

DIFFERENCES BETWEEN GIFTED AND NON-GIFTED STUDENTS' PERCEPTIONS OF  
ADVANCED INTERNATIONAL CERTIFICATE OF EDUCATION COURSE QUALITY

by

Kristin Lynn Hudson

Liberty University

A Dissertation Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

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APPROVED BY:

Gina Thomason Ed.D., Committee Chair

Scott Watson, Ph.D., Committee Member

## ABSTRACT

A nonexperimental, causal-comparative research study examined if potential differences exist between secondary-level gifted and non-gifted students' perceptions of course quality in Advanced International Certificate of Education (AICE) courses. While research in gifted education has examined students' perceptions of advanced coursework and the impact of acceleration on academic growth and motivation, no research to date has examined secondary gifted students' perceptions of AICE course quality. Current research on the AICE program has focused on the program's influence as a predictive model for university matriculation and achievement, most often using grade point average. Student participants attend a local public-school high school located in a rural, Title 1 district located in northeast Florida and are enrolled in AICE courses in Grades 11 and 12. The gifted student participants are identified as gifted by the Florida Department of Education classification criteria. Since a lack in resources often forces rural schools to offer less accelerated educational options, a need to justify the use of such programs as viable and impactful for student learning exists along with a need to increase research concerning the AICE program as an appropriate acceleration resource. Researching students' perceptions can offer additional support for advanced secondary programs. The Student Perceptions of Course Quality Survey, a 38-question Likert scale, was used to measure student perceptions. The study used a multivariate analysis of variance to determine if there are differences between the two independent variables and to determine if potential differences exist for each of the subscale aspects for the independent variable groups—appeal, challenge, choice, meaningfulness, and academic self-efficacy. The results indicated that no statically significant differences exist between the two student populations.

*Keywords:* AICE, course quality, gifted education, student perceptions

## **Dedication**

To my grandfather, who never got a chance to finish his own doctorate, the man who once told me that an education was one thing I could spend my money on that would never personally depreciate.

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### **List of Abbreviations**

Academically Challenging Curriculum to Enhance Learning (ACCEL)

Advance Placement (AP)

Advanced International Certificate of Education (AICE)

Advanced (A) Levels

Advanced Subsidiary (AS) Levels

Analysis of Variance (ANOVA)

Cambridge International Examinations (CIE)

Confirmatory Factor Analysis (CFA)

Exceptional Student Education (ESE)

Florida's Department of Education (FLDOE)

Grade Point Average (GPA)

Institutional Review Board (IRB)

Intelligence Quotient (IQ)

International Baccalaureate (IB)

Multivariate Analysis of Variance (MANOVA)

Root Mean Square Error of Approximation (RMSEA)

Student Perceptions of Classroom Quality (SPOCQ)

University of Cambridge Local Examinations Syndicate (UCLES)

Zone of Proximal Development (ZPD)

## **CHAPTER ONE: INTRODUCTION**

### **Overview**

This chapter provides an overview of the research study focusing on gifted and non-gifted students' perceptions of course quality. The chapter includes background on the subject, the problem statement, the purpose statement, the significance of the study, the research question, and related definitions. This study aims to examine gifted students' perceptions versus non-gifted students' perceptions of course quality in an Advanced International Certificate of Education (AICE) diploma program. Since perceptions of course quality can potentially affect academic performance and motivation, especially with gifted students, it is important to examine student perceptions to aid in determining whether this advanced academic program is an appropriate learning environment in which to educate gifted and high-achieving students.

### **Background**

Gifted student education and academic acceleration has been stereotyped as formalized intervention used predominantly in the elementary and middle school grades. Typically, little specific pedagogical interventions or differentiation is offered in the upper secondary grades to support gifted and high-achieving learners beyond placing them in accelerated collegiate-preparatory courses, often with teachers who were never trained in gifted and accelerated educational pedagogy (Brown & Garland, 2015). If these types of secondary courses are the primary interventions for the education of the brightest academic minds in the U.S.'s secondary public-school system, adequate and robust research attesting to such needs to exist to support the implementation of these advanced programs.

