%)	0 (0%)	1 (1.7%)	3 (5.1%)	6 (10.2%)	9 (15.3%)	40 (67.8%)
2. I feel that I must do well in math class.	0 (0%)	0 (0%)	1 (1.7%)	4 (6.8%)	11 (18.6%)	14 (23.7%)	29 (49.2%)
3. It's personally important for me to do well in math class.	0 (0%)	2 (3.4%)	3 (5.1%)	4 (6.8%)	9 (15.3%)	10 (16.9%)	31 (52.5%)
4. I need to do well in math class to please myself.	1 (1.7%)	3 (5.1%)	7 (11.9%)	10 (16.9%)	5 (8.5%)	10 (16.9%)	23 (39%)
5. Doing well in math class gives me a sense of accomplishment.	1 (1.7%)	0 (0%)	1 (1.7%)	5 (8.5%)	6 (10.2%)	12 (20.3%)	34 (57.6%)
6. I feel personal satisfaction from doing well in math class.	0 (0%)	3 (5.1%)	0 (0%)	9 (15.3%)	9 (15.3%)	6 (10.2%)	32 (54.2%)
7. I am often bored in math class.	9 (15.3%)	9 (15.3%)	9 (15.3%)	6 (10.2%)	8 (13.6%)	6 (10.2%)	12 (20.3%)
8. I find the content of math class interesting.	4 (6.8%)	4 (6.8%)	8 (13.6%)	6 (10.2%)	11 (18.6%)	13 (22%)	13 (22%)
9. I like learning new things in math class.	4 (6.8%)	2 (3.4%)	5 (8.5%)	8 (13.6%)	10 (16.9%)	7 (11.9%)	23 (39%)

Table 15 (continued)

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
10. I enjoy the activities we do in math class.	2 (3.4%)	4 (6.8%)	8 (13.6%)	7 (11.9%)	9 (15.3%)	14 (23.7%)	15 (25.4%)
11. I find the content of math class boring.	12 (22%)	11(18.6%)	6 (10.2%)	11(18.6%)	4 (6.8%)	5 (8.5%)	9 (15.3%)
12. I enjoy doing work in math class.	8 (13.6%)	5 (8.5%)	3 (5.1%)	11(18.6%)	7 (11.9%)	11 (18.6%)	14 (23.7%)
13. Math class interests me.	4 (6.8%)	6 (10.2%)	7 (11.9%)	4 (6.8%)	7 (11.9%)	13 (22%)	18 (30.5%)
14. I find it easy to pay attention in math class.	8 (13.6%)	2 (3.4%)	7 (11.9%)	10(16.9%)	14 (23.7%)	10 (16.9%)	8 (13.6%)
15. I hate doing the work in math class.	21(35.6%)	12(20.3%)	7 (11.9%)	5 (8.5%)	6 (10.2%)	2 (3.4%)	6 (10.2%)
16. Math class is necessary for achieving my future goals.	3 (5.1%)	1 (1.7%)	4 (6.8%)	2 (3.4%)	7 (11.9%)	15 (25.4%)	27 (45.8%)
17. Math class has many “real world” applications.	5 (8.5%)	0 (0%)	3 (5.1%)	13 (22%)	9 (15.3%)	10 (16.9%)	19 (32.2%)
18. The content of math class is useful.	3 (5.1%)	2 (3.4%)	5 (8.5%)	4 (6.8%)	9 (15.3%)	16 (27.1%)	20 (33.9%)
19. Doing well in math class will help me with my future goals.	1 (1.7%)	2 (3.4%)	3 (5.1%)	3 (5.1%)	9 (15.3%)	14 (23.7%)	27 (45.8%)

Table 15 (continued)

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
20. I am learning valuable information in math class.	4 (6.8%)	4 (6.8%)	5 (8.5%)	8 (13.6%)	9 (15.3%)	10 (16.9%)	19 (32.2%)
21. I will definitely use the information taught in math class.	3 (5.1%)	2 (3.4%)	5 (8.5%)	5 (8.5%)	11 (18.6%)	12 (20.3%)	21 (35.6%)
22. Math class will help to “get me where I want to go.”	3 (5.1%)	0 (0%)	6 (10.2%)	4 (6.8%)	8 (13.6%)	14 (23.7%)	24 (40.7%)

Table 16

Reading Class Value Assessment Pre-Intervention

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
1. Doing well in language arts class makes me feel good about myself.	1 (1.8%)	2 (3.6%)	3 (5.4%)	4 (7.1%)	4 (7.1%)	12 (21.4%)	30 (53.6%)
2. I feel that I must do well in language arts class.	1 (1.8%)	3 (5.4%)	1 (1.8%)	6 (10.7%)	11 (19.6%)	12 (21.4%)	22 (39.3%)
3. It's personally important for me to do well in language arts class.	4 (7.1%)	2 (3.6%)	1 (1.8%)	7 (12. 5%)	6 (10.7%)	13 (23.2%)	23 (41.1%)
4. I need to do well in language arts class to please myself.	4 (7.1%)	2 (3.6%)	1 (1.8%)	7 (12.5%)	6 (10.7%)	13 (23.2%)	23 (41.1%)
5. Doing well in language arts class gives me a sense of accomplishment.	2 (3.6%)	1 (1.8%)	2 (3.6%)	3 (5.4%)	7 (12.5%)	12 (21.4%)	29 (51.8%)
6. I feel personal satisfaction from doing well in language arts class.	2 (3.6%)	3 (5.4%)	3 (5.4%)	3 (5.4%)	11 (19.6%)	14 (25%)	20 (35.7%)
7. I am often bored in language arts class.	6 (10.7%)	6 (10.7%)	4(7.1%)	15 (26.8%)	6 (10.7%)	4 (7.1%)	15 (26.8%)
8. I find the content of language arts class interesting.	10(17.9%)	2 (3.6%)	8 (14.3%)	10 (17.9%)	13 (23.2%)	7 (12.5%)	6 (10.7%)

Table 16 (continued)

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
9. I like learning new things in language arts class.	7 (12.5%)	3 (5.4%)	9 (16.1%)	8 (14.3%)	9 (16.1%)	8 (14.3%)	12 (21.4%)
10. I enjoy the activities we do in language arts class.	4 (7.1%)	0 (0%)	7 (12.5%)	7 (12.5%)	12 (21.4%)	13 (23.2%)	13 (23.2%)
11. I find the content of language arts class boring.	5 (8.9%)	8 (14.3%)	6 (10.7%)	10 (17.9%)	9 (16.1%)	8 (14.3%)	10 (17.9%)
12. I enjoy doing work in language arts class.	9 (16.1%)	2 (3.6%)	10(17.9%)	12 (21.4%)	9 (16.1%)	8 (14.3%)	6 (10.7%)
13. Language arts class interests me.	11(19.6%)	2 (3.6%)	8 (14.3%)	8 (14.3%)	10 (17.9%)	11 (19.6%)	6 (10.7%)
14. I find it easy to pay attention in language arts class.	10(17.9%)	2 (3.6%)	7 (12.5%)	10 (17.9%)	10 (17.9%)	12 (21.4%)	5 (8.9%)
15. I hate doing the work in language arts class.	12 (21.4%)	9 (16.1%)	6 (10.7%)	10 (17.9%)	9 (16.1%)	3 (5.4%)	7 (12.5%)
16. Language arts class is necessary for achieving my future goals.	5 (8.9%)	1 (1.8%)	3 (5.4%)	12 (21.4%)	7 (12.5%)	10 (17.9%)	18 (32.1%)
17. Language arts class has many “real world” applications.	5 (8.9%)	3 (5.4%)	1 (1.8%)	10 (17.9%)	15 (26.8%)	11 (19.6%)	11 (19.6%)

Table 16 (continued)

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
18. The content of language arts class is useful.	5 (8.9%)	1 (1.8%)	4 (7.1%)	14 (25%)	6 (10.7%)	10 (17.9%)	16 (28.6%)
19. Doing well in language arts class will help me with my future goals.	3 (5.4%)	1 (1.8%)	5 (8.9%)	8 (14.3%)	16 (28.6%)	9 (16.1%)	14 (25%)
20. I am learning valuable information in language arts class.	8 (14.3%)	3 (5.4%)	3 (5.4%)	12 (21.4%)	8 (14.3%)	9 (16.1%)	12 (23.2%)
21. I will definitely use the information taught in language arts class.	7 (12.5%)	3 (5.4%)	4 (7.1%)	18 (32.1%)	4 (7.1%)	7 (12.5%)	13 (23.2%)
22. Language arts class will help to "get me where I want to go."	4 (7.1%)	3 (5.4%)	2 (3.6%)	15 (26.8%)	11 (19.6%)	11 (19.6%)	10 (17.9%)

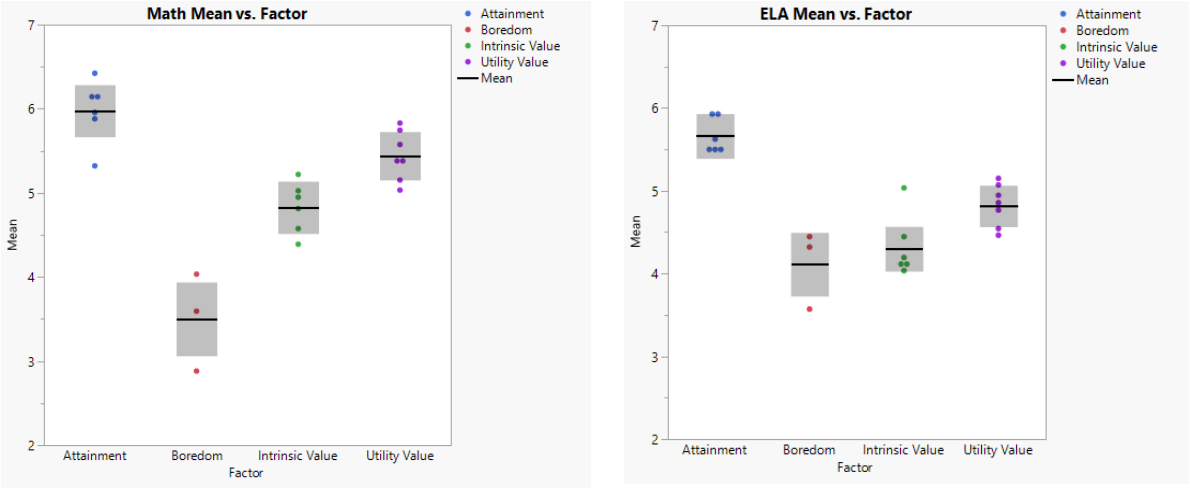


Figure 4. Pre-intervention means of items and factors for math and language arts.

To put the interpretation on a firmer empirical footing, Figure 5 shows the outcome of an analysis of the factor means (math in the left-hand panel, language arts in the right-hand panel) taking the overall mean (the central horizontal line, labeled "Avg." [5.156 for math; 4.811 for language arts]) as the baseline to determine whether the factor means are significantly different from each other. The shaded area represents the upper decision limit (UDL) and the lower decision limit (LDL) at the 0.05 level of significance; the factor means are the points (red for significantly higher or lower, green for not significantly different) and the ordinates from the overall mean highlight the values of the factor means—either higher or lower than the overall mean.

From Figure 5, the overall average for the factors is "Slightly Agree" for both math and language arts. However, as my initial inspection prefigured, Attainment is a significant factor in both math and language arts ("Agree" level for math; between "Agree" and "Slightly Agree" for language arts) for the participants and Boredom, although present, plays a significant but minor role (between "Slightly Disagree" and "Neither Agree nor Disagree" for math and "Neither Agree nor Disagree" for language arts). Intrinsic Value for math is not a significant factor (a little less than "Slightly Agree") whereas it is significant but minor for language arts (between "Neither Agree nor Disagree" and "Slightly Agree").

Pre-Intervention Summary

The nature of the problem of practice at the end of the pre-intervention phase was essentially unchanged: The needs of gifted students were not being met fully or consistently contributing to some gifted students not attaining to their full potential. Teachers were using differentiation strategies and recognized the benefits for students, but they were not consistently

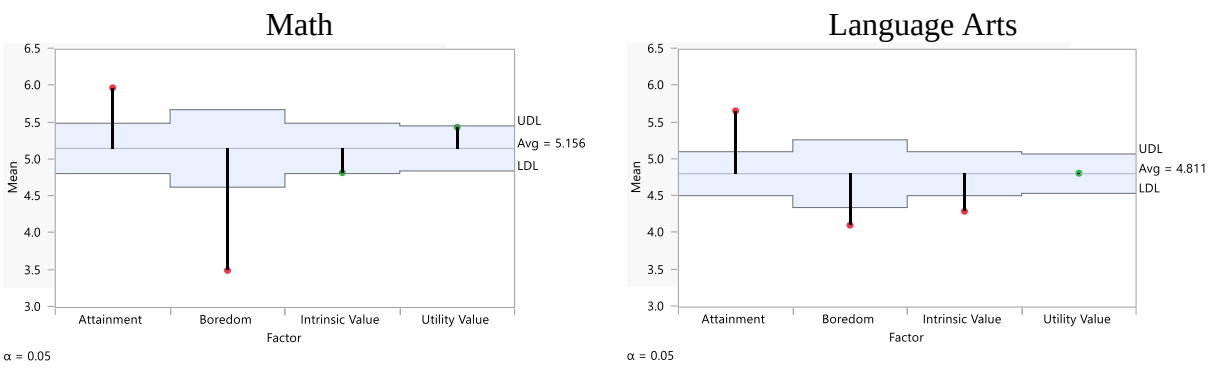


Figure 5. Pre-intervention analysis of factor means for math and language arts.

implementing differentiation strategies. Students reported a stronger connection with learning in math than in reading.

Post-Intervention CVA Analysis

Due to unforeseen circumstances, the post-intervention CVA surveys were completed by only approximately half of the math (N = 31) and language arts (N = 26) participants. The survey link was sent to 19 Grade 4 students, 18 Grade 5 students and 21 Grade 6 students. The results of the post-intervention CVA surveys are shown in Table 17 (for math) and Table 18 (for reading).

I had anticipated comparing the pre-intervention and post-intervention outcomes, but such a comparison is clearly not supported. However, the post-intervention CVA completers responded in markedly similar ways with respect to both math and language arts. As Figure 6 shows by inspection, Boredom is less of a factor in both subjects but strikingly so in language arts. Both Intrinsic Value and Utility Value have increased notably.

Again, to obtain a more empirical perspective on this outcome, I conducted an analysis of the means, using the mean of the means as the baseline. As Figure 7 illustrates, participants "Slightly Disagree" that Boredom is a factor in either subject, Attainment is the dominant factor (close to "Agree"), closely followed by Utility Value. Intrinsic Value is borderline significant at the "Slightly Agree" level for both subjects.

It is unfortunate that, because the same students did not complete both the pre- and post-intervention forms (which was my original intention), I am not able to compare the pre- and post-intervention outcomes or do anything beyond highlight the differences between the pre-intervention and post-intervention results.