Historically, most educators and stakeholders in gifted education equate the inception of formal gifted and acceleration education with the National Defense Education Act of 1958,

following the Soviet Union's launch of the satellite Sputnik (Heuser, Wang, & Shahid, 2017). During this time, students were identified as gifted based solely on intelligence quotient (IQ) tests, such as the Woodcock-Johnson Test of Cognitive Abilities or Wechsler Intelligence Scale for Children (Cao, Jung, & Lee, 2017). While IQ tests have historically been the determiner of gifted classification, a push among researchers and educators now exists to create alternative methods of identification, such as Renzulli's (2011) triad model of giftedness that includes "above-average general abilities, high levels of task commitment, and high levels of creativity" (p. 87), which would increase the population of gifted students by including academically high-achieving students.

While some state departments of education have still not passed educational legislation mandating the accommodation and specialized educational planning for gifted students, Florida began formalized gifted education in 1956 by mandating funding for gifted programs within individual school districts. Gifted education was added to the control of the Exceptional Student Education (ESE) division in 1968. More recently, the Florida Department of Education (FLDOE) began offering teacher professional development courses in how to best serve gifted populations in both general education classrooms and, specifically, designed gifted environments. In 2006, FLDOE provided teacher allotments for gifted instructors.

The Academically Challenging Curriculum to Enhance Learning (ACCEL) law, which requires every school to offer acceleration options, was passed in 2014, and the requirements for this law are not limited to offering acceleration only to gifted students but rather are inclusive of all students who participate in such courses. According to the *Resource Guide for the Education of Gifted Students in Florida* (FLDOE, 2017b), an advanced class option for gifted students is any course that offers coursework above the grade-level requirement and is typically labeled as

honors, dual enrollment, International Baccalaureate (IB), Advance Placement (AP), or AICE with awarded weighted credit for grade point average (GPA). The AICE diploma program and preparatory courses for this program, called pre-AICE, are specifically listed as acceptable options (FLDOE, 2017a).

Cambridge International Examinations (CIE) is a division of the University of Cambridge Local Examinations Syndicate (UCLES) and has existed as part of the University of Cambridge since 1863 (Eason, Reach, & Sismey, 2004). This branch of the university system has existed to supervise assessment for the university for over a century and now also manages and designs the examination branch of their international high school program of study—AICE. The AICE program is accepted in over 160 countries worldwide, and students sit one of three versions of an examination, based on time zone, to further protect the integrity of the examination papers (University of Cambridge Local Examinations Syndicate, 2019).

In 1995, a high school in Florida first offered CIE qualifications in the United States; currently, Florida's state legislation mandates that the Florida public university system award comparable collegiate credit for all passed AICE examination (Educational Code, 2018). Additionally, this state legislation requires that students who earn the full AICE diploma be awarded the highest amount of the in-state scholarship, which is typically based on ACT or SAT score, outside of earning an AICE or IB diploma.

From a psychological approach to learning, Piaget and Vygotsky both explored the idea of creativity as intellectual capacity. Vygotsky approached creativity as the development of the ability to have *superior psychological functioning* (Stoltz, Piske, de Fátima Quintal de Freitas, D'Aroz, & Machado, 2015). Creativity for Vygotsky meant the ability to challenge learners to expand their knowledge bases, placing them in a cognitive status he termed the zone of proximal

development (ZPD). The ZPD is the cognitive point at which learners are adequately challenged by giving them problem-solving tasks just beyond their ability levels while simultaneously supporting their efforts with peers or adults who are more capable (Kanevesky & Geake, 2004). Vygotsky saw creative learning as a constantly supported challenge. This need for challenging environments with appropriate supports is what prompts many stakeholders to argue for the implementation of specific learning options for gifted and talented students (Coleman, Gallagher, & Job, 2012; Gallagher, 2004, 2015 a, b, and c).

Similarly, Piaget saw intelligence as creative cognitive ability. According to Piaget, creativity is the ability to assimilate new information to previously learned information, and consequently creativity can be taught as part of the cognitive ability to problem solve. According to Cohen and Kim (1999), this assimilation process happens simultaneously for gifted students. For students who are not as cognitively capable, the process may take longer and require more separation into individual tasks for assimilation to be reached, indicating a need for differentiated paths to learning.