Table 17

Math Class Value Assessment Post-Intervention

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
1. Doing well in math class makes me feel good about myself.	0 (0%)	0 (0%)	0 (0%)	4 (12.9%)	1 (3.2%)	8 (25.8%)	18 (58.1%)
2. I feel that I must do well in math class.	0 (0%)	0 (0%)	1 (3.2%)	3 (9.7%)	7 (22.6%)	6 (19.4%)	14 (45.2%)
3. It's personally important for me to do well in math class.	0 (0%)	1 (3.2%)	0 (0%)	1 (3.2%)	5 (16.1%)	6 (19.4%)	18 (58.1%)
4. I need to do well in math class to please myself.	1 (3.2%)	2 (6.5%)	1 (3.2%)	3 (9.7%)	5 (16.1%)	8 (25.8%)	11 (35.5%)
5. Doing well in math class gives me a sense of accomplishment.	0 (0%)	0 (0%)	2 (6.5%)	2 (6.5%)	4 (12.9%)	8 (25.8%)	15 (48.4%)
6. I feel personal satisfaction from doing well in math class.	0 (0%)	0 (0%)	2 (6.5%)	3 (9.7%)	4 (12.9%)	6 (19.4%)	16 (51.6%)
7. I am often bored in math class.	6 (19.4%)	5 (16.1%)	3 (9.7%)	7 (22.6%)	4 (12.9%)	3 (9.7%)	3 (9.7%)
8. I find the content of math class interesting.	0 (0%)	0 (0%)	5 (16.1%)	8 (25.8%)	5 (16.1%)	6 (19.4%)	7 (22.6%)
9. I like learning new things in math class.	1 (3.2%)	1 (3.2%)	2 (6.5%)	6 (19.4%)	3 (9.7%)	6 (19.4%)	12 (38.7%)

Table 17 (continued)

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
10. I enjoy the activities we do in math class.	1 (3.2%)	2 (6.5%)	2 (6.5%)	6 (19.4%)	5 (16.1%)	7 (22.6%)	8 (25.8%)
11. I find the content of math class boring.	10(32.3%)	6 (19.4%)	3 (9.7%)	5 (16.1%)	2 (6.5%)	4 (12.9%)	1 (3.2%)
12. I enjoy doing work in math class.	3 (9.7%)	3 (9.7%)	1 (3.2%)	9 (29%)	6 (19.4%)	6 (19.4%)	3 (9.7%)
13. Math class interests me.	1 (3.2%)	0 (0%)	6 (19.4%)	4 (12.9%)	4 (12.9%	5 (16.1%)	11 (35.5%)
14. I find it easy to pay attention in math class.	0 (0%)	3 (9.7%)	2 (6.5%)	3 (9.7%)	9 (29%)	7 (22.6%)	7 (22.6%)
15. I hate doing the work in math class.	11(35.5%)	6 (19.4%)	6 (19.4%)	2 (6.5%)	3 (9.7%)	1 (3.2%)	2 (6.5%)
16. Math class is necessary for achieving my future goals.	0 (0%)	0 (0%)	2 (6.5%)	3 (9.7%)	6 (19.4%)	3 (9.7%)	17 (54.8%)
17. Math class has many “real world” applications.	0 (0%)	1 (3.2%)	3 (9.7%)	4 (12.9%)	6 (19.4%)	6 (19.4%)	11 (35.5%)
18. The content of math class is useful.	0 (0%)	1 (3.2%)	1 (3.2%)	2 (6.5%)	7 (22.6%)	9 (29%)	11 (35.5%)
19. Doing well in math class will help me with my future goals.	0 (0%)	1 (3.2%)	1 (3.2%)	1 (3.2%)	8 (25.8%)	8 (25.8%)	12 (38.7%)

Table 17 (continued)

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
20. I am learning valuable information in math class.	1 (3.2%)	1 (3.2%)	0 (0%)	1 (3.2%)	11 (35.5%)	3 (9.7%)	14 (45.2%)
21. I will definitely use the information taught in math class.	1 (3.2%)	0 (0%)	2 (6.5%)	2 (6.5%)	5 (16.1%)	9 (29%)	12 (38.7%)
22. Math class will help to “get me where I want to go.”	0 (0%)	0 (0%)	2 (6.5%)	4 (12.9%)	2 (6.5%)	12 (38.7%)	11 (35.5%)

Table 18

Reading Class Value Assessment Post-Intervention

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
1. Doing well in language arts class makes me feel good about myself.	0 (0%)	0 (0%)	0 (0%)	2 (7.7%)	1 (3.8%)	8 (30.8%)	15 (57.7%)
2. I feel that I must do well in language arts class.	0 (0%)	0 (0%)	0 (0%)	2 (7.7%)	5 (19.2%)	8 (30.8%)	11 (42.3%)
3. It's personally important for me to do well in language arts class.	0 (0%)	2 (7.7%)	0 (0%)	1 (3.8%)	4 (15.4%)	6 (23.1%)	13 (50%)
4. I need to do well in language arts class to please myself.	1 (3.8%)	1 (3.8%)	2 (7.7%)	3 (11.5%)	3 (11.5%)	7 (26.9%)	9 (34.6%)
5. Doing well in language arts class gives me a sense of accomplishment.	0 (0%)	0 (0%)	1 (3.8%)	2 (7.7%)	2 (7.7%)	7 (26.9%)	14 (53.8%)
6. I feel personal satisfaction from doing well in language arts class.	0 (0%)	1 (3.8%)	0 (0%)	3 (11.5%)	4 (15.4%)	5 (19.2%)	13 (50%)
7. I am often bored in language arts class.	4 (15.4%)	8 (30.8%)	2 (7.7%)	3 (11.5%)	4 (15.4%)	1 (3.8%)	4 (15.4%)
8. I find the content of language arts class interesting.	3 (11.5%)	1 (3.8%)	2 (7.7%)	2 (7.7%)	4 (15.4%)	10 (38.5%)	4 (15.4%)

Table 18 (continued)

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
9. I like learning new things in language arts class.	0 (0%)	1 (3.8%)	3 (11.5%)	2 (7.7%)	4 (15.4%)	10 (38.5%)	6 (23.1%)
10. I enjoy the activities we do in language arts class.	1 (3.8%)	2 (7.7%)	0 (0%)	2 (7.7%)	3 (11.5%)	11 (42.3%)	7 (26.9%)
11. I find the content of language arts class boring.	5 (19.2%)	7 (26.9%)	1 (3.8%)	7 (26.9%)	2 (7.7%)	2 (7.7%)	2 (7.7%)
12. I enjoy doing work in language arts class.	2 (7.7%)	3 (11.5%)	1 (3.8%)	7 (26.9%)	2 (7.7%)	9 (34.6%)	2 (7.7%)
13. Language arts class interests me.	4 (15.4%)	2 (7.7%)	0 (0%)	3 (11.5%)	4 (15.4%)	8 (30.8%)	5 (19.2%)
14. I find it easy to pay attention in language arts class.	3 (11.5%)	2 (7.7%)	3 (11.5%)	2 (7.7%)	6 (23.1%)	5 (19.2%)	5 (19.2%)
15. I hate doing the work in language arts class.	7 (26.9%)	5 (19.2%)	4 (15.4%)	2 (7.7%)	6 (23.1%)	0 (0%)	2 (7.7%)
16. Language arts class is necessary for achieving my future goals.	0 (0%)	0 (0%)	2 (7.7%)	3 (11.5%)	2 (7.7%)	10 (38.5%)	9 (34.6%)
17. Language arts class has many “real world” applications.	0 (0%)	1 (3.8%)	1 (3.8%)	2 (7.7%)	5 (19.2%)	7 (26.9%)	10 (38.5%)

Table 18 (continued)

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
18. The content of language arts class is useful.	0 (0%)	1 (3.8%)	2 (7.7%)	3 (11.5%)	3 (11.5%)	5 (19.2%)	12 (46.2%)
19. Doing well in language arts class will help me with my future goals.	0 (0%)	1 (3.8%)	1 (3.8%)	2 (7.7%)	4 (15.4%)	8 (30.8%)	10 (38.5%)
20. I am learning valuable information in language arts class.	0 (0%)	1 (3.8%)	0(0%)	5 (19.2%)	3 (11.5%)	6 (23.1%)	11 (42.3%)
21. I will definitely use the information taught in language arts class.	0 (0%)	1 (3.8%)	0 (0%)	5 (19.2%)	1 (3.8%)	8 (30.8%)	11 (42.3%)
22. Language arts class will help to "get me where I want to go."	0 (0%)	0 (0%)	0 (0%)	5 (19.2%)	2 (7.7%)	8 (30.8%)	11 (42.3%)

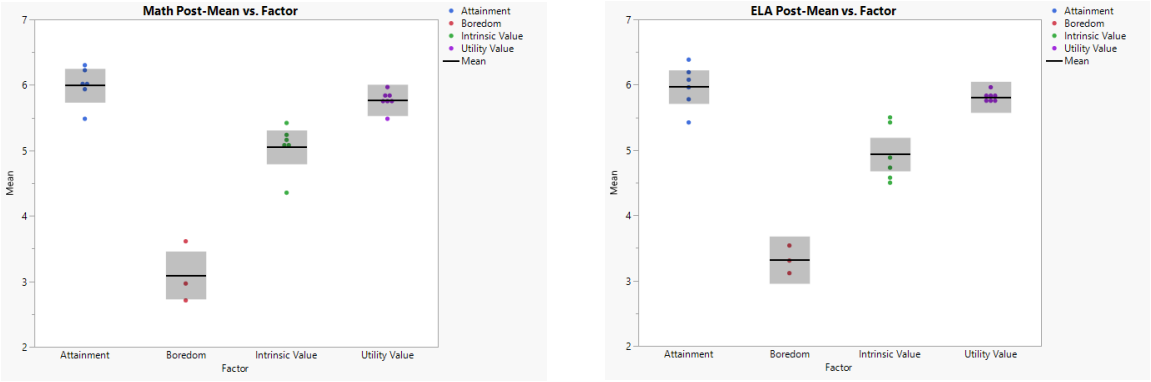


Figure 6. Post-intervention means of items and factors for math and language arts.

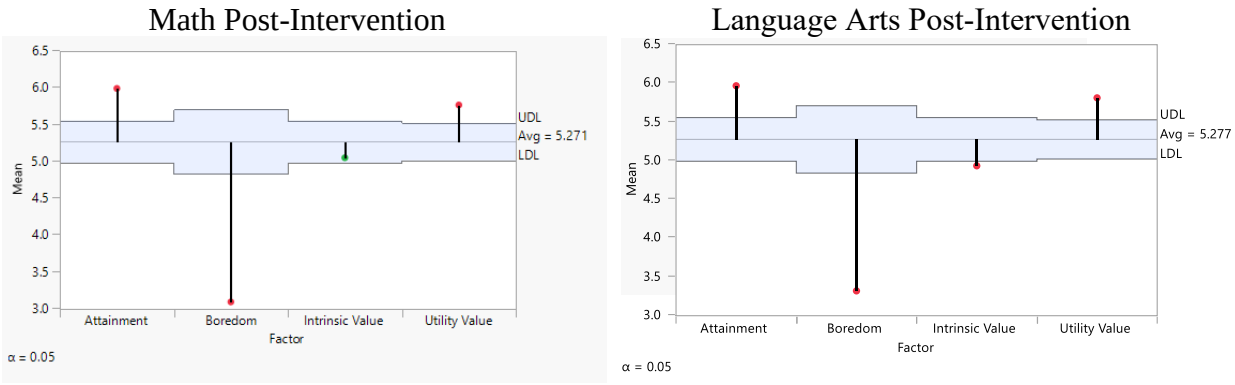


Figure 7. Post-intervention analysis of factor means for math and language arts.

Analysis of iReady End-of-Year Data

In Tables 19 through 21, “DNM” means the student did not meet expectations (below grade level), “Met” means the student met expectations (on grade level), and “Exceeded” means the student exceeded expectations (above grade level). In the area of reading, 75% of Grade 4 underperformers (students scoring below grade level at the beginning of the year) exceeded expectations at the end of the year, 25% did not meet expectations and 0% met expectations. In Grade 5, 100% of underperformers exceeded expectations at the end of the year. In Grade 6, 50% of underperformers exceeded expectations, 25% did not meet expectations and 25% met expectations (see Tables 19 through 21). In the area of math, 100% of the Grade 4 underperformers exceeded expectations at the end of the year, as did 100% of the Grade 5 underperformers. The student in Grade 6 who was previously underperforming also exceeded expectations (see Tables 19 through 21).

There is an association between the increased performance of the underperforming gifted students and the intervention that I implemented. Following the ability grouping of the students and the differentiation professional development that I provided to the teachers, students benefited academically. Their academic performance in math and reading was more in line with their ability than previous diagnostic assessments indicated. However, socially, some students would have preferred not to be grouped with their identified gifted peers all day.

Teacher Data Analysis

I collected survey data from the teachers of students in each of Grade 4, Grade 5, and Grade 6, and focus group data from the participating teachers of students in Grade 4 (four classroom teachers and one AIG teacher), Grade 5 (three classroom teachers), and Grade 6 (four classroom teachers).

Table 19

2023-2024 Grade 4 iReady Math and Reading Data

	Math				Reading			
Student ID	BOY Math	MOY Math	EOY Math	Met, Exceeded or DNM	BOY Reading	MOY Reading	EOY Reading	Met, Exceeded or DNM
O	483	493	496	DNM	538*	578	549*	DNM
P	515	523	525	DNM	533*	555	576	Exceeded
G	485	492	527	Exceeded	567	571	576	DNM
H	468	584	497	Exceeded	553*	580	584	Exceeded
I	506	504	519	DNM	582	606	584	DNM
S	463*	482	512	Exceeded	536*	575	588	Exceeded
E	462*	482	497	Exceeded	566	591	595	Exceeded
D	497	524	530	Exceeded	609	611	599	DNM
F	506	508	531	Exceeded	592	615	602	DNM
A	469	478	498	Exceeded	563	577	614	Exceeded
C	466	510	506	Exceeded	582	626	621	Exceeded
Q	468	492	510	Exceeded	596	606	621	Exceeded
B	485	493	502	DNM	628	626	624	DNM
R	474	493	509	Exceeded	585	596	628	Exceeded
M	495	534	532	Exceeded	611	642	629	Exceeded
J	494	500	516	Exceeded	636	606	636	DNM
K	480	481	518	Exceeded	603	610	637	Exceeded

Table 19 (continued)

	Math				Reading			
Student ID	BOY Math	MOY Math	EOY Math	Met, Exceeded or DNM	BOY Reading	MOY Reading	EOY Reading	Met, Exceeded or DNM
L	478	495	526	Exceeded	624	643	643	Exceeded
N	503	516	522	Met	625	629	649	Exceeded

Table 20

2023-2024 Grade 5 iReady Math and Reading Data

	Math				Reading			
Student ID	BOY Math	MOY Math	EOY Math	Met, Exceeded or DNM	BOY Reading	MOY Reading	EOY Reading	Met, Exceeded or DNM
FF	483	497	513	Exceeded	594	588	566	DNM
HH	511	522	532	Exceeded	581	595	579	DNM
EE	485	498	508	Exceeded	560*	597	583	Exceeded
BB	494	508	505	DNM	567*	609	586	Exceeded
II	511	508	520	DNM	642	634	586	DNM
X	489	497	513	Exceeded	593	572	591	DNM
AA	484	494	512	Exceeded	585	600	598	Met
DD	491	496	513	Exceeded	585	585	601	Exceeded
Y	493	523	519	Exceeded	570*	601	607	Exceeded
Z	483	505	515	Exceeded	571*	597	613	Exceeded
CC	485	511	512	Exceeded	601	613	624	Exceeded
W	515	529	534	Exceeded	579*	626	627	Exceeded
T	489	503	535	Exceeded	606	634	639	Exceeded
U	500	526	549	Exceeded	630	636	642	Exceeded
KK	520	532	538	Exceeded	597	637	644	Exceeded
V	506	521	533	Exceeded	600	635	652	Exceeded
GG	478*	498	502	Exceeded	615	630	629	Exceeded
JJ	509	542	563	Exceeded	646	661	668	Exceeded

Table 21

2023-2024 Grade 6 iReady Math and Reading Data

	Math				Reading			
Student ID	BOY Math	MOY Math	EOY Math	Met, Exceeded or DNM	BOY Reading	MOY Reading	EOY Reading	Met, Exceeded or DNM
LL	509	523	531	Exceeded	602	615	588	DNM
TT	513	515	544	Exceeded	595*	603	597	DNM
CCC	495	511	538	Exceeded	586*	640	598	Met
SS	525	506	530	DNM	617	622	623	Exceeded
UU	535	526	534	DNM	595*	625	626	Exceeded
VV	524	532	558	Exceeded	639	643	628	DNM
OO	512	513	544	Exceeded	659	635	635	DNM
NN	524	538	548	Exceeded	636	635	640	Met
QQ	545	597	566	Exceeded	612	638	644	Exceeded
MM	503	525	545	Exceeded	597*	643	652	Exceeded
WW	523	535	554	Exceeded	651	659	653	DNM
YY	513	512	520	Exceeded	608	624	660	Exceeded
EEE	496	524	534	Exceeded	627	622	665	Exceeded
XX	512	527	545	Exceeded	658	661	667	Exceeded
FFF	513	549	545	Exceeded	658	673	672	Exceeded
DDD	509	523	547	Exceeded	679	654	684	Met
AAA	492*	500	511	Exceeded	606	636	605	DNM
RR	539	537	554	Exceeded	624	612	613	DNM

Table 21 (continued)

	Math				Reading			
Student ID	BOY Math	MOY Math	EOY Math	Met, Exceeded or DNM	BOY Reading	MOY Reading	EOY Reading	Met, Exceeded or DNM
ZZ	541	552	564	Exceeded	650	647	643	DNM
PP	504	535	552	Exceeded	633	642	661	Exceeded
BBB	527	535	566	Exceeded	666	701	691	Exceeded

Teacher Self-Assessment Checklist

I collected qualitative survey data from the teacher participants regarding their use of differentiation strategies by content (see Table 22), process (see Tables 23-25), and product (see Table 26). Teachers of students in Grade 4 (N = 4, submissions = 7), Grade 5 (N = 4, submissions = 9), and Grade 6 (N = 4, submissions = 17) retuned completed checklists which are aggregated in Figure 8. Overall, differentiation strategies were documented more frequently for the area of reading with 17 of the 28 entries and 11 out of the 28 entries for the area of math.

Content Differentiation. In terms of content differentiation strategies in Grade 4, tiered content was more prevalent than any other strategy (see Table 22). Tiered content means content that spans the range from below grade to above grade level as opposed to strictly above grade level. Tiered content and above grade level content were the most prevalent strategies used in Grade 5. In Grade 6, research projects and advanced vocabulary were among the most frequently implemented strategies. However, overall, there was a slight preference for using above grade content with students, closely followed by tiered content.

Process Differentiation. In my professional development presentation, process differentiation strategies were subdivided into three sub-strategies. The first sub-strategy was readiness-determined process differentiation (see Table 23). In this sub-strategy, in Grade 4, small group instruction was reported most frequently, in Grade 5, small group instruction and think-pair-share were reported most frequently, and in Grade 6, print and digital resources at varied levels of complexity and think-pair-share were used most frequently. Overall, small group instruction and think-pair-share were the most frequently implemented.

Table 22

Content Differentiation Strategies

Focus of Differentiation	Grade 4	Grade 5	Grade 6	Total
Above grade level content	4	7	3	14
Advanced literature	1	2	3	6
Advanced mathematical concepts	1	2	3	6
Advanced vocabulary	2	3	4	9
Alternative methods for solving problems	1	1		2
Complex problem-solving tasks	1	2		3
Complex texts	2	5	3	10
Creating own Integer Maze			1	1
Differentiated homework		2		2
Encourage critical analysis		3	3	6
Encourage independent reflections		3	3	6
Engage in word analysis	2	5	3	10
Explore connections to real-world applications in reading response journals		3	3	6
Explore word roots and prefixes	2	5	3	10
None			2	2
Research projects	2	4	5	11
Tiered content	5	7	1	13

Table 23

Readiness-Determined Process Differentiation Strategies

Focus of Differentiation	Grade 4	Grade 5	Grade 6	Total
Apps for skills practice at varied levels of complexity (Example: iReady)	3	6	1	10
Choice Boards	3	2	4	9
Class Discussions featuring questions at varied levels of complexity	5	5	4	14
Exit tickets		6	2	8
Help station/help folder	1	2		3
Learning stations		5	3	8
None			1	1
Other		1		1
Peer tutoring/peer partners	4	6	4	14
Personalized formative feedback	4			4
Print and digital resources at varied levels of complexity	5	5	5	15
Print and digital resources in a student's home language (MLL)		3	3	6
Small group instruction	7	7	3	17
Think-Pair-Share	5	7	5	17
Tiered assignments	5	5		10
Wait time	2	1	2	5

Table 24

Interest-Determined Process Differentiation Strategies

Focus of Differentiation	Grade 4	Grade 5	Grade 6	Total
Apps for enriching a current study based on aspects of the topic of interest to a student		2	1	3
Class discussions with connections to student interests	3	6	3	12
Genius hour			2	2
Independent studies		1		1
Interactive journals	4	3	3	10
Jigsaw		1	2	3
Learning Contracts		1		1
None			4	4
Other		1		1
Student interest activities	2	3	4	9

Table 25

Learning Profile-Determined Process Differentiation Strategies

Focus of Differentiation	Grade 4	Grade 5	Grade 6	Total
Analytical and creative questions	3	6	3	12
Assessments with varied ways to express learning		2	1	3
Assignments with varied ways to expressing learning	2	1	5	8
Choice of working arrangements	1	5	5	11
Class discussions featuring practical applications	1	5	3	9
Collaborative learning options	4	5	3	12
Competitive learning options		2	1	3
Hand signals for student communication/participation	3	6	1	10
Learning Contracts		1		1
Manipulatives and models		2		2
None			4	4
Practical and creative prompts and tasks	2	1		3
Role play	1	1		2

Table 26

Product Differentiation Strategies

Focus of Differentiation	Grade 4	Grade 5	Grade 6	Total
Act out a scene from a play or film	3	1		4
Conduct an interview		1		1
Conduct observations and document findings		1		1
Create a comic book	4		1	5
Create a poster or infographic summarizing information		5	1	6
Create a website or multimedia project			1	1
Create an interactive learning experience	2			2
Create and share a multimedia presentation		7	8	15
Create and solve real-world math scenarios	1	1	1	3
Deliver a speech or debate on a controversial issue		2		2
Design a game		2		2
Design a new product			4	4
Design and build something			2	2
Design and conduct experiments			2	2
Design and set up learning centers			1	1
Develop, distribute, and present survey results			2	2
English: Analyze a novel, or poem, or play	9	3		12
Formulate and defend a theory		1		1
History: Write a historical analysis or research paper		3		3
None		1	2	3
Present findings as a team in a collaborative format		1	1	2
Reflect on personal growth and learning through a written reflection		1	1	2

Table 26 (continued)

Focus of Differentiation	Grade 4	Grade 5	Grade 6	Total
Science: Summarize a scientific experiment or concept		1		1
Solve math problems and show the step-by-step process		2	1	3
Work in groups to solve a problem or complete a project	3	4	3	10
Write a short story or poem.	4	2	1	7

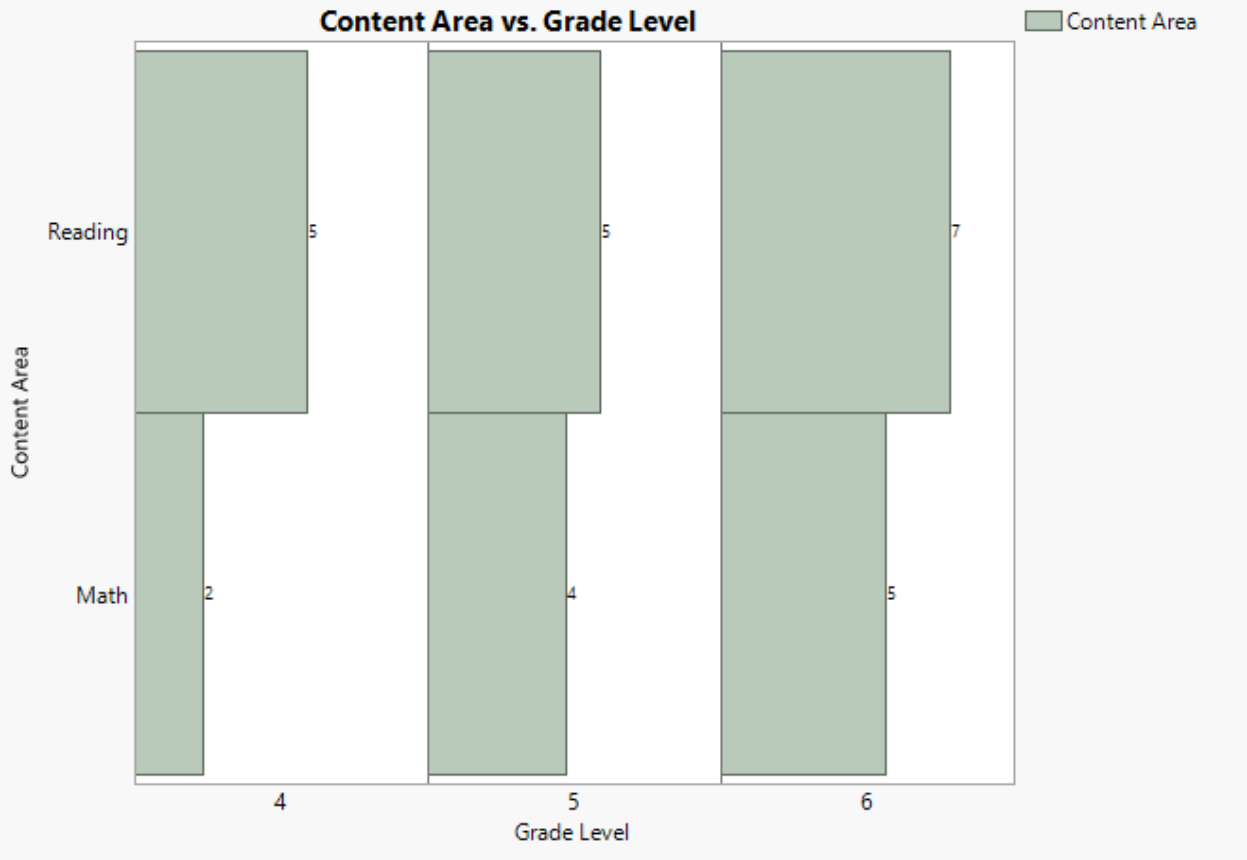


Figure 8. Distribution of participants.

The second sub-strategy was interest-determined process differentiation (see Table 24). In Grade 4, interactive journals were used most frequently, in Grade 5, teachers reported that class discussions with connections to student interests were the most frequently used, and, in Grade 6, teachers reported that student interest activities were implemented the most frequently, but on a par with "none." When I referred back to the raw data, I found it interesting to reflect on the fact that the "none" responses were all from the math teachers. Overall, the most prevalent means of interest-determined process differentiation was class discussions with connections to student interests.

The third sub-strategy was learning profile-determined process differentiation (see Table 25). In this sub-strategy, the most frequently used in Grade 4 was collaborative learning options, in Grade 5, teachers mostly implemented analytical and creative questions and hand signals for collaboration and participation, and in Grade 6, teachers noted choice of working arrangements and assignments with varied ways to expressing learning the most. Again, there were four "none" responses—all from the math teachers. Overall, the most prevalent approach was the use of analytical and creative questions.

Product Differentiation. Teachers also utilized product differentiation strategies from the list of 23 products (including "none," see Table 26). In Grade 4, the English teachers reported students were analyzing a novel, or poem, or play more frequently than the other strategies listed. In both Grades 5 and 6, teachers reported that they invited students to create and share a multimedia presentation most frequently and this was also the overall most frequently used strategy—although limited to Grades 5 and 6 (none of the Grade 4 teachers utilized it).

Survey Data on Impact of Differentiation and Students' Goal Valuation

As discussed above, I collected survey data from the teacher participants regarding their use of specific differentiation strategies by content, process, and product (see Appendix I) in the areas of math and reading from Grade 4, Grade 5, and Grade 6 teachers. I also inquired about the teachers' perception of the impact of their differentiation endeavors (see Appendix G)

The strongest agreement among the teachers (N = 12; 58% often, 33% sometimes, 8% rarely) revealed their consensus that (a) product differentiation prompted students to value their learning and that (b) both content and product differentiation were conducive to students' accelerated mastery. The teachers were evenly divided (N = 12; 50% often, 33% sometimes, 17% rarely) as to whether they provided access to a variety of materials that catered for different learning preferences and readiness. There was mixed support (N = 12; 42% often, 42-50% sometimes, 8-17% rarely) for the propositions that (a) process differentiation was conducive to accelerated mastery and that (b) either content or process differentiation prompted students to value their learning. Finally, there was a largely non-committal confirmation (N = 12; 25% often, 75% sometimes) that they provided additional resources commensurate with the students' levels of readiness. These data were collected pre- and post-intervention, but I am presenting the outcome side-by-side for ease of comparison in Appendix M.

The most striking changes with regards to the teachers' pedagogical approach (the first three survey prompts) were in relation to provision of additional resources (from 25% to 89.9% "often") and giving access to a variety of materials (from 50% to 77.8% "often"). By contrast, with regards to expressing their learning in various ways, the percentage of "often" decreased from 33.3% to 25%. I think this drop was due to the increase of common formative assessments

provided by the district. Most of the common formative assessments given by the teachers are premade by the district. They are multiple choice and follow an EOG style format.

The next three survey prompts related to students' valuing their learning. Here again there was an impressive increase in the impact of content differentiation (from 41.7% to 88.9% "often"), process differentiation (from 41.7% to 66.7% "often"), and product differentiation (58.3% to 77.8% "often").

The final three survey prompts related to students' acquisition of mastery. Again, there was a striking increase from pre-intervention to post-intervention with regards to students' enhanced ability to demonstrate mastery at a greater rate in the context of differentiated content (from 58.3% to 77.8% "often") and differentiated process (41.7% to 77.8% "often"), but a slight decrease for differentiated product (58.3% to 55.6% for "often"). Collaborating with teachers has unveiled the difficulty they find providing students with differentiated product while also preparing them for standardized multiple-choice tests. They want to prepare students for standardized tests with typical multiple-choice tests, so the students will be prepared for EOGs. However, this leaves little room for differentiated products.

Focus Group Data

I supplemented the teachers' survey data by conducting grade-level focus groups (see Appendix H) to ascertain the Grade 4, Grade 5, and Grade 6 teachers' perspectives on students' goal valuation ($N = 12$).

Grade 4 Data. From the first focus group with the four Grade 4 teachers and one AIG teacher, I discerned several themes from my analysis of their responses to the focus group prompts (see Appendix H) by completing three of Saldaña's (2016) elemental, first cycle coding methods: initial coding (pp. 115-119), descriptive coding (pp. 102-105), and in vivo coding (pp.

105-110). First, I recorded every focus group with an iPad. I used the Otter (https://otter.ai/) program to transcribe the words that were spoken and checked the transcription for accuracy against the iPad recording. I copied the transcription from the Otter program to a Google spreadsheet and assigned a different tab to each grade level.

I read through each response and assigned initial code definitions. For example, the code "leading learning" was given to a response provided by Teacher 2 and Teacher 3 (see Appendix K for the complete code book). Then, I completed descriptive coding and looked for patterns such as when Teacher 2, Teacher 3 and Teacher 4 gave similar responses to the prompt "How enthusiastic are your gifted students about learning in your classroom right now?"

Next, I completed in vivo coding and selected phrases that conveyed powerful messages and captured participants' perspectives—such as when Teacher 1 said, "super, super engaged and super enthusiastic." Finally, I synthesized my initial codes, in vivo codes, and descriptive codes to determine themes in the data.

The first theme was that gifted students show enthusiasm for learning and leadership. They are enthusiastic about new content, and they like to lead. For example, Teacher 1, an experienced female teacher, in response to the prompt "How enthusiastic are your gifted students about learning in your classroom right now?" declared that

> Anything new that we're learning. So, in third grade if we just build on to third grade and it's not anything new, then they're not really enthusiastic. I don't get as much buy in and engagement as I want but anything new like long division, they had no idea how to do that. That was new. They were like super, super engaged and super enthusiastic.

This was confirmed by Teacher 2, an experienced female teacher, and Teacher 4, also an experienced female teacher. In response to the same prompt, Teacher 4 stated:

> And there are times where if we're teaching like a brand-new reading strategy, something they're not familiar with, they'll kind of be your guinea pigs, the ones that want to try it, whereas the other students will say, “I don't know how to do this” or you can tell they're a little uncertain. So they've got the confidence part of it.

In response to the prompt “To what extent does differentiation and ability grouping enhance the learning environment in your classroom right now?” Teacher 2 stated “They didn't want to have to be a part of the group that was continuing to review. They wanted to work ahead.” In response to the prompt “How enthusiastic are your gifted students about learning in your classroom right now?” Teacher 2 declared “They love to like lead the learning in the classroom environment.” Teacher 4 confirmed “So definitely, like you just said they are the ones that are comfortable raising their hands more often than your lower-level students.”

Second, when it comes to disengagement, unenthusiastic gifted students invest less effort, physically look disengaged, give the bare minimum of effort at times and only work hard when they think it “matters” such as earning a specific grade. To the prompt “What is an unenthusiastic student like in your class?” Teacher 4 stated:

> In looking at written responses, you can see a difference in the one that puts forth the effort because they know the material compared to the one that's going to write the bare minimum or may not because they either don't care or they're not interested.”

To the same prompt Teacher 1 responded “Less engaged. You know, not maybe, for me sitting up like a superstar student like when they're sitting up and they're looking at you.” Teacher 1 went on later to also suggest they physically look disengaged by saying, “The ones that are not sharing their answer not raising their hands. The opposite.”

In response to the prompt “What would you say is the goal for gifted students right now with respect to their schoolwork?” Teacher 1 replied:

> I was meeting with some of my AIG students today. For example, with their fan five they are giving the bare minimum to get by. They are not digging deeper. They're not you know, thinking outside of the box. They're not proving their answers like I know they can.

She went on to say in response to that same prompt “They are not trying to do the best possible thing that they could do.” Later she added “So they're just doing kind of the bare minimum to get by, in my opinion,” and “So right now their goal is just to make good grades.” When I asked the group “Do you think the gifted students are reaching their full potential?” Teacher 1 responded with the following:

> They kind of know when to turn it on and when to turn it off. Like they know if it's an EOG they are going to work really, really hard and for a check in. I'm going to do what [Teacher 1] said, I'm going to show it, but they're not doing that all the time.