Shaunessy and Suldo (2010) found that gifted students are often likely to create patterns of learning and craft their own schemas during and after this period of assimilation of new knowledge. This cognitive ability to quickly rectify new information into existing schemas is what Piaget considered the essence of creativity and intelligence (Stoltz et al., 2015). This type of cognitive creativity is not seen as necessarily artistic creativity, although Renzulli (2011) argued for artistic creativity as a part of the gifted classification.

To nurture and enhance this cognitive ability, learners require adequately challenging environments; as such, Piaget's work, like Vygotsky's, is often cited as an argument for the need



for specific differentiated learning environments beyond the general academic requirements of the mainstream grade-level classroom.

### **Problem Statement**

Little research currently exists on the AICE program, with no research conducted on currently enrolled gifted students' perceptions. What research has been conducted has mainly focused on the program as a predictive model for university matriculation to graduation, primarily within the Florida university system (Rodeiro, Crawford, & Shaw, 2017; Shaw, 2011; Shaw & Bailey, 2011). Currently, no research has been conducted to examine gifted or non-gifted secondary students' perceptions toward AICE course quality. The current study focuses on currently enrolled students' perceptions of AICE course quality with additional focus on gifted student perception to discuss if the advance program could be added to the list of acceptable differentiation options for gifted students' academic needs. Since some U.S. school systems, many of which are in Florida, use AICE program courses as acceptable acceleration options for gifted and advanced secondary learners, a need exists to examine the academic viability and rigor of the courses and student perceptions of these courses, as studies have shown that gifted motivation and academic performance are often tied to perceptions of academic challenge (Kurt & Chenault, 2017; Schmitt & Goebel, 2015; Siegle et al., 2016).

Additionally, concerns about offering specialized gifted education do exist, including regarding what viable options have been afforded to gifted students (Schmitt & Goebel, 2015). According to the National Association for Gifted Children (as cited in Beisser, 2008), in 2008 approximately 3 million gifted students were identified; many of these students were educated in America's public-school system. While this number has certainly adjusted in recent years,

especially when considering the widening of classifications for gifted placement, there is a growing need for specialized services for this percentage of the student population.

While research studies exist to investigate the perceptions of gifted students on advanced coursework, many of those studies are qualitative in nature, leaving room for additional quantitative research studies and development of quality instrumentation to add to the existing body of literature. Additionally, few quantitative measurement tools exist to survey gifted students' perceptions of such courses (Wu, Jen, & Gentry, 2018). While research studies examining gifted and high-achieving students' perceptions of advanced coursework and programs exist and have used similar research methods, this has not yet occurred with AICE courses (Gentry & Owen, 2004; Judson & Hobson, 2015; Schmitt & Goebel, 2015; Shaunessy, Suldo, Hardesty, & Shaffer, 2006; Tookey, 2000). Examining gifted and non-gifted students' perceptions of AICE course quality would add to the existing body of research on acceleration options for secondary gifted and advanced students that are appropriate for accommodating their academic needs in accelerated learning environments. The problem is that no research exists on students' perceptions of AICE coursework during their time in the courses, which limits the ability to argue if such courses are acceptable acceleration options for advanced learners, yet AICE courses are utilized as viable acceleration methods.

### **Purpose Statement**

The purpose of this study is to examine if potential differences exist between gifted and non-gifted students' perceptions of AICE course quality, using a casual-comparative approach to examine for potential differences and determine if current students view this advanced course program as quality program for student engagement and performance.

### Significance of the Study

Researchers have examined gifted students' perceptions in other secondary advance course programs used to accommodate the diverse needs that gifted and accelerated learners bring to secondary education. A lack of academic rigor often is unavailable for gifted and academically high-achieving students, especially those located in rural communities, some educators and researchers would claim that gifted students are the highest at-risk students for academic underachievement, when academic underachievement is defined as a discrepancy between cognitive ability and low academic grade performance (Kurt & Chenault, 2017).

Students' perceptions of both courses and teachers' abilities are two major indicators of whether gifted and advanced students will academically achieve or underachieve. Typically, when gifted students perceive academic courses as adequately challenging, or what Vygotsky termed within their ZPD, they are more likely to engage in classroom tasks and activities (Kurt & Chenault, 2017; Schmitt & Goebel, 2015). Additionally, when gifted students perceive that teachers in advance courses are experts and enthusiastic about their subject matters, gifted students are more likely to engage and achieve in those courses (Kurt & Chenault, 2017; Robertson, 2013). However, the converse of this effect is also possible. When teachers are viewed as uninspiring or coursework is menial or repetitive, gifted students tend to disengage and underachieve (Azano, Callahan, Brodersen, & Caughey, 2017; Siegle et al., 2016).

Furthermore, when gifted students are enrolled in advanced secondary courses with high-quality curriculums, they tend to display higher motivation to academic tasks and exhibit higher locus of control (Azano et al., 2017; Heuser et al., 2017). Advanced courses such as AP classes or IB diploma option courses have been studied in relation to gifted student perceptions. In a literary review, Park, Caine, and Wimmer (2014) found that gifted students' perceptions of these

advanced courses include comfort in *sameness*, impact of teacher perception, mentorship, skill sets, and future goals and rewards of learning. These perceptions of advance coursework also included perceptions of self-image and interpersonal relationships as well as perceptions of course quality, with many of these perceptions influencing academic motivation while enrolled in advanced courses. Yet, gifted students who attend rural high schools are at increased risk of not receiving adequate resources to provide them with stimulating and challenging academic coursework potentially limiting their academic growth (Burney & Cross, 2006; Kettler, Puryear, & Mullet, 2016; Seward & Gaesser, 2018).

Since formalized gifted intervention and grade differentiation or acceleration are primarily associated with the elementary and middle school years, many stakeholders believe that gifted enrollment in honors classes or advanced college preparatory programs will adequately educate gifted and advanced secondary students (Schmitt & Goebel, 2015). While several traditionally accepted acceleration options exist in local public schools, honors courses, Governor's School, AP courses, IB Diploma Programme, and dual enrollment courses, the CIE's AICE program most closely resembles the AP or IB course options.

However, with recent declines in pass rates for AP examinations, some concerns exist if this program has remained the most appropriate for gifted homogenous grouping as more schools have used AP courses to replace traditional honors courses, even though gifted students have reported appreciating the academic challenge presented by these courses (Judson & Hobson, 2015). Of the two similar programs, the IB Diploma Programme seems to most closely resemble the AICE program in curriculum design, holistic educational planning, and academic learning goals. Previous studies with students enrolled in IB courses reported that students are offered challenging course loads, some gifted students even claiming it was the first academic challenge

they experienced (Vanderbrook, 2006). Additionally, students enrolled in IB courses engage in critical thought, constant questioning, and challenging of ideas, like the AICE curriculum aims (Hill & Saxton, 2014).

While research exists to justify the use of Governors' Schools, AP courses, and IB Diploma Programme as appropriate acceleration options for advanced secondary-level learners, no research conducted with gifted secondary students currently enrolled in AICE programs exists. The current research justifying students participating in AICE program enrollment has been conducted with collegiate students postcompletion of the program and largely focused on predictive models for collegiate success and matriculation (Rodeiro et al., 2017; Shaw & Bailey, 2011). No existing research examines the viability of this program for use as an accommodation in gifted education, even though many educators claim it has equal effect on learning to previously mentioned programs and courses.

### **Research Question**

**RQ1:** Are there differences in student perceptions regarding course quality between gifted and non-gifted students who are enrolled in AICE classes?

### **Definitions**

1. *Academically Challenging Curriculum to Enhance Learning (ACCEL) Law* – Florida state law mandating acceleration options for advanced learners (FLDOE, 2017a)
2. *Accelerated courses* – FLDOE (2017b) defined any course offered that allows students to study coursework above the state-mandated grade level requirements as accelerated (i.e., honors, dual enrollment, AP, IB, and/or Advance International Certificate of Education).
3. *Advance International Certificate of Education (AICE)* – International collegiate credit by examination program of study often used as an accelerated program for secondary

students in the United States, many of which are located in Florida (Rodeiro et al., 2017; Shaw, 2011; Shaw & Bailey, 2011).