Third, regarding academic challenges and critical thinking, learning facts has been easy for them but they struggle to think critically. This relates to the second theme in that gifted students invest the bare minimum of effort at times. In response to the prompt “So what would you say is the goal for gifted students right now with respect to their schoolwork?” Teacher 12, an experienced female teacher who teaches gifted students in grades 3rd through 5th, replied:

> I see a lot of students when they're with me if it's not multiple choice, like somebody's telling me what to think and it's very obvious which one it is, like that open ended, I have to dive deeper. You mean I can't just type this into Google just the way it's printed on the

paper. Like I have to ask a different kind of question or I have to think about it in a different way that it is not word for word for me. That's difficult.

Teacher 3 concurred saying, "I think the same thing in reading. I take it back to like the explicit versus like inference."

Fourth, there are barriers to gifted students reaching their full potential such as student-to-teacher ratio. In response to the prompts "Do you think gifted students are reaching their full potential? Is there anything you would like to change, to assist them with that?" Teacher 4 declared:

> There are eight million things we would like to change but we can't. We want them to do better but the time of the day the scheduling, you know, having one to 25 kids, there's a whole bunch of different factors that go into that. And we've talked about that. As a grade level, like how can we grow this group? How can we grow this group you know, and it's just a challenge. There are things that we would like to change.

In response to the prompts "Please describe what the very best assignment looks like? What can make those assignments better?" Teacher 4 shared, "An extra person to meet with them individually. I struggle with meeting with every single kid for every single assignment as much as I want to."

Fifth, the teachers reported that ability grouping had a positive effect on participation and engagement and students knew when they were ability grouped. In response to the prompt "To what extent does differentiation and ability grouping enhance the learning environment in your classroom right now?" Teacher 3 declared:

> I think it's in grouping, especially like small groups like grouping like kids with like kids. Our middle kids are just with their level. But also, I noticed like in small groups,

depending on like from reviewing the test or a quiz, the kids are scoring the same and like it'd be different for each test or quiz or whatever we're reviewing. But kids are more comfortable when they're in groups that are similar. And I feel like if you have a kid who's going to like dominate the group because they know every answer, the kids who need the help are not going to speak out. Versus like kids who are all struggling with the same thing or kids that are higher, and you can take it to the next level because all the kids are there. And I think that affects a learning environment for like, participation and engagement.

Grade 5 Data. My analysis of the Grade 5 focus group of three teachers largely aligned with my findings from my Grade 4 focus group analysis, but I discerned some additional themes. Grade 5 teachers reported that gifted students engaged more enthusiastically when they knew the content and were excited by new material. For example, in response to the prompt "How enthusiastic are your gifted students about learning in your classroom right now?" Teacher 7, an experienced female teacher, declared "Participation wise if it's math and they know it, they'll definitely participate and answer the questions, but for science, it's something that for them they don't have they still have a lot to learn." When the topic shifted to assignments, Teacher 7 revisited this theme when she said "I think that's where most of them are engaging because it's different. They know they can be great at math, they can do 500 math problems, but the science and social studies is a little bit different."

Again, the teachers portrayed some gifted students as displaying unenthusiastic behavior, doing the bare minimum, and lacking engagement when in class. For example, Teacher 6, an experienced female teacher, replied "Bare minimum" to the prompt "Please describe what an unenthusiastic student does with your class?" To the same prompt, Teacher 7 declared "side

conversations or will try to like ask questions that does not pertain to what we're doing." Teacher 5, an experienced female teacher, added "or they'll just put their head down or kind of just follows along and lets another person lead, just copies what they do or lets someone else do the work if it's a small group or something." Teacher 6 added "they don't check over and like reread and ignore, like grammar spelling, if it's an essay type thing, it's just not like checking over their work."

On the other hand, enthusiastic, gifted students participated and took initiative in their learning. For example, in response to the prompt "Please describe what an enthusiastic student does in your class," Teacher 7 declared "constantly raising their hand and shouting out answers." Teacher 6 added "actively participating whole group and small group discussion" and "taking their time on assignments, asking about their grades. Okay. And yeah, like or volunteer." Teacher 7 added "asking numerous questions just for either clarification for themselves or just more clarification." Teacher 5 added "or having to like comment on new ideas, thinking outside the box."

Concerning needs and motivation, the teachers described some gifted students as lacking confidence and seeking reassurance, while others were focused on grades and pleasing adults. For example, in response to the prompt "What would you say is the goal of your gifted students right now with respect to schoolwork?" Teacher 7 replied:

> Depends on the student. Some students would be just like, yeah, get it done and just move on. Others want that 100 or want a perfect A. What pressures they feel or what expectations are put on them from home, kind of gets brought into the classroom. And there are some that want to please the teacher and want to be praised.

Teacher 5 added “I have a mix that like they're concerned about. They're always checking Powerschool or just want to make sure you know, they get it right. What is this word or you know, have I turned everything in?” Teacher 7 shared “Independently wise it's harder for them to do it and finally because they want that self-assurance.”

Reflecting on their teaching practice, the Grade 5 teachers noted that they felt a need to push students deeper into the content. For example, Teacher 7, in response to, “Do you think that your students are reaching their full academic potential right now?” declared: “

> I need to push. I need to find stuff to challenge them more. I go deeper, instead of going to like sixth or eighth grade, which is what they would love to do. But I need them to stay in the fifth grade. Well, let’s just make it deeper. So I would say I need to push more.

Teachers were also interested in developing skills and obtaining resources to better meet the needs of their gifted students. For example, Teacher 6 responded to the prompt “Is there anything you would like to change?” with “more resources, I guess, or ideas for challenging the ones who finish like I’m done. I’m done. I’m done.” They were cognizant of the competitive nature of some gifted students and how this impacted differentiation and ability grouping. For example, while they knew that both differentiation and ability grouping enhanced learning, both also brought about a counterproductive dynamic because students were aware of their placement within ability grouping.

Finally, the teachers highlighted that gifted students felt boxed in when answer choices were rigid but responded favorably to having choices in assignments. For example, in response to the prompt “Please describe what the very best assignment or classwork you provided this year looked like” Teacher 6 responded “My example was choice board assignment. What they perform best on is these project-based assignments.” Teacher 7 shared a story about students

becoming frustrated when required to put an answer choice in a certain way. She said, “they had the right answers, they were just putting the answer in incorrectly and they could not figure out why they were not moving on to the next problem.”

Grade 6 Data. My analysis of the Grade 6 focus group from the four teachers yielded largely similar findings with a few exceptions. Pertaining to differentiation and ability grouping, the Grade 6 teachers asserted that students did well when grouped homogeneously. When gifted students were not grouped with peers, they often blended in and did not engage fully in learning. For example, in response to the prompt “How enthusiastic are your students about learning in your classroom right now?” Teacher 11, an experienced female teacher, declared “I just have one gifted student and she is very unsure of herself. It is rare that she offers up answers. She is not one that stands out. I think she tries to blend in.” Teacher 11 went on to later say when gifted students were the minority, they seemed to think “I am just going to sit here and go through the motions and hope she doesn’t call on me.” Teacher 11 also shared “because there is no one on her level, she is just doing what she needs to do to get by and there is no one there to push her.” Teacher 8, an experienced male teacher, in response to that same prompt, while agreeing with Teacher 11’s perspective, shared “I think if she was with a different group of kids she might work harder.”

However, the teachers also noted that there were both advantages and disadvantages to ability grouping: higher ability students benefited, while lower and middle ability students struggled. Teacher 10, an experienced female teacher, in response to the prompt, “To what extent does curriculum differentiation and ability grouping enhance the environment in your classroom right now?” commented that “I can see it both ways because I can see ability grouping enhancing

some and I can see it hurting some." She went on to say "when you have them homogeneously grouped sometimes the lower ones don't rise up."

The Grade 6 teachers agreed with the Grade 5 teachers about the counterproductive dynamic that arose because students knew the ability grouping in their classes so that non-advanced classes were stigmatized. For example, in response to that same prompt, Teacher 10 declared:

> I try to encourage my middle group and say just because you are not in the accelerated class does not mean you cannot be there or cannot strive to be there. And I think a lot of times it's just a stigma of I'm not as smart as they are, but I think they are. It's just a title that comes with the accelerated class.

In response to the prompt, "Do you think your students know that your classroom is different from the usual regarding the ability grouping?" Teacher 10 agreed and Teacher 8 said, "in previous years students would say, 'I'm not in the smart class or I'm in the dumb class'."

Regarding challenge and motivation, Grade 6 teachers depicted gifted students as enjoying being challenged and responding favorably when given open-ended opportunities. For example, Teacher 9, an experienced female teacher, in response to the prompt, "please describe what the very best assignment you provided this year looked like" shared, "open ended opportunities for responses has really rocked their world. It has forced them to step outside of that just ABCD and answer these ambiguous and more subjective things in detail." Teacher 9 went on to describe an activity her students completed where they were given choices and she said, "they went to town" and "really enjoyed the creative piece of it." In response to that same prompt Teacher 8 shared an example of giving students choice and freedom in an assignment and the outcome was favorable.

Reflecting on their teaching practice, the Grade 6 teachers reported that their enthusiasm fostered student engagement. For example, in response to "Do you think your gifted students are reaching their full academic potential right now?" Teacher 10 shared, "I think it is relationships with them." Teacher 10 declared, "I think the enthusiasm comes from the teacher. When I'm excited about what I am teaching they are going to be like 'ooh this is something new'!" Teacher 8 concurred saying, "it's just a matter of drawing them in."

Regarding the learning environment, the Grade 6 teachers perceived the relationships among students as crucial for optimal learning. For example, in response to the prompt "How enthusiastic are your gifted students about learning in your classroom right now?" Teacher 9 stated, "I would say like my first block is homogeneously grouped and I would say they bounce off each other really well. They feed into each other in a positive way." Finally, the Grade 6 teachers agreed that the performance of gifted students depended on the content area, with students performing better in math and English Language Arts.

Summary of Teacher Focus Group Data. Several themes were consistent across two or more focus groups. Pertaining to ability grouping and differentiation, gifted students were characterized as more engaged when grouped with peers of similar abilities and they benefited from differentiation. When not in homogeneous groups, gifted students tended to blend in and disengaged from their learning. Students were aware of their placement within ability grouping. Gifted students preferred open-ended tasks. Concerning the impact enthusiasm has on gifted students, they responded well to enthusiastic teachers and were more engaged, especially in supportive learning environments.

Overall, the pre-intervention qualitative teacher data enabled me to determine teacher participants' comfort levels with differentiation and ability grouping prior to my intervention. I

also learned that while teachers were implementing differentiation in their classrooms and believed it positively impacted goal valuation and content mastery, there was still an opportunity to improve the use of the differentiation strategies.

Assessment of Goal Attainment

In alignment with Figure 3, in the final subsection of the Study phase, I reflected on the goals that I set in the Plan phase. There is an association between the goals that I had for this study and the outcome of the interventions.

Goal 1

The first goal of the study was for there to be a positive influence on students' achievement in reading and math in Grade 4, 5 and 6 as a result of ability grouping and differentiation. Students were ability grouped in Grades 4, 5 and 6 and received differentiated instruction. According to the teacher checklist data (see Tables 22, 23, 24, 25 and 26) that was reported by the classroom teachers, students received a variety of differentiation instructional strategies. The majority of previously underperforming students, met or exceeded expectations according to the end of year iReady diagnostic. Only two students, a Grade 6 student and a Grade 4 student who were underperforming in reading, continued to underperform despite the interventions (see Tables 19, 20 and 21). In math, all students who were previously underperforming (students scoring below grade level at the beginning of the year) improved their score to "exceeds expectations" (see Tables 19, 20 and 21). Teachers responded favorably when I asked them about the impact ability grouping and differentiation in reading and math had on gifted students in Grades 4, 5, and 6. Three survey prompts on the teacher self-rating scale (see Figure 9) related to students' acquisition of mastery. There was a striking increase from pre-intervention to post-intervention with regards to students' enhanced ability to demonstrate

mastery at a greater rate in the context of differentiated content and process. Goal 1 was met based on the data produced by the study. There was a positive influence on students' reading and math in Grade 4, 5 and 6 as a result of ability grouping and differentiation.

Goal 2

The second goal of the study was to determine the relationship between changes in goal valuation and achievement outcomes in reading and math for gifted students at ENC School in Grades 4, 5, and 6. There is an association between increased goal valuation and the introduction of the intervention, ability grouping and differentiation. When surveyed (see Appendix M) post intervention all teachers reported differentiating process, product, and content either often or sometimes, potentially encouraged students to value their learning. The data from the CVA also pointed toward a relationship between changes in goal valuation and achievement outcomes. Although I could not compare the pre-intervention and post-intervention outcomes, the post-intervention CVA completers responded in markedly similar ways with respect to both math and language arts. As Figure 7 shows by inspection, Boredom is less of a factor in both subjects but strikingly so in language arts. Both Intrinsic Value and Utility Value increased notably.

As shared previously, in math, all students who were previously underperforming (students scoring below grade level at the beginning of the year) improved their grading to "exceeds expectations." We also saw positive gains in reading achievement. For example, 75% of Grade 4 underperformers exceeded expectations at the end of the year, 25% did not meet expectations and 0% met expectations. In Grade 5, 100% of underperformers exceeded growth at the end of the year. In Grade 6, 50% of underperformers exceeded growth, 25% did not meet growth and 25% met growth (see Tables 19 through 21). Goal 2 was met based on the data produced by this study. There is a relationship between changes in goal valuation and

achievement outcomes in reading and math for gifted students at ENC School in Grades 4, 5, and 6.

Goal 3

The third goal of the study was for teachers to positively perceive the impact of ability grouping and differentiated instruction in reading and math on gifted students at ENC School in Grades 4, 5, and 6. According to the teacher self-rating scale, the strongest agreement among the teachers (N = 12; 58% often, 33% sometimes, 8% rarely) revealed their consensus that (a) product differentiation prompted students to value their learning and that (b) both content and product differentiation were conducive to students' accelerated mastery (see Appendix M). There were mixed feelings regarding ability grouping based on the responses to the focus group questions about ability grouping. The teachers noted that there were both advantages and disadvantages to ability grouping: higher ability students benefited, while lower and middle ability students struggled. The Grade 6 teachers agreed with the Grade 5 teachers about the counterproductive dynamic that arose because students knew the ability grouping in their classes so that non-advanced classes were stigmatized. The third goal was partially met based on the data produced by the study. Teachers positively perceive differentiation, but have mixed feelings regarding the impact of ability grouping.

Act

Following the analysis of my data, I called a meeting of the stakeholders with whom I had consulted at various stages of my study to consider the data and the findings that I drew from them and discussed next steps for this endeavor. Stakeholders agreed that given the positive nature of the outcomes regarding differentiation, content, product and process differentiation is a practice that should be continued and should be explored in additional grade levels. Survey data

and focus group data supported the continuation of content, product and process differentiation. Additional grade levels should be explored because EVAAS data indicates there are gifted students underperforming in reading in Grade 8 and underperforming in math in Grade 7. Although ability grouping also yielded some positive outcomes, due to the negative social results, stakeholders decided not to move forward with ability grouping. Instead, the team opted for flexible ability grouping the following year. This allowed students to be placed with same ability peers while also allowing students to interact with students non-identified as gifted. It is believed this will enhance teachers' ability to better meet the needs of all students while also carving out a learning space for gifted students.

Differentiation

During the meeting with stakeholders, it was decided that the teachers at ENC School would be given a professional development plan goal that included differentiated instruction. Professional development on the topic of differentiation was provided to all teachers to support them with their goal. Teachers were taught the benefits of differentiation including meeting individual needs and increasing engagement. Instructional strategies including differentiation were also discussed during professional learning team time. Content, product and process differentiation was added to the school walkthrough form to collect data, provide feedback and heighten awareness of its' importance in our instructional framework. Four hundred and thirty-three walkthroughs were completed by the administration team from August to January and content, process and product differentiation were observed being implemented by teachers in Grades kindergarten through 8.

Ability Grouping

Ability grouping was not continued the following year due to the negative feedback received from teachers and students. Teachers provided feedback formally through focus groups and students provided feedback informally during typical principal and student conversations. Gifted and students not identified as gifted did not prefer to be grouped all day with the same peers. Students shared that they prefer interacting with different students throughout the day. Teachers reported that the social and emotional impact of students was not worth the academic benefits. Students in the non-advanced courses often felt stigmatized which could lead to harmful effects on students' self-esteem. Teachers also discussed the loss of peer learning benefits that come from a mixed ability classroom. In a mixed ability classroom, students not identified as gifted benefit from working with gifted peers.