4. *Advance Placement (AP)* – U.S. series of courses with corresponding examination for high school students to earn collegiate credit based on passing scores created and owned by College Board (Judson & Hobson, 2015; Wilson & Adelson, 2012).
5. *Advanced (A) Levels* – Course-level classification for the AICE program, offering six collegiate credits for passed examinations (Education Code, 2018).
6. *Advanced Subsidiary (AS) Levels* – Course-level classification for the AICE program, offering three collegiate credits for passed examinations (Education Code, 2018)
7. *Appeal* – Combination of interest and enjoyment of academic tasks (Wu et al., 2018).
8. *Cambridge International Examinations (CIE)* – Division of University of Cambridge Examinations, London, England (Rodeiro et al., 2017; Shaw, 2011; Shaw & Bailey, 2011).
9. *Challenge* – Rigor, depth, and complex academic tasks (Wu et al., 2018).
10. *Choice* – Student decisions concerning academic learning (Wu et al., 2018).
11. *Creativity* – Development of ideas and cognitive ability (Stoltz et al., 2015).
12. *Differentiation* – Matching the student’s readiness, interests, and learning mode to the instructional methods and learning production (Nurenberg, 2016).
13. *Dual enrollment* – Option allowing secondary students to sit collegiate courses during their high school years while earning both high school and collegiate course credit (Rogers, 2007).
14. *Exceptional Student Education (ESE)* – FLDOE classification for students on both ends of the cognitive ability scale.

15. *Giftedness* – Giftedness is the ability to significantly perform above the norm for a given age (National Association for Gifted Children, 2018).
16. *Governor's Schools* – Educational program legally required to provide challenging and engaging options for high-ability students (McHugh, 2006).
17. *Intelligence quotient (IQ)* – Scale score to measure intellectual ability, generated from instruments such as the Woodcock-Johnson Test of Cognitive Abilities or the Wechsler Intelligence Scale for Children; historical basis for gifted classification (Cao et al., 2017).
18. *International Baccalaureate (IB) Diploma Programme* – International program of study, originally designed for international businessmen's and diplomats' children, with corresponding examination series designed to allow students to earn an international secondary diploma and collegiate credit (Tookey, 2000).
19. *Meaningfulness* – Students' values of education, relevance to student life and connected to importance (Wu et al., 2018).
20. *Motivation* – Willingness to attempt adequately challenging academic tasks (Azano et al., 2017; Cross & Coleman, 2014; Hertberg-Davis & Callahan, 2008; Heuser et al., 2017; Park et al., 2014; Robertson, 2013; Shaunessy-Dedrick et al., 2014).
21. *Multivariate analysis of variance (MANOVA)* – Statistical analysis appropriate for comparing means of multiple groups (Warner, 2013).
22. *Perceptions* – Views of students toward learning, evident through behaviors displayed in the classroom environment (Foust, Hertberg-Davis, & Callahan, 2009; Gentry & Owen, 2004; Park et al., 2014; Shaunessy, Suldo, et al., 2006).
23. *Theory of equilibrium* – Intake of new information and modification to previous knowledge (Cohen & Kim, 1999).

24. *Underachievement* – Discrepancy between cognitive development ability and academic performance (Figg, Rogers, McCormick, & Low, 2012; Schmitt & Goebel, 2015; Shaunessy-Dedrick, Suldo, Roth, & Fefer, 2014; Siegle et al., 2016).
25. *Zone of proximal development (ZPD)* – Distance between development level of ability and the potential learning ability determined by problem solving (Kanevsky & Geake, 2004, p. 183).



## CHAPTER TWO: LITERATURE REVIEW

### Overview

The brightest and potentially most academically capable students, often students who are likely identified as gifted and talented, are prone to be the most ignored and least developed students in the American public-school sector (Brown & Garland, 2015). When gifted and high-achieving students are left in general education classrooms that offer little to no differentiation or acceleration options with educators who are often untrained in gifted and advanced educational methods, this population of learners is potentially academically underdeveloped (Brown & Garland, 2015). Seen as students who will *just get it* and are not in need of direct instruction, the U.S. educational system seemingly places little emphasis on providing gifted and talented students opportunities to truly develop to their greatest academic and intellectual potentials (Gallagher, 2004). This *forgotten* demographic of learners has seemingly been created, as many states do not include the gifted and talented classification as a subgroup on school assessment reporting unlike other ethnic, socioeconomic, or special education demographics (Brown & Garland, 2015; Burney & Cross, 2006). This lack of reporting has permitted gifted and advanced students to be left out of specific interventions or focus of education reform, as students at or above grade level are often ignored in favor of focusing on low-performing learners.

Specifically provided gifted and advanced learning services are often viewed as exclusive, elitist, and undemocratic, instead of the necessary environment that offers gifted and talented students authentic, engaging learning tasks designed to develop their cognitive abilities and adequately challenge their current abilities. Differentiated pedagogies work to place students in the proper ZPD for cognitive growth and new, creative cognitive development, a

difficult undertaking in a classroom full of various ability levels (Lawrence, 2009; Rogers, 2007; Shabani, Khatib, & Ebadi, 2010).

Many general education teachers will argue that students should receive engagingly appropriate curriculums with differentiated instructional methods and environments conducive to learning, yet this educational philosophy of differentiation and appropriateness does not always extend to specific programs for gifted and talented learners (Heuser et al., 2017). There is a definite need to expose all learners to their optimum learning environments, and this exposure will take professional development for educators and a potential restructuring of the educational process with changes in educational philosophies concerning acceleration and homogeneous grouping for those with the highest abilities to learn (Coleman et al., 2012; Gallagher 2004, 2015).

### **Conceptual or Theoretical Framework**

#### **Vygotsky's Zone of Proximal Development**

For Vygotsky, creativity meant the development of *superior psychological function* (Stoltz et al., 2015). Inspiring creativity in learners means providing them with and placing them in the appropriately challenging academic environments—what Vygotsky coined the ZPD.

According to Vygotsky (as cited in Kanevsky & Geake, 2004), the ZPD is

the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers . . . The ZPD defines those functions that have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in an embryonic state. These functions could

be termed the “buds” or “flowers” of development rather than the “fruits” of development. (p. 86)

To best affect optimal student learning, academic tasks must be placed just out of reach of students’ current individual abilities yet attainable with learning supports, pushing for students’ maximum learning potentials. The need for supportive, challenging learning environments can be considered one of the strongest arguments for the implementation of differentiated instruction for gifted and talented learners. Placing gifted and advanced students in appropriately challenging courses with expert teachers should create innovative learning environments where students are cognitively potentially engaged in the appropriate ZPD (Coleman et al., 2012; Lawrence, 2009).

Students learn best when placed in appropriately challenging, safe, supportive environments, not when regurgitating prior learned knowledge. Students can be expected to have differences in the breadth of their ZPD. While gifted students appear to need less support compared to non-gifted peers, they still require supports for learning new information (Kanevsky & Geake, 2004). Leaving gifted and advanced students to learn independently, without direct support from educators, will rarely develop their true intellectual potentials. When challenged with progressively more difficult academic tasks that were collaboratively set with peers and teachers, or tutors, gifted students were seen to progress at high rates of mastery (Rogers, 2007). Furthermore, when both parents and schools work in correlation to provide complex knowledge acquisition, gifted students have significantly greater development of academic ability (Burney & Cross, 2006; Rogers, 2007; Seward & Gaesser, 2018).

### **Piaget's Theory of Equilibration**

Piaget's theory of equilibration involves learners assimilating, bringing in new information, and accommodating, modifying the new information to fit within their evolving schemas of knowledge. For gifted students, this process can appear to happen simultaneously. For non-gifted students, the process of assimilating and accommodating is more linear and separated into individual steps (Cohen & Kim, 1999). As gifted students are exposed to new cognitive challenges, they must rectify new knowledge with previous experiences, creating new schemas. However, gifted students must be exposed to interdisciplinary, complex academic coursework to influence them into this process of accommodating new information. As many gifted students are bored with no new information to learn, boredom can potentially create gifted underachievers, as they tend to default to disengagement with academic tasks when not adequately and appropriately involved in assimilation and accommodation (Grobman, 2006).