Flexible Ability Grouping

Flexible ability grouping was implemented the following year in Grades 4 – 8. Students were grouped based on their gifted identification. Students not identified as gifted were also placed in these classrooms. Flexible ability grouping has led to more personalized learning for students. Teachers are able to provide students with instruction at the appropriate level and pace. Since students are being challenged and provided work at their level, they are more engaged.

Summary

In summary, gifted students benefited from the interventions that were implemented, ability grouping and differentiation proved to be effective interventions. However, only differentiation was continued the following year. Ability grouping was abandoned and flexible ability grouping was adopted. Post-intervention survey data and focus group data indicated that the interventions I implemented were associated with enhanced student goal valuation and

achievement. For example, according to data from the teacher self-rating scale, the strongest agreement among the teachers (N = 12; 58% often, 33% sometimes, 8% rarely) revealed their consensus that (a) product differentiation prompted students to value their learning and that (b) both content and product differentiation were conducive to students' accelerated mastery. The majority of students met my goals in both reading and math. For example, all students in Grade 5 exceeded expectations in math and in reading. In Grade 4, all students exceeded expectations in math and 75% of students exceeded in reading and 25% did not meet expectations in reading. In Grade 6, all students exceeded in math and 50% exceeded in reading. Twenty-five percent of Grade 6 students met expectations in reading and 25% did not meet expectations in reading. Overall, the study was a success and gifted students benefited.

CHAPTER 5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

In this chapter, I will summarize the outcome of my endeavor to alleviate the problem of practice at ENC School: Gifted students were underperforming according to the EVAAS and the math and reading iReady diagnostic assessments. I will also share my conclusions and recommendations. Federal law and the North Carolina Department of Public Instruction demand that educators meet the diverse needs of gifted students. However, the education gifted students receive differs greatly across the United States. Also, during the time educators spend pursuing their education degrees, they receive various levels of AIG training. This is problematic because in addition to the needs of gifted students not being met due to these factors, society may stand to lose the benefits and potential for global societal innovation and flourishing that could likely stem from gifted students. My study investigated the factors causing some gifted students to underperform and responded by implementing a research-based intervention: differentiated instruction and ability grouping.

Summary of Findings

Question 1

What influence will ability grouping and differentiated instruction have on goal valuation for gifted students at ENC School in reading and mathematics in Grades 4, 5, and 6?

Prior to the intervention, in math and language arts, as seen in Figure 4, participants considered Attainment the most important factor, although a little higher in math. Questions that I asked to gather data for the Attainment factor focused on the personal importance of math and language arts to the student taking the survey. Personal satisfaction was heavily supported by responses to the questions in the Attainment factor. Utility Value was the second most important value. Questions used to document students' feelings toward the Utility factor focused heavily on

the usefulness and future implications of math and language arts. These were followed by Intrinsic Value, while Boredom was notably less prominent. Questions surrounding student interest were used to capture students' feelings toward Intrinsic Value factor. For the Intrinsic Value factor, students were asked if they enjoyed the content, doing the work, learning new things and other aspects of math and language arts instruction. Finally, for the Boredom factor, students were asked intentionally negatively worded questions such as "I am often bored in language arts/math class." In language arts, Boredom overlaps with Intrinsic Value. Figure 5 goes more in-depth and highlights the significance of each factor by calculating the means. This calculation was in line with my initial inspection.

Attainment continues to be a significant factor in both math and language arts ("Agree" level for math; between "Agree" and "Slightly Agree" for language arts) for the participants and Boredom, although present, plays a significant but minor role (between "Slightly Disagree" and "Neither Agree nor Disagree" for math and "Neither Agree nor Disagree" for language arts). Intrinsic Value for math is not a significant factor (a little less than "Slightly Agree") whereas it is significant but minor for language arts (between "Neither Agree nor Disagree" and "Slightly Agree").

As stated in Chapter 4, due to unforeseen circumstances, the post-intervention CVA surveys were completed by only approximately half of the math (N = 31) and language arts (N = 26) participants. However, the post-intervention CVA completers responded in markedly similar ways with respect to both math and language arts. As Figure 5 shows by inspection, Boredom is less of a factor in both subjects but strikingly so in language arts. Both Intrinsic Value and Utility Value have increased notably. As seen in Figure 6, my analysis of the means shows that participants "Slightly Disagree" that Boredom is a factor in either subject, Attainment is the

dominant factor (close to “Agree”), closely followed by Utility Value. Intrinsic Value is borderline significant at the “Slightly Agree” level for both subjects.

Question 2

What is the relationship between changes in goal valuation and achievement outcomes in reading and mathematics for gifted students at ENC School in Grades 4, 5, and 6?

Although I am only able to highlight the differences between the pre-intervention and post-intervention results, I am able to connect the notable increase in both Intrinsic Value and Utility Value and the decrease in the Boredom factor to the improved achievement outcomes in language arts and math for gifted students at ENC School in Grades 4, 5, and 6.

Students scoring below grade level at the beginning of the year on the iReady diagnostic were labeled underperformers. Students who scored below grade level on the iReady end of year diagnostic were considered not meeting expectations. Students that scored on grade level were considered meeting expectations and students who scored above grade level exceeded expectations.

In reading, 75% of Grade 4 underperformers exceeded expectations at the end of the year, 25% did not meet expectations and 0% met expectations. All of the Grade 5 underperformers exceeded expectations at the end of the year. In Grade 6, 50% of underperformers exceeded expectations, 25% did not meet expectations and 25% met expectations (see Tables 19, 20, and 21). The increase in both Intrinsic Value and Utility Value and the decrease in the Boredom factor coincides with the increase in reading achievement.

In math, 100% of Grade 4 underperformers exceeded expectations at the end of the year. 100% of Grade 5 underperformers exceeded expectations at the end of the year. The student in Grade 6 that was previously underperforming exceeded expectations (see Tables 19, 20, and 21).

The increase in both Intrinsic Value and Utility Value and the decrease in the Boredom factor coincides with the increase in math achievement.

These data suggest a positive correlation between increased goal valuation in math and reading and improved achievement in reading and math. There are several trends worth noting. According to the end of year iReady diagnostic, in reading and math there is a strong trend of underperformers exceeding expectations post-intervention, especially in Grade 4 and Grade 5. In Grade 4 in reading, 75% of underperformers exceeded expectations, 25% of Grade 4 underperformers did not meet expectations and 0% met expectations post intervention. In Grade 4 in math, 100% of underperformers exceeded expectations post intervention. Students in Grade 5 showed the most growth with all underperformers exceeding expectations post intervention in both reading and math. The performance in Grade 6 shows more variability in reading and math. In Grade 6 in reading, 50% of the underperformers exceeded expectations, 25% did not meet expectations and 25% met expectations at the end of the year. The Grade 6 student who was underperforming in math pre intervention was exceeding expectations post-intervention.

Question 3

How do teachers perceive the impact of ability grouping and differentiated instruction in reading and mathematics on gifted students at ENC School in Grades 4, 5, and 6?

Overall, the data indicate that teachers perceive the impact of ability grouping and differentiated instruction in reading and math to have a positive impact. During the post-intervention focus group, Teacher 7, Teacher 3, and Teacher 11 noted enhanced engagement and enthusiasm in math and reading. Teacher 7 observed that gifted students appreciated working with same ability peers and that led to enthusiasm. Teacher 3 noted that ability grouping and differentiation increased eagerness to participate in classroom activities. Teacher 11 shared that

peer helper roles within differentiation improve enthusiasm and focus because it provided responsibility. Enthusiasm was also witnessed by Teacher 3 and Teacher 9 when students were given a choice regarding how they wanted to demonstrate content mastery. The students' confidence and competitiveness, for both gifted students and students not identified as gifted, increased. Teacher 6 and Teacher 11 commented that students worked harder when surrounded by same ability peers. They also gained confidence when they took on leadership roles such as peer helper. Teacher 7 noted that students not identified as gifted were given an opportunity to gain confidence as they worked through problems without having to worry that a gifted student would overshadow them. Teacher 11 and Teacher 9 both commented on the positive shift in goal valuation that was noted. Teacher 9 shared that students valued their work more when they had to put forth effort and the work aligned with their ability levels. Teacher 11 reported that even when students were proficient, conversations about growth led to students focusing on improvement.

In addition to the positive comments teachers made about differentiation and ability grouping during the post-intervention focus group, teachers also reported positive responses on the self-rating scale post-intervention. For example, three of the questions asked teachers to reflect on if differentiating content, process and product cause students to value their learning. Post-intervention, all teachers reported differentiating process, product and content either often or sometimes causes students to value their learning, with the majority reporting often for each one. Teachers were also asked to reflect on if differentiating content, process and product impacted the rate students show mastery. These data were also positive and the majority of teachers responded often for each statement. For example, 77.8% of teachers responded often to the statement "my students show mastery at a greater rate when I differentiate process."

Collaborative Inquiry Partners

I worked closely with my study partners throughout the study. Prior to implementing the study and while drafting surveys, I met with the Director who oversees the Academically Gifted program. He was able to provide me with guidance during that part of the study. I plan to meet with him at the conclusion of my defense to share the promising data from my study. I also collaborated with two gifted education teachers on the development of the differentiation professional development that was provided to teachers as part of the intervention. We met once in person to plan the professional development and then we collaborated virtually through Google Slides. The differentiation professional development was provided three times. One gifted education teacher co-presented with me once for the Grade 4 teachers and the other Gifted Education teacher co-presented with me twice, once for the Grade 5 teachers and once for the Grade 6 teachers. The Grade 4, 5 and 6 teachers participated in the pre- and post-intervention focus groups, completed the teacher self-assessment checklist during the intervention, and the differentiation implementation teacher self-rating scale pre and post intervention. I collaborated with the Assistant Principal and Instructional Coach on school data weekly as I normally would in my position as principal.

Development as a Leader

This study has strengthened my leadership skills and provided me with an opportunity to focus on a subgroup (gifted students) that I am passionate about. They can get overlooked at times because some educators may assume they will "be okay" because they are gifted when in reality they need to be challenged and motivated too. When I made the decision to pursue my first master's degree, I knew I wanted to focus on gifted education because as a teacher I witnessed the lack of attention they received in some educational settings due to their ability to

seemingly thrive on their own. I thoroughly enjoyed my educational journey during my elementary education master's program and gained important insight to gifted education overall.

While participating in the school administration master's program I was able to spend some time strengthening my understanding and ability to support and advocate for subgroups including gifted students. In my role as principal, I have had the opportunity to analyze gifted student academic data periodically following major assessments including EOGs. I have also had the opportunity to provide teachers with guidance on how to best meet the needs of gifted students based on the learning I gained while pursuing master's degree and professional development I have received since.

While pursuing my doctorate degree I have had the opportunity to deepen my expertise of underperforming gifted students and interventions to improve their academic outcomes and goal valuation. During the literature review part of this study, I had the opportunity to dive into studies about underperforming gifted students and interventions to address underperformance. As a result of this study, I have grown personally. This study has taught me resilience and discipline. When faced with the challenge of becoming a principal at a different school mid-dissertation, I resiliently looked at the data of the new school, found an area of opportunity and dove in. It took great discipline to complete this process.

A lot of sacrifices were made along the way including time with family and friends. This study also caused me to be a more reflective educator. I reflected on my values, goals and leadership philosophy. Prior to this study, I found myself focused solely on academic data points such as EVAAS, EOG scores and iReady scores. Studying the literature and analyzing goal valuation data caused me to widen my focus to include the desires and needs of our students identified as gifted and our students not identified as gifted. For example, part of my journey led

me to believe ability grouping throughout the day was what was best for academic data points, but I failed to consider the impact that would have on individual students and their overall wellbeing. During one of the focus groups several of the teachers pointed out that ability grouping left students not in the “high” class questioning their self-worth.

Interpretation of Findings

According to Siegle (2013), the Achievement Orientation Model (AOM) grounds individuals' self-perceptions in three areas: self-efficacy, goal valuation, and environmental perceptions. Although all components support gifted students in some way, for this study I focused solely on goal valuation. This study determined that ability grouping and differentiation had a positive effect on goal valuation and student achievement outcomes. As a result of this study, previously underperforming gifted students valued tasks in reading and math classes in Grades 4, 5, and 6 and the majority of them demonstrated better results academically.

This confirms the literature reviewed in Chapter 2. Plucker and Callahan (2020a) defined two types of ability grouping; ability grouping and flexible ability grouping. For this study we implemented ability grouping which entails dividing classes, schools, or districts into smaller groups based on students' ability levels. According to Preckel et al. (2019), all gifted students should have access to ability grouping due to the approach's effectiveness in meeting the needs of gifted students. Ability grouping significantly and positively impacts gifted students’ achievement development. Their research showed ability grouping led to gifted students achieving more significant academic gains over time when compared to gifted students that did not participate in an ability grouping model. Siegle (2013) emphasized that gifted students' valuing of tasks leads to differences in academic achievement. Siegle went on to say that

students must believe that putting forth effort is a good use of time and energy and believe they have the skills to do well and value the related task.

This study addressed equity and social justice by bringing the needs of gifted students to the forefront. Teachers typically focus on meeting the needs of average-ability and lower-ability students while underestimating the needs of gifted students (Ntamu & Oyo-Ita, 2022). Unfortunately for students and teachers, some students are notably far from grade level expectations. Therefore, teachers become preoccupied with the needs of students performing below grade level and the needs of gifted students are overlooked.

At ENC School, math, reading and some science teachers are graded based on students' performance on EOG tests. They receive an EVAAS score for students exceeding, meeting or not meeting the expected growth. In some grades and subject areas financial compensation is tied to how students score on EOG tests. This causes teachers to feel pressured to devote more time and energy into students who have not yet mastered the content. This leads to inequity and contributes to the underachievement of gifted students. During my study this inequity was addressed by studying the research surrounding gifted education and underperforming gifted students and implementing interventions based on that research. Teachers attended professional development that focused on differentiation and were equipped with the instructional strategies on differentiation meant to combat underperformance in gifted students. Although differentiation was not a new idea to many of the teachers, they began to be more intentional about implementing differentiation. In addition to teaching practices being changed, students were ability grouped to support their academic growth.

There were a few interesting practices that surfaced during the study. According to the teacher self-rating scale, in both Grades 5 and 6, teachers reported that they invited students to

create and share a multimedia presentation most frequently and this was also the overall most frequently used strategy—although limited to Grades 5 and 6 (none of the Grade 4 teachers utilized it). Another interesting practice that surfaced involved the lack of differentiation strategies reported by math teachers. On the teacher differentiation checklist there was a "none" option. This option was used by only math teachers.

Limitations to the Study

Firstly, my study did not account for all the variables present in each classroom where gifted students receive instruction. For example, some gifted students received math instruction in the morning and some received math instruction in the afternoon. The same can be said for reading. Also, class size varied. Some classes had fewer children than others, so those students had a smaller teacher to student ratio and their likelihood of receiving more individualized attention increased.

Another variable that may have impacted my study is teacher experience. Although there was only one beginning teacher with fewer than 3 years in the classroom, the experienced teachers had differing levels of experience. Based on my experience working with teachers of various levels of experience, as teachers gain experience they often become better at their craft. Therefore, teacher experience may have limited my study.

I also serve as the supervisor to the participants, so they may have responded in a favorable manner due to my position as the principal and their supervisor. This could have skewed focus group discussions.

Although, the school has grades Pre-kindergarten through Grade 8, this study was limited to Grades 4, 5 and 6. This limited the data that was collected and the generalization. I also limited the study when I decided to collect post-intervention data digitally without gathering the

students in a centralized location. Fewer students completed the form, so less data were collected and could be analyzed. I also limited my data collection by not being able to gather grade levels separately and in-person for the post-intervention focus groups. I believe that would have led to more in-depth discussion. Instead, due to participant availability I had to meet with participants via Zoom altogether and some were unable to attend. Finally, the last limitation was not including a grade level indicator on the survey. This prevented me from being able to disaggregate data based on grade level.

Implications of the Findings for Practice

There are implications for the academic programming at ENC School as a consequence of my research. Although ability grouping was part of the intervention and academic and goal valuation outcomes were favorable, ENC School will not continue the practice of full-day ability grouping. In Grades 4 and 5 it is typical for students to remain with the same set of peers throughout the day. However, the fact that we ability grouped all day in Grade 6 is not typical, and has not been done for several years at the school. Full-day ability grouping led to a negative impact on self-esteem for some Grade 6 students. For example, in response to the prompt "Do you think your students know that your classroom is different from the usual regarding the ability grouping?" Teacher 8 responded that students have stated "I'm not in the smart class or I'm in the dumb class" previously when ability grouped. When Teacher 3 was asked that same question she responded "one million percent" indicating it was obvious that the students knew which class they were in. ENC School will continue to ability group for math in Grade 6 and implement ability grouping on a smaller scale in Grades 4 and 5. A group of students identified as gifted will be placed in the same class, but every student in the class will not be gifted.

Therefore, we can place a group of gifted students in each of the classes, giving them the peer support they need, while still maintaining academically well-balanced classes.

ENC will continue the practice of differentiation. Teachers were surveyed regarding their perspective on content differentiation, student's goal valuation and achievement. Post intervention teachers' beliefs were more favorable regarding the impact differentiating content, process and product made on students' goal valuation and achievement. Mastery was also achieved at a greater rate according to teachers' survey data and iReady post intervention data. For example, in math, 100% of Grade 4 underperformers exceeded expectations at the end of the year. 100% of Grade 5 underperformers exceeded expectations at the end of the year. The student in Grade 6 who was previously underperforming exceeded expectations (see Tables 19, 20, and 21).

Implications of the Findings for Equity

This study addresses equity and social justice by bringing the needs of gifted students to the forefront. Teachers typically focus on meeting the needs of average-ability and lower-ability students while underestimating the needs of gifted students (Ntamu & Oyo-Ita, 2022). During this study teachers were tasked with reflecting on current educational practices used to support gifted students. Part of the intervention included equipping teachers of gifted students with differentiation strategies they could use to better meet the needs of gifted students. After utilizing the strategies teachers noted an improvement in students' goal valuation and their ability to show content mastery. Prior to the interventions of ability grouping and differentiation, gifted students were underperforming according to the 2021-2022 EVAAS and 2023 iReady beginning of the year diagnostic data. Post-intervention gifted students met growth according to the EVAAS and in most cases moved from not meeting expectations to exceeding expectations according to

iReady end of year diagnostic data. As a result of this study, gifted students were given the environment and instruction needed to reach their maximum learning potential. This study promoted a more equitable educational experience for gifted students.

Recommendations for Practice

Based on the results of my study, I recommend process, content, and product differentiation for gifted students in Grades 4, 5, and 6. As indicated in Table 16, 77.8% of teachers reported that "often" (the most favorable choice) post intervention students showed greater mastery when teachers differentiated content and process. Also indicated in Table 16, 55.6% of teachers reported "often" post intervention that students show greater mastery when teachers differentiate product. This is something that can be done easily now with the support of artificial intelligence like Magic School, ChatGPT etc., and academic resources such as Newsela, Edpuzzle. For example, Magic School has several tools that will assist teachers in differentiating assignments like the "Text Scaffolder" feature that allows educators to increase or reduce Lexile based on student ability.

In ENC school district, schools have access to gifted education educators. I recommend utilizing these educators to provide professional development on the topic of differentiation to general education teachers. Based on the feedback from the teachers, complex text, research projects exploring root words and prefixes, engaging in word analysis advanced vocabulary, above grade level content and tiered content were some of the most prevalent strategies used regarding differentiated content. The most frequently used strategy to differentiate product was students working in groups to solve a problem or complete a project. Application for skills practice at varied levels of complexity such as iReady, class discussions featuring questions at various levels of complexity, peer tutoring and peer partners, print and digital resources at varied

levels of complexity, small group instruction, think pair share, tiered assignments and choice boards were the most prevalent among strategies used to address differentiated process based on readiness. Student interest activities, class discussions with connections to student interest and interactive journals were most often used to differentiate process based on interest. Choice of working arrangement and collaborative learning options were the most prevalent way teachers differentiated process based on learning profile. I recommend these ways of differentiating content, process and product be used by teachers of gifted students in Grades 4, 5, and 6.

Also, as a result of my study, I also recommend flexible ability grouping. In regular education settings with students not identified as gifted, gifted students often lack opportunities for adequate emotional acknowledgment (Miedijensky, 2018). However, when gifted students were grouped with other gifted students, they reported stronger relationships, increased motivation, and less social stigma surrounding their giftedness (Redding & Grissom, 2021). Plucker and Callahan (2020a) defined two types of ability grouping; ability grouping and flexible ability grouping. In my study I implemented ability grouping which entailed dividing classes based on students' ability levels. In my study, I found that ability grouping unintentionally caused some students to view themselves in a negative light due to their not being in the “high” class. Teachers also reported other barriers that resulted from ability grouping. However, flexible ability grouping could provide the benefits of ability grouping without the barriers of ability grouping. Within one class you can cluster a group of gifted students, but the rest of the class would be heterogeneously mixed. Plucker and Callahan (2020a) found that flexible ability grouping in one classroom was the most effective strategy for promoting advanced learning.

Recommendations for Future Study

If I were given the opportunity to go back and make adjustments to my study I would change several things. I would have kept my original plan of gathering students in the cafeteria for the post-intervention survey. By sending it to them electronically and expecting them to do it on their own, I missed an opportunity to ensure all students completed the survey. I also would have added a grade level indicator to the student survey, so I could analyze the data by grade level.

I also would have utilized the flexible ability grouping model instead of the ability grouping model. We chose to ability group students by class and they remained with those peers throughout the day. There were benefits for the gifted students, but ability grouping caused barriers for those not in the highest performing class. Through my role as principal, I also had several students who were gifted and not identified as gifted share that they did not prefer to be grouped all day with the same peers for social reasons. Unfortunately, if students did not have a peer they considered a friend in their class, that impacted them their entire day.

Future studies may want to expand the sample size to include students from a larger span of grade levels. For my study I selected Grades 4, 5, and 6 because that is where there were the most underperforming gifted students. However, research shows that the underperformance of gifted students is not confined to Grades 4, 5, and 6 and there is evidence of that at ENC School. At ENC School, we have students in Grades 4, 5, 6, 7, and 8 who underperform, but the majority of underperformers are situated in Grades 4, 5, and 6.

With the advent of artificial intelligence, future research may want to explore how artificial intelligence could impact underperforming gifted students. As stated previously, there are many artificial intelligence resources now that assist teachers in differentiating content,

process and product. For example, in a future study a researcher may want to provide teachers with professional development on artificial intelligence resources such as Khan Academy which differentiates content by providing personalized learning paths based on how students perform and allows students to access content that matches their skill levels. There are also many artificial intelligence tools that differentiate process such as Flipgrid that cater to different communication styles by allowing students to engage with their learning through multimedia discussions. Thinglink is an artificial intelligence tool that allows students to differentiate product by creating interactive projects including virtual tours.

Although my study made gains in the area of underperforming gifted students, based on the research presented in Chapter 2, there is a lot more work to be done to address the problem of underperforming gifted students.

Conclusions

In conclusion, a portion of our gifted population at ENC School, historically underachieves on benchmark (formative) and End-of-Grade (summative) assessments. The underperformance of gifted students is a problem that is not isolated to ENC School. Due to many factors including but not limited to variability in the quality of services from district to district, teacher preparation variability, and teachers feeling pressured to meet the needs of students not yet on grade level, gifted students are underperforming in many schools. My study improved the underperformance of gifted students by identifying an intervention and implementing it and producing favorable results.

My study researched three questions: (1) What influence will ability grouping and differentiated instruction have on goal valuation for gifted students at ENC School in reading and mathematics in Grades 4, 5, and 6? (2) What is the relationship between changes in goal

valuation and achievement outcomes in reading and mathematics for gifted students at ENC School in Grades 4, 5, and 6? (3) How do teachers perceive the impact of ability grouping and differentiated instruction in reading and mathematics on gifted students at ENC School in Grades 4, 5, and 6? Ability grouping and differentiated instruction had a positive influence on goal valuation for gifted students at ENC School in reading and mathematics in Grades 4, 5, and 6. The increase in both Intrinsic Value and Utility Value and the decrease in the Boredom factor coincides with the increase in reading and math achievement. There is a positive relationship between goal valuation and achievement outcomes in reading and mathematics for gifted students at ENC School in Grades 4, 5, and 6.

According to iReady end of year diagnostic reading data, the majority of underperformers in Grades 4, 5, and 6 met or exceeded expectations. In math, 100% of Grade 4, 5, and 6 underperformers exceeded expectations at the end of the year. Although the previous data are positive, according to the EVAAS for 2023-2024, students continued to meet growth and not exceed growth, so there are huge gains to be made. Overall, the data indicate that teachers perceive the impact of ability grouping and differentiated instruction in reading and math at ENC School in Grades 4, 5, and 6 to have a positive impact. In addition to the positive comments teachers made about differentiation and ability grouping during the post intervention focus group, teachers also reported positive responses on the self-rating scale post intervention.

Scholarly Practitioner Reflections on Leadership

My dissertation journey has made me a more reflective leader, given me an opportunity to grow professionally, and provided me with new perspectives on educational leadership. It has also strengthened my resiliency and perseverance. Working alongside teachers and listening to their input during focus groups made me more reflective and increased my empathy and

understanding of classroom challenges. I've grown professionally in many ways especially in the areas of data-driven decision making and collaboration with stakeholders. Throughout my study, I was required to use data to direct my next steps. For example, after analyzing EVAAS data and iReady data, I had to determine which grade levels had the most gifted underperformers. I also had to analyze the focus group data and teacher survey data and use that to guide my intervention.

My study required collaboration with stakeholders from different components of our school community. For example, I collaborated with the AIG teachers to create and facilitate differentiation professional development. Their contributions were extremely valuable and I strengthen my ability to co-facilitate a professional development session. My collaboration with them may not have taken place had it not been a part of my study.

My perspective on educational leadership changed, especially during the literature review portion of this study. This study has solidified my role as an advocate for gifted education.

My biggest growth came in the form of resiliency and perseverance. While completing this dissertation I also switched from being a K-5 principal to a Pre K – 8th grade principal. As a result, the topic of my dissertation changed because the needs at my previous school were different from the needs at ENC School. I also continued to be a wife, mother to three children and a daughter, sister, colleague, and friend. The sacrifices that had to be made by myself and others along with the encouragement and determination to achieve this lifelong goal gave me the tools needed to be resilient and to persevere.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
Willis Building · Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** ·
rede.ecu.edu/umcirb/

Notification of Initial Approval: Expedited

From: Social/Behavioral IRB
To: Leslie Hayes
CC: Robert Reardon
Date: 12/20/2023
Re: UMCIRB 23-001943
Improving the Academic Achievement of Underperforming Gifted Learners

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) occurred on 12/20/2023. The research study is eligible for review under expedited category # 6, 7. The Chairperson (or designee) deemed this study no more than minimal risk.

As the Principal Investigator you are explicitly responsible for the conduct of all aspects of this study and must adhere to all reporting requirements for the study. Your responsibilities include but are not limited to:

1. Ensuring changes to the approved research (including the UMCIRB approved consent document) are initiated only after UMCIRB review and approval except when necessary to eliminate an apparent immediate hazard to the participant. All changes (e.g. a change in procedure, number of participants, personnel, study locations, new recruitment materials, study instruments, etc.) must be prospectively reviewed and approved by the UMCIRB before they are implemented;

2. Where informed consent has not been waived by the UMCIRB, ensuring that only valid versions of the UMCIRB approved, date-stamped informed consent document(s) are used for obtaining informed consent (consent documents with the IRB approval date stamp are found under the Documents tab in the ePIRATE study workspace);

3. Promptly reporting to the UMCIRB all unanticipated problems involving risks to participants and others;

4. Submission of a final report application to the UMICRB prior to the expected end date provided in the IRB application in order to document human research activity has ended and to provide a timepoint in which to base document retention; and

5. Submission of an amendment to extend the expected end date if the study is not expected to be completed by that date. The amendment should be submitted 30 days prior to the UMCIRB approved expected end date or as soon as the Investigator is aware that the study will not be completed by that date.

The approval includes the following items:

Name	Description
CVA Math	Surveys and Questionnaires
CVA Reading	Surveys and Questionnaires
Focus Group Questions	Interview/Focus Group Scripts/Questions
Informed Assent	Consent Forms
Informed Consent	Consent Forms
Oral Assent Script	Consent Forms
Parent Permission	Consent Forms
Student Recruitment Email	Recruitment Documents/Scripts
Teacher Recruitment Email	Recruitment Documents/Scripts
Teacher Scale	Surveys and Questionnaires
Underperforming Gifted Learners	Study Protocol or Grant Application

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: INFORMED CONSENT FORM

Informed Consent to Participate in Research

Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: Underperforming Giftedstudents

Principal Investigator: Leslie Knight Hayes
Institution, Department or Division: Department of Educational Leadership, College of Education, East Carolina University
Address: 577 Baywood Dr. Winterville, N.C. 28590
Telephone #: (910) 840-0956

Researchers at East Carolina University (ECU) study issues related to society, health problems, environmental problems, behavior problems and the human condition. To do this, we need the help of volunteers who are willing to take part in research.

Why am I being invited to take part in this research?

The purpose of this research is to determine if differentiated instruction and ability grouping in math and reading will lead to positive achievement outcomes for gifted students that have underperformed in the past. You are being invited to take part in this research because you provide instruction to students in Grades 4, 5, or 6 at Eastern North Carolina (ENC) School (pseudonym), which are the students in the grades at the school being studied as part of this research. The decision to take part in this research is yours to make. By doing this research, we hope to learn how to better meet giftedstudents' needs.

If you volunteer to take part in this research, you will be one of about ___twelve___ people to do so.

Are there reasons I should not take part in this research?

I understand I should not volunteer for this study if I am, under 18 years of age, or I am not a part-time or full-time teacher at ENC School.

What other choices do I have if I do not take part in this research?

You can choose not to participate. There will be no repercussions for doing so.

Where is the research going to take place and how long will it last?

The research will be conducted at Chicod School in Eastern North Carolina. You will need to come to the PLC room 4 times during the study. The total amount of time you will be asked to volunteer for this study is 5 hours from now until June of 2024. I have allotted two 30 minutes sessions for a pre survey and post survey that can be done at your convenience.

What will I be asked to do?

You will be asked to do the following:

- Participate in professional development to strengthen differentiation practices.
- Implement differentiation strategies.
- Reflect on walkthrough feedback and make adjustments, as needed.
- Meet with other participants and I to analyze data.
- Questions that will be asked and/or interviews or surveys that may be conducted, focus groups in which you may be asked to take part.
- Complete pre and post survey

- Audiotaping will take place during the focus group. The researcher and study partners will have access to these tapes. The tapes will be kept for a minimum of three years. When the time comes, the digital files will be deleted.

What might I experience if I take part in the research?
We don't know of any risks (the chance of harm) associated with this research. Any risks that may occur with this research are no more than what you would experience in everyday life. We don't know if you will benefit from taking part in this study. There may not be any personal benefit to you but the information gained by doing this research may help others in the future.

Will I be paid for taking part in this research?
Unfortunately, we will not be able to pay you for the time you volunteer while being in this study.

Will it cost me to take part in this research?
It will not cost you any money to be part of the research.

Who will know that I took part in this research and learn personal information about me?
ECU and the people and organizations listed below may know that you took part in this research and may see information about you that is normally kept private. With your permission, these people may use your private information to do this research:

- The investigator(s) conducting this study.
- The University & Medical Center Institutional Review Board (UMCIRB) and its staff have responsibility for overseeing your welfare during this research and may need to see research records that identify you.

How will you keep the information you collect about me secure? How long will you keep it?
Information will be kept in Google Drive and it is password protected. Our district also uses a two-step verification process. Pseudonyms will be used. Data will be stored for a minimum of three years post study completion.

What if I decide I don't want to continue in this research?
You can stop at any time after it has already started. There will be no consequences if you stop and you will not be criticized.

Who should I contact if I have questions?
The people conducting this study will be able to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator at (910) 840-0956 Monday - Friday 8:30 pm - 4:30 pm.

If you have questions about your rights as someone taking part in research, you may call the University & Medical Center Institutional Review Board (UMCIRB) at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, you may contact the Director for Human Research Protections, at 252-744-2914.

Is there anything else I should know?
Your information or biospecimens collected as part of the research, even if identifiers are removed, will not be used or distributed for future studies.

I have decided I want to take part in this research. What should I do now?
The person obtaining informed consent will ask you to read the following and if you agree, you should sign this form:

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that I can stop taking part in this study at any time.
- By signing this informed consent form, I am not giving up any of my rights.
- I have been given a copy of this consent document, and it is mine to keep.

_____

Participant's Name (PRINT) **Signature** **Date**

Person Obtaining Informed Consent: I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above, and answered all of the person's questions about the research.

_____

Person Obtaining Consent (PRINT) **Signature** **Date**

APPENDIX C: PARENT PERMISSION

Parental Permission to Allow Your Child to Take Part in Research

Information to consider before allowing your child to take part in research that has no more than minimal risk.