Additionally, as gifted students seek to create patterns with new information, they create their own schemas after these periods of assimilation and accommodation (Shaunessy & Suldo, 2010). The pattern of seeking and developing equilibration sets gifted learners apart from other learners of similar age, since gifted learners tend to work through these periods of assimilation and accommodation more quickly than their peers. This quick ability to assimilate seems to justify the need for differential learning tasks and, perhaps, even different learning environments with accelerated options for learning embedded in both.

According to Piaget, developing creativity in learners is synonymous to developing cognitive abilities (Stoltz et al., 2015). Creativity is embedded in the ability to create new knowledge and acknowledging patterns in learning. Creativity for gifted students seems to be a key area in developing intellectual excellence, albeit an overlooked quality in today's high-stakes

testing era (Gallagher, 2004). Being creative can include interest in multiple areas and the ability to develop problem-solving skills (Kem & Navan, 2006). For gifted students, creativity may include the ability to approach situations and problems from unique perspectives. Furthermore, creativity ability is often one of the argued-for skills to identify gifted learners and is included in the triad model to define giftedness (Renzulli, 2011). Based on Piaget's concept of creativity, it would be appropriate to encourage the creativity of gifted students by developing their cognitive and academic skills in appropriate venues with appropriate support levels and systems, a blend of the educational influences of Piaget and Vygotsky.

### **Related Literature**

#### **Academic Giftedness**

Perhaps one reason for a lack of continuity for gifted services across the United States is a lack of an accepted, cohesive definition of academic giftedness. Yet, Heuser et al. (2017) posited that some stakeholders may hesitate to create a centralized definition of giftedness due to fears of tension between equality and differentiation, along with accusations of elitism, especially in democratic societies such as the United States.

Renzulli (2011) attempted to define giftedness as a three-cluster model, which would adjust the current, traditional method of gifted classification by expanding from giftedness identified solely by test scores: "Giftedness consists of an interaction among three basic clusters of human traits—these clusters being above-average general abilities, high levels of task commitment, and high levels of creativity" (p. 87). By considering this expanded definition of giftedness under Renzulli's model, more students would qualify for the gifted classification and potentially expand the options offered due to population increase need.

The National Association for Gifted Children (2018) defined giftedness as ability that is significantly above the norm for the given age. And according to the No Child Left Behind Act (as cited in Schmitt & Goebel, 2015),

The term “gifted and talented,” when used with respect to students, children, or youth, means students, children, or youth who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services or activities not ordinarily provided by the school in order to fully develop those capabilities. (p. 429)

Yet, concerns over the No Child Left Behind legislation regarding actual opportunities offered to gifted students exist (Beisser, 2008; Schmitt & Goebel, 2015). With so much effort and instruction pedagogies typically focused on lower-performing students, and since gifted students are often at or above grade level, gifted students seem to be the *forgotten* demographic in need of direct instruction and academic support (Gallagher, 2015 a, b, c). This lack of perceived need tends to translate into a lack of direct instruction or enrichment for academically highly capable students.

The one similarity among the provided definitions of giftedness seems to be an acknowledgement of superior ability; however, how that ability is measured has long been a point of contention among stakeholders. To affectively educate this country’s gifted student population, there seems to be a need for a centralized understanding of gifted pedagogy, especially in the secondary years of school, and a valued importance for the implementation of specialized gifted services. According to the National Association for Gifted Children (as cited in Beisser, 2008), there are approximately 3 million gifted students in the United States, many of whom are educated in the public-school system. This is an alarmingly large number of students

to seemingly ignore, or hope they will just *get it*, without adequately challenging coursework to develop their abilities. This lack of development of the highest intellectual minds could potentially lead to a dearth of innovation for the coming generations (Brown & Garland, 2015; Lawrence, 2009).