Title of Research Study: Improving the Academic Achievement of Underperforming Giftedstudents in Elementary School

Principal Investigator: Leslie Knight Hayes (Person in Charge of this Study)
Institution, Department or Division: East Carolina University
Address: East 5th Street Greenville, NC 27858
Telephone #: 252-328-4260

Researchers at East Carolina University (ECU) issues related to society, health problems, environmental problems, behavior problems and the human condition. To do this, we need the help of volunteers who are willing to take part in research**.**

Why is my child being invited to take part in this research?

The purpose of this research is to determine if ability grouping and differentiated instruction will positively impact giftedstudents preventing them from underachieving on achievement assessments. Your child is being invited to take part in this research because your child is a giftedstudent in grade 4th, 5th or 6th. The decision for your child to take part in this research will also depend upon whether your child wants to participate. By doing this research, we hope to learn the answers to the following questions:

1. What influence will ability grouping and differentiated instruction have on goal valuation for giftedstudents at ENC School in reading and mathematics in Grades 4, 5, and 6?
2. What is the relationship between changes in goal valuation and achievement outcomes in reading and mathematics for giftedstudents at ENC School in Grades 4, 5, and 6?
3. How do teachers perceive the impact of ability grouping and differentiated instruction in reading and mathematics on giftedstudents at ENC School in Grades 4, 5, and 6?

If you and your child agree for him/her to volunteer for this research, your child will be one of about _100_ people to do so.

Are there reasons my child should not take part in this research?
You should not agree for your child to take part in this study if he/she is unable or uncomfortable.

What other choices do I have if my child does not take part in this research?
Your child can choose not to participate.

Where is the research going to take place and how long will it last?
The research will be conducted Chicod School. You will need to come to school regularly during the study. The total amount of time your child will be asked to volunteer for this study is daily over the next 6 months. There will not be space available for you to wait for your child during the research.

What will my child be asked to do?
Your child will be asked to do the following:

- Complete a pre-survey to determine if they currently value the tasks they are assigned in reading. (mid December)
- Complete a pre-survey to determine if they currently value the tasks they are assigned in math. (mid December)
- Complete the iReady diagnostic to the best of your ability.
- Attend school regularly and participate in instruction. (mid December to early June)
- Complete a port-survey to determine if they currently value the tasks they are assigned in reading. (late May)
- Complete a post-survey to determine if they currently value the tasks they are assigned in math. (late May)

What might I experience if I take part in the research?
We don't know of any risks (the chance of harm) associated with this research. Any risks that may occur with this research are no more than what you would experience in everyday life. We don't know if your child will benefit from taking part in this study. There may not be any personal benefit to your child but the information gained by doing this research may help others in the future.

Will my child be paid for taking part in this research?
We will not] be able to pay you or your child for the time you volunteer while being in this study.

Will it cost me anything for my child to take part in this research?
It will not cost you any money to be part of the research

Who will know that I took part in this research and learn personal information about me?
ECU and the people and organizations listed below may know that your child took part in this research and may see information about your child that is normally kept private. With your permission, these people may use your child's private information to do this research:

- The University & Medical Center Institutional Review Board (UMCIRB) and its staff have responsibility for overseeing your child's welfare during this research and may need to see research records that identify your child.
- People designated by ECU

How will you keep the information you collect about my child secure? How long will you keep it?
Data will be stripped of identifiers. Electronic data will be kept safely in a Google Drive account that requires a two-step identification process. Paper copies of data will kept in a locked cabinet at Chicod School in room 140. Data will be kept a minimum of three years post study completion.

What if my child decides he/she doesn't want to continue in this research?
Your child can stop at any time after it has already started. There will be no consequences if he/she stops and he/she will not be criticized. Your child will not lose any benefits that he/she would normally receive.

Who should I contact if I have questions?
The people conducting this study will be able to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator at (910) 840-0956 Monday through Friday, 8:00 am to 4:00 pm.

If you have questions about your rights as someone taking part in research, you may call the ECU University and Medical Center Institutional Review Board (UMCIRB) at phone number 252-744-2914 (days). If you would like to report a complaint or concern about this research study, you may call the Director for Human Research Protections, at 252-744-2914.

Is there anything else I should know?
Your information or biospecimens collected as part of the research, even if identifiers are removed, will not be used or distributed for future studies.

I have decided my child can take part in this research. What should I do now?
The person obtaining informed consent will ask you to read the following and if you agree, you should sign this form:

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that my child can stop taking part in this study at any time.
- By signing this informed consent form, my child is not giving up any of his/her rights.
- I have been given a copy of this consent document, and it is mine to keep.

_____ _____

Parent/Guardian's Name (PRINT) **Signature** **Date**

Person Obtaining Informed Consent: I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above, and answered all of the person's questions about the research.

_____

Person Obtaining Consent (PRINT) **Signature** **Date**

_____

Principal Investigator (PRINT) **Signature** **Date**

APPENDIX D: CLASS VALUE ASSESSMENT – MATH

Instructions: Please rate how strongly you agree or disagree with the following statements. Use a range from (**1**) to (**7**) where (**1**) stands for **strongly disagree** and (**7**) stands for **strongly agree**. Please circle only one response choice per question.

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree
1. Doing well in math class makes me feel good about myself.	1	2	3	4	5	6	7
2. I feel that I must do well in math class.	1	2	3	4	5	6	7
3. It's personally important for me to do well in math class.	1	2	3	4	5	6	7
4. I need to do well in math class to please myself.	1	2	3	4	5	6	7
5. Doing well in math class gives me a sense of accomplishment.	1	2	3	4	5	6	7
6. I feel personal satisfaction from doing well in math class.	1	2	3	4	5	6	7
7. I am often bored in math class.	1	2	3	4	5	6	7
8. I find the content of math class interesting.	1	2	3	4	5	6	7
9. I like learning new things in math class.	1	2	3	4	5	6	7
10. I enjoy the activities that we do in math class.	1	2	3	4	5	6	7
11. I find the content of math class boring.	1	2	3	4	5	6	7
12. I enjoy doing work in math class.	1	2	3	4	5	6	7

13. Math class interests me.	1	2	3	4	5	6	7
14. I find it easy to pay attention in math class.	1	2	3	4	5	6	7
15. I hate doing the work in math class.	1	2	3	4	5	6	7
16. Math class is necessary for achieving my future goals	1	2	3	4	5	6	7
17. Math class has many "real world" applications.	1	2	3	4	5	6	7
18. The content of math class is useful.	1	2	3	4	5	6	7
19. Doing well in math class will help me with my future goals.	1	2	3	4	5	6	7
20. I am learning valuable information in math class.	1	2	3	4	5	6	7
21. I will definitely use the information taught in math class.	1	2	3	4	5	6	7
22. Math class will help to "get me where I want to go."	1	2	3	4	5	6	7

APPENDIX E: CLASS VALUE ASSESSMENT – LANGUAGE ARTS

Instructions: Please rate how strongly you agree or disagree with the following statements. Use a range from (**1**) to (**7**) where (**1**) stands for **strongly disagree** and (**7**) stands for **strongly agree**. Please circle only one response choice per question.

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree
1. Doing well in language arts class makes me feel good about myself.	1	2	3	4	5	6	7
2. I feel that I must do well in language arts class.	1	2	3	4	5	6	7
3. It's personally important for me to do well in language arts class.	1	2	3	4	5	6	7
4. I need to do well in language arts class to please myself.	1	2	3	4	5	6	7
5. Doing well in language arts class gives me a sense of accomplishment.	1	2	3	4	5	6	7
6. I feel personal satisfaction from doing well in language arts class.	1	2	3	4	5	6	7
7. I am often bored in language arts class.	1	2	3	4	5	6	7
8. I find the content of language arts class interesting.	1	2	3	4	5	6	7
9. I like learning new things in language arts class.	1	2	3	4	5	6	7

10. I enjoy the activities that we do in language arts class.	1	2	3	4	5	6	7
11. I find the content of language arts class boring.	1	2	3	4	5	6	7
12. I enjoy doing work in language arts class.	1	2	3	4	5	6	7
13. Language arts class interests me.	1	2	3	4	5	6	7
14. I find it easy to pay attention in language arts class.	1	2	3	4	5	6	7
15. I hate doing the work in language arts class.	1	2	3	4	5	6	7
16. Language arts class is necessary for achieving my future goals	1	2	3	4	5	6	7
17. Language arts class has many "real world" applications.	1	2	3	4	5	6	7
18. The content of language arts class is useful.	1	2	3	4	5	6	7
19. Doing well in language arts class will help me with my future goals.	1	2	3	4	5	6	7
20. I am learning valuable information in language arts class.	1	2	3	4	5	6	7
21. I will definitely use the information taught in language arts class.	1	2	3	4	5	6	7
22. Language arts class will help to "get me where I want to go."	1	2	3	4	5	6	7

APPENDIX F: WALKTHROUGH INSTRUMENT

Walkthrough Instrument	
Is there evidence of differentiated content?	Check all that apply ❑ no ❑ individualized Lexile levels ❑ visual and/or auditory presentation of material ❑ tiered vocabulary ❑ Other
Is there evidence of differentiated processes?	Check all that apply ❑ no ❑ flexible grouping ❑ tiered activities ❑ student centered ❑ manipulatives ❑ scaffolding ❑ kinesthetic supports ❑ Other
Is there evidence of differentiated products?	Check all that apply ❑ no ❑ rubrics ❑ tiered assignments ❑ student created assignments ❑ student choice ❑ Other

APPENDIX G: DIFFERENTIATION IMPLEMENTATION

TEACHER SELF RATING SCALE

Differentiation Implementation Teacher Self Rating Scale

My students are provided with additional resources that match their level of readiness.	❑ Never ❑ Rarely ❑ Sometimes ❑ Always
My students are given access to a variety of materials that target different learning preferences and readiness.	❑ Never ❑ Rarely ❑ Sometimes ❑ Always
My students can express what they learned in various ways.	❑ Never ❑ Rarely ❑ Sometimes ❑ Always
Differentiating the content causes my students to value their learning.	❑ Never ❑ Rarely ❑ Sometimes ❑ Always
Differentiating the process causes my students to value their learning.	❑ Never ❑ Rarely ❑ Sometimes ❑ Always
Differentiating the product causes my students to value their learning.	❑ Never ❑ Rarely ❑ Sometimes ❑ Always
My students show mastery at a greater rate when I differentiate content.	❑ Never ❑ Rarely ❑ Sometimes ❑ Always

My students show mastery at a greater rate when I differentiate process.	❑ **Never** ❑ **Rarely** ❑ **Sometimes** ❑ **Always**
My students show mastery at a greater rate when I differentiate product.	❑ Never ❑ Rarely ❑ Sometimes ❑ Always

APPENDIX H: TEACHER FOCUS GROUP QUESTIONS

Focus Group Questions

1. How enthusiastic are your gifted students about learning in your classroom right now?
    a. Please describe what an "unenthusiastic student" does in your class.
    b. Please describe what an "enthusiastic student" does in your class.

2. What would you say is the goal of your gifted students right now with respect to schoolwork?

3. Do you think that your gifted students are reaching their full academic potential right now?
    a. Is there anything you would like to change?

4. To what extent does curriculum differentiation and ability grouping enhance the learning environment in your classroom right now?
    a. Do you think your students know that your classroom is different from "the usual"?

5. Please describe what the very best assignment/class work your students have submitted so far this year looks like. *[Note: Teachers were asked to bring that assignment/class work with them to the focus group, if that was feasible.]*
    a. Are there any ways that this student could have done a better job on this piece of work?
    b. What might have allowed this improvement to have happened?

Add at Final:

6. To what extent have you noticed a change in the enthusiasm of your gifted students for learning since our last meeting?
    a. To what extent do you attribute this to our emphasis on curriculum differentiation and ability grouping?

7. What would you say is the goal of your gifted students right now with respect to schoolwork?
    a. To what extent do you attribute any change to our emphasis over this term on curriculum differentiation and ability grouping?

APPENDIX I: TEACHER SELF ASSESSMENT

Teacher Self-Assessment Checklist

As you reflect on your instruction this week, kindly mark all applicable items from the list below:

* Indicates required question

1. Grade Level *

Mark only one oval.

- ❑ 4th
- ❑ 5th
- ❑ 6th

2. Date *

_____

Example: January 7, 2019

3. Content Area *

Mark only one oval.

- ❑ Math
- ❑ Reading

4. Is there evidence of differentiated content? *

Mark only one oval.

- ❑ Yes
- ❑ No

5. Select all of the strategies used this past week: (differentiated content) *

Check all that apply.

- ❑ None
- ❑ Complex texts
- ❑ Complex problem-solving tasks
- ❑ Advanced literature
- ❑ Alternative methods for solving problems
- ❑ Advanced mathematical concepts
- ❑ Research projects
- ❑ Advanced vocabulary
- ❑ Explore word roots and prefixes, and engage in word analysis
- ❑ Encourage critical analysis, independent reflections, and connections to real-world applications in reading response journals.
- ❑ Above grade level content
- ❑ Tiered content
- ❑ Compacting
- ❑ Differentiated homework
- ❑ Other: _____

6. Is there evidence of differentiated process? *

Mark only one oval.

- ❑ Yes
- ❑ No

7. Select all of the strategies used this past week: (differentiated process based on readiness) *

Check all that apply.

- ❑ None
- ❑ Apps for skills practice at varied levels of complexity (Example: iReady) Class Discussions featuring questions at varied levels of complexity.
- ❑ Help station / help folder
- ❑ Learning contract
- ❑ Peer tutoring / peer partners
- ❑ Personalized formative feedback
- ❑ Print and digital resources at varied levels of complexity
- ❑ Print and digital resources in a student's home language (MLL)
- ❑ RAFT Assignments (Role, Audience, Format, Topic) writing strategy
- ❑ Small group instruction
- ❑ Think Dots
- ❑ Think-Pair-Share
- ❑ Tiered assignments
- ❑ Wait time
- ❑ Choice Boards
- ❑ Exit tickets
- ❑ Learning stations
- ❑ Other

*

8. Select all of the strategies used this past week: (differentiated process based on interest)

Check all that apply.

- ❑ None
- ❑ Student interest activities
- ❑ Apps for enriching a current study based on aspects of the topic of interest to a student
- ❑ Class discussions with connections to student interests
- ❑ Genius hour
- ❑ Independent studies
- ❑ Interactive journals Jigsaw
- ❑ Learning Contracts
- ❑ Maker Space
- ❑ Orbitals
- ❑ RAFT (Role, Audience, Format, Topic) writing strategy
- ❑ Specialty Groups
- ❑ Other

9. Select all of the strategies used this past week: (differentiated process based on learning profile)

Check all that apply.

- ❑ None
- ❑ Analytical, practical and creative prompts and tasks Assessments with varied ways to express learning
- ❑ Assignments with varied ways of expressing learning
- ❑ Choice of working arrangements
- ❑ Class discussions featuring practical, analytical and creative questions
- ❑ Collaborative learning options
- ❑ Competitive learning options
- ❑ Hand signals for student communication/participation
- ❑ Learning Contracts
- ❑ Manipulatives and models
- ❑ RAFT (Role, Audience, Format, Topic) writing strategy
- ❑ Role play
- ❑ Other

*

10. Is there evidence of differentiated product? *

Mark only one oval.

- ❑ Yes
- ❑ No

11. Select all of the strategies used this past week: (differentiated product)

Check all that apply.

- ❑ None
- ❑ Conduct an interview
- ❑ Create a comic book
- ❑ Create and share a multimedia presentation
- ❑ Design a game
- ❑ Design a new product
- ❑ Design and build something
- ❑ Design and conduct experiments
- ❑ Design and set up learning centers
- ❑ Develop a virtual museum
- ❑ Develop and advertising campaign
- ❑ Develop and present a mime routine
- ❑ Develop, distribute and present survey results
- ❑ Formulate and defend a theory
- ❑ Generate a set of explanatory graphs
- ❑ English: Analyze a novel, poem, or play.
- ❑ History: Write a historical analysis or research paper.
- ❑ Science: Summarize a scientific experiment or concept.
- ❑ Create a PowerPoint or Google Slides presentation on a specific topic.
- ❑ Deliver a speech or debate on a controversial issue.
- ❑ Build a model, diorama, or prototype related to a science or engineering concept.
- ❑ Create a poster or infographic summarizing information.
- ❑ Conduct a scientific experiment and write a report on the findings.
- ❑ Demonstrate a chemistry or physics concept through hands-on activities.
- ❑ Design and create artwork inspired by a specific theme or artist.
- ❑ Compose a piece of music or write a song.
- ❑ Act out a scene from a play or film.

- ❑ Perform a dance routine or choreography.
- ❑ Solve math problems and show the step-by-step process.
- ❑ Create and solve real-world math scenarios.
- ❑ Develop a computer program or app.
- ❑ Create a website or multimedia project.
- ❑ Write a short story or poem.
- ❑ Work in groups to solve a problem or complete a project.
- ❑ Present findings as a team in a collaborative format.
- ❑ Compile a portfolio showcasing the best work over a period.
- ❑ Reflect on personal growth and learning through a written refection.
- ❑ Develop a board game or simulation that demonstrates understanding of a concept.
- ❑ Create an interactive learning experience.
- ❑ Conduct interviews with experts or individuals relevant to a topic.
- ❑ Analyze and present a case study related to a subject.
- ❑ Conduct observations and document findings.
- ❑ Create a report based on experiences outside the classroom.
- ❑ Other

APPENDIX J: EXIT TICKET

Differentiation PD Exit Ticket

* Indicates required question

1. Name

2. How do you envision incorporating the differentiation techniques into your lesson plans or curriculum? *

3. Are there any specific subjects or topics where you see immediate opportunities to apply what you've learned? *

APPENDIX K: CODE BOOK

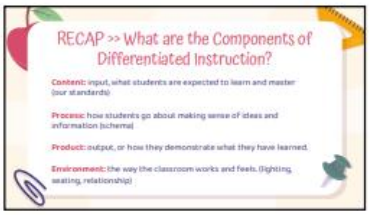
Code Book	
Initial Codes	**Initial Code Definitions**
ability grouping	The organization of students into groups based on their academic abilities to enhance learning.
academic eagerness	students responding to an academic task eagerly
academic inertia	reluctance to engage in expanded "response modality"
academic potential	The capability of gifted students to reach their highest academic performance.
academic repertoire	the range of learning contexts in which the students can exhibit proficiency and learn optimally
academic self-confidence	a component of extroversion but sustained by their confidence in their academic acuity based on prior experience
academic value	the value students place on academic tasks.
little academic self-confidence	perhaps introversion or "parsimony" or the converse of "academic self-confidence"
age-related	Middle school students may not show enthusiasm outwardly
aesthetic preference	Preference for visually appealing or aesthetically pleasing tasks.
awareness	students are aware their class is ability based
behaviors of enthusiastic students	Actions and attitudes displayed by students who are highly interested and engaged in learning.
choice	students are given an opportunity to choose their assignment when presented with different options
curriculum differentiation	The practice of modifying the curriculum to meet the diverse needs of students with different abilities.
disproportional	when gifted learners do more of the work when paired with non gifted learners
easier task preference	Tendency to choose tasks perceived as simpler or requiring less effort.
enthusiasm	The level of excitement and interest shown by students in the classroom.
extrinsically motivated	expending only the energy required to meet the criteria for the grade they desire
increased confidence	displaying more confidence than previously displayed

intrinsically motivated	expending the energy required to please themselves about their academic performance
familiarity	the converse of novelty; being presented with academic challenges on which they have already attained proficiency
frustration	Difficulty in correctly following task directions, causing frustration.
goals	The academic and personal objectives that gifted students aim to achieve.
growth	growth within proficiency
high-quality work	Work that demonstrates exceptional effort, detail, or skill.
leading learning	exploring new academic vistas; implicitly beating a path for others
learning environment	the totality of factors that militate against optimal learning
learning speed	the amout of time it takes to complete a task.
learning pace	the pace a student completes tasks
mental engagement	portraying by their demeanor that they are cognitively processing the academic challenges they are presented
metacognition	challenging students to reflect on their own understanding
mixed feelings	Students having varied emotional responses to assigned groups.
need for deeper challenges	Desire or need to offer tasks that challenge students deeply.
novelty	being presented with academic challenges that are within their ZPD; implies intrinsic motivation
parsimony	expending minimal or no effort to demonstrate learning
passivity	present but portraying by their demeanor that they are committing little energy to actively processing the academic challenges
participation	the degree to which students engage in class activities and discussions
peer influence	When gifted students are the minority they tend to blend in.
positive effect	causing an academic improvement
response modality	constraints placed on the expansiveness of students' responses
segment enthusiasm	Different enthusiasm levels based on student groups
strategies	instructional arrangements to facilitate "novelty" and expand "academic repertoire"

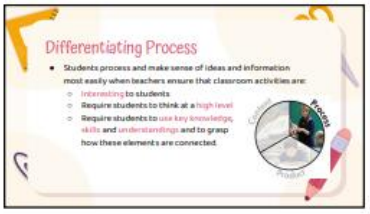
subject potential	potential in math vs. potential in SS
teacher enthusiasm	Teacher's enthusiasm influences student engagement
varied effort	students portrayed varied amounts of effort
varied levels	varied levels of giftedness
Invivo Codes	
Pre Grade 4:	Post Grade 4
"Like long division"	"work it out in their heads"
"Super, super engaged and super enthusiastic"	"much more engaged"
"Come to Jesus Meetings"	"much more excited and motivated"
"Life has been easy for them"	
"Eight million things we would like to change but we cant"	
"One million percent"	
"Anything they have to create are their best assignments"	
Pre Grade 5:	Post Grade 5
“Really well”	"flying through"
“Most enthusiastic learners”	"more worthwhile"
“Excitement for science”	"actually getting something out of it"
“Bare minimum”	"worth their time"
“Constantly raising their hands”	"stand around and wait"
“Taking their time on assignments”	
“Asking numerous questions”	
“Thinking outside the box”	
“Perfect A”	
“Just get it done and move on”	

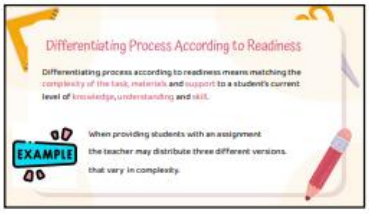
“Go deeper”	
“I’m done. I’m done. I’m done.”	
"If they don't do it the speedy quick, then they're not smart."	
"Golden shining apple"	
"Tremendous"	
“Feel high and mighty”	
"Competition with themselves"	
"Pressures they put on themselves"	
“Life is good”	
“Peer tutoring”	
Pre Grade 6:	Post Grade 6:
“Not her thing”	"game changer"
“trying to blend in”	"One of the most important things to be aware of is that just because a student is “gifted” does not mean we are working with a “one size fits all” shoe."
Descriptive Codes	**Definitions**
group-based dynamics	How students are organized in groups and how they influence each other.
student motivation	What drives students to learn, either from within or outside.
emotional and behavioral responses	How students act and feel in class.
learning preferences	What students like or prefer when learning.
engagement and participation	How actively students are involved in learning.
academic growth and performance	How students improve and perform.
cognitive processes	How students think and learn.
instructional impact	How teaching and the curriculum affect students.
environmental factors	Outside influences that affect learning.
effort and work ethic	How much effort students put into learning.

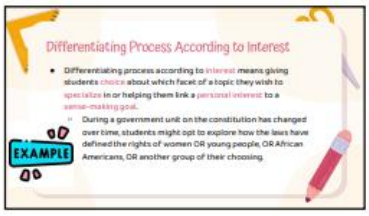
APPENDIX L: DIFFERENTIATION PRESENTATION




Differentiating Content
Jigsaw
Pick one strategy, review for 5 minutes and be ready to share out.


Differentiating Process
Students process and make sense of ideas and information most easily when teachers ensure that classroom activities are:
Interesting to students
Require students to think at a high level
Require students to use key knowledge, skills and understandings and to grasp how these elements are connected.
Content
Process
Product


Differentiating Process According to Readiness
Differentiating process according to readiness means matching the complexity of the task, materials and support to a student's current level of knowledge, understanding and skill.
EXAMPLE
When providing students with an assignment
the teacher may distribute three different versions.
that vary in complexity.

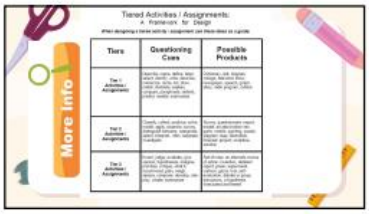

Differentiating Process According to Interest
Differentiating process according to interest means giving students choice about which facet of a topic they wish to specialize in or helping them link a personal interest to a sense-making goal.
During a government unit on the constitution has changed over time, students might opt to explore how the laws have defined the rights of women OR young people, OR African Americans, OR another group of their choosing.
EXAMPLE

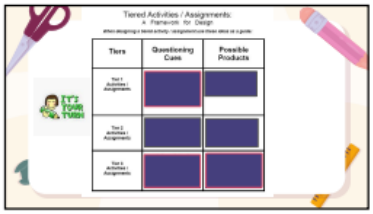

Differentiating Process According to Learning Profile
Differentiating process according to learning profile means encouraging students to make sense of information via a way of learning they prefer.
Work with a partner or alone, sit in the floor or in a chair, learn through movement or drawing.
EXAMPLE
Content
Process
Product


Differentiating Process

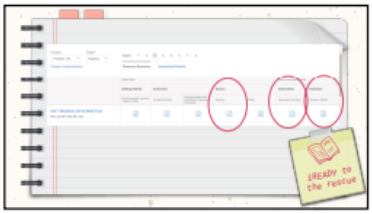

More Ways to Differentiate Process

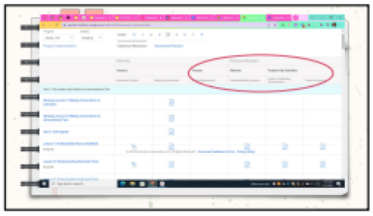

Ways to Differentiate
Readiness
Apps for practice at varied levels of complexity
Question at varied levels of complexity
Personalized Formative Feedback
Tiered Assignments
Interest
Product options
Makerspace
Class discussions with connections to student interests
Independent studies
Jigsaw
Learning Profile
Analytical, creative and practical prompts and tasks
Assessments with varied ways to express learning
Choice of working assignments
Hand signals for participation
Interactive journals
Role play

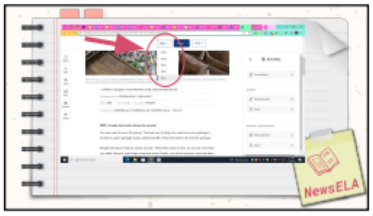

Tiered Activities / Assignments:
Tiers
Questioning Cues
Possible Products
More info


Tiered Activities / Assignments:
Tiers
Questioning Cues
Possible Products


What resources do we have?

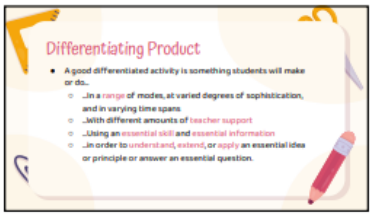

iREADY to the rescue




NewsELA

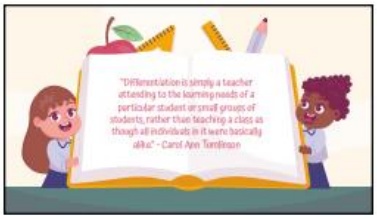

Magic School


Differentiating Product
Identify the key knowledge, understandings and skills the product will incorporate.
Decide on the format(s) that the product(s) will take.
Determine baselines expectations for quality.
Determine support structures.
Present the assignment (all paths)
Product


Differentiating Product
A good differentiated activity is something students will make or do...
...in a range of modes, at varied degrees of sophistication, and in varying time spans
...with different amounts of teacher support
...Using an essential skill and essential information
...in order to understand, extend, or apply an essential idea or principle or answer an essential question.

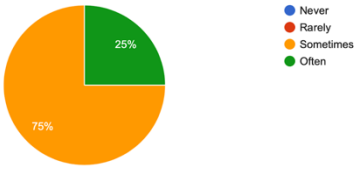
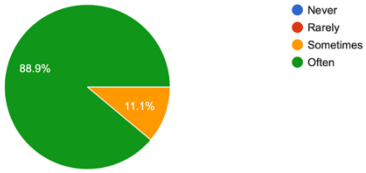
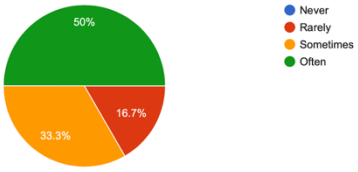
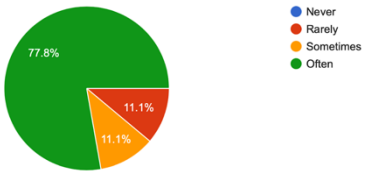
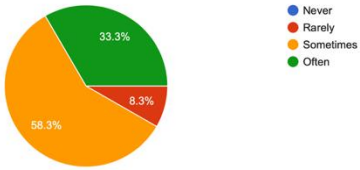
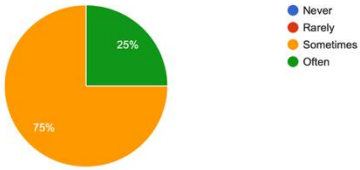
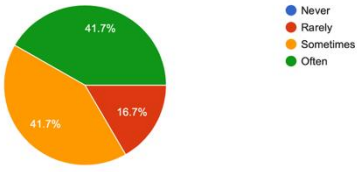
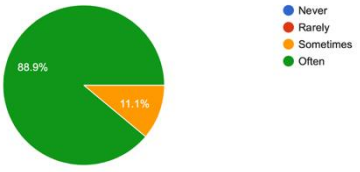

Differentiating Product
Review one strategy and create a flipgrid about it or an infographic.


Kahoot Time!

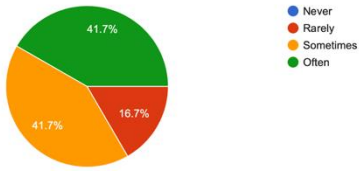

"Differentiation is simply a teacher attending to the learning needs of a particular student or small groups of students, rather than teaching a class as though all individuals in it were basically alike." - Carol Ann Tomlinson


Exit Ticket
Exit

APPENDIX M: TEACHER SELF-RATING SCALE/DIFFERENTIATION AND STUDENTS' GOAL VALUATION

Pre-Intervention	Post-Intervention
My students are provided with additional resources that match their level of readiness. 12 responses 	My students are provided with additional resources that match their level of readiness. 9 responses 
My students are given access to a variety of materials that target different learning preference readiness. 12 responses 	My students are given access to a variety of materials that target different learning preference readiness. 9 responses 
My students can express what they learned in various ways. 12 responses 	My students can express what they learned in various ways. 8 responses 
Differentiating the content causes my students to value their learning. 12 responses 	Differentiating the content causes my students to value their learning. 9 responses 

Differentiating the process causes my students to value their learning.
12 responses



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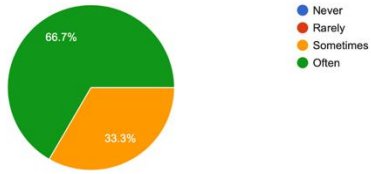
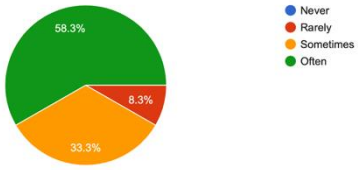


Differentiating the product causes my students to value their learning.
12 responses



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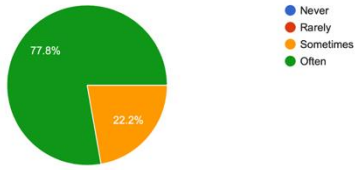
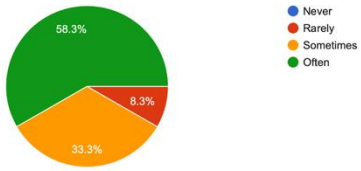
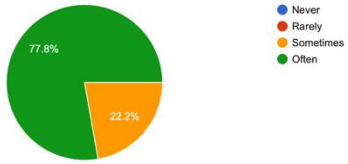
9 responses



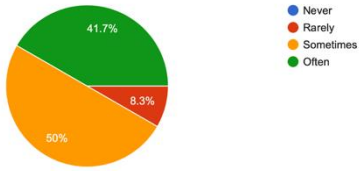
My students show mastery at a greater rate when I differentiate content.
12 responses



My students show mastery at a greater rate when I differentiate content.
9 responses



My students show mastery at a greater rate when I differentiate process.
12 responses



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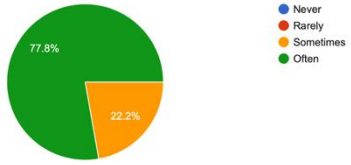
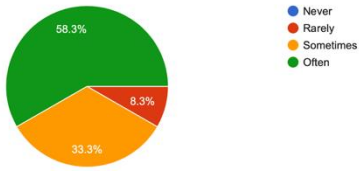


My students show mastery at a greater rate when I differentiate product.
12 responses



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