**Florida gifted criteria for classification.** For the purposes of the current research, the FLDOE (2018) gifted definition is used, as the participants were identified under these criteria. FLDOE's statute classifies students as gifted when they:

1. Show a need for a special program,
2. Have a majority of characteristics of gifted students according to a standard scale or checklist, and
3. Superior intellectual development as measured by an intelligence quotient of two standard deviations or more above the mean on an individually administered standardized test of intelligence.

The FLDOE also considers the potential detrimental impact of low socioeconomic influence on learners. Children who receive free or reduced lunch can be classified as gifted under Plan B, which allows for a slightly lower IQ scale score if all other measures are met, along with state standardized test scores within the 90th or higher percentiles. According to Section 1003.57 of the Florida Statutes for Education (2017 b), individual school districts are responsible to provide gifted services, including individualized plans for differentiated instruction.

**History and policy.** The National Defense Education Act of 1958 is arguably the document that sparked the inception of formalized gifted education in the United States (Heuser et al., 2017). In reaction to the Soviet Union's Sputnik launch, educational reforms increased in concentrated development of the brightest minds, especially focusing on talent development in

mathematics and science. Yet, with the launching of the American space program, much of the federal funding and push for development has lapsed due to the lack of immediacy, allowing America to drop behind competing countries in both scientific and mathematical achievement scores (Heuser et al., 2017).

Historically, gifted students have been identified by IQ from such tests as the Woodcock-Johnson Test of Cognitive Abilities, Wechsler Intelligence Scale for Children, or the Stanford-Binet Intelligence Scale (Cao et al., 2017). However, there is now a push to identify giftedness by local comparison of student performance and consideration of multiple areas for giftedness, such as leadership or artistic creativity. The use of a diversity model of intelligence would create an increase in gifted student population, adding more weight to the need for appropriate learning environments and opportunities, since it would include a larger population of learners (Azano et al., 2017).

***Legislation in gifted education and acceleration options.*** The 1972 Marland Report, *Education of the Gifted and Talented*, provided the standard definition of giftedness typically used at the local and state level. The report argued for the creation of differentiated gifted programs in order to develop the brightest of U.S. academic talent (as referenced in Gallagher, 2015 b). Following this report, a decade later *A Nation at Risk* (1983) warned of the long-term effects of failing to educate and develop the country's brightest academic minds (as referenced in Gallagher, 2015 b). This report warned of a potential loss of eminence as a world power due to a lack of development of intellectual potentials. Gardner (as cited in Gallagher, 2015a) warned that the country's educational system had "in effect, been committing an act of unthinking unilateral educational disarmament" (p. 79). Yet, this report seems to have had little effect on education reform for gifted and high-achieving learners given that a third report on the same



issue emerged in 1993—*National Excellence: A Case for Developing America's Talent* (Gallagher, 2015a). Despite the stirring language of these reports to the country's governance, little has changed in the way of creating and maintaining gifted and talented programs of academic study, nor has educational funding been provided for implementation of such direct interventions.

The 21st century saw the passing of the No Child Left Behind Act. This legislation was aimed at turning around low-quality education through a series of accountability measures that placed heavy testing and outcome requirements on schools or risk department of education takeover or shutdown. This act mandated that all teachers earn the classification of *highly qualified* by 2006 in order to continue as educators in public-school systems (Gallagher, 2004). This legislation also aimed to *close the gap* between high-performing and low-performing students, seeming to intend that the lower-performing students will rise in performance, yet with the average to low level of the state testing thresholds, this legislation seems to have created the converse effect of lowering academic expectations for students. Also, the promised funding to accompany the passing of this act for implementing the new requirements has fallen short of what was originally proposed, leaving schools with difficult decisions regarding which programs to continue to maintain and fund and which to drop, consequently making new programs more difficult to adopt and implement (Gallagher, 2004).

For gifted and advanced students, this legislation has seemingly forgotten them, given that its focus is mainly on lower-performing students and requires only adequate-level educational attainments. The heavy emphasis on high-stakes testing has created classroom environments heavy on *teaching to the test* with a dearth of problem solving, higher-order

thinking tasks—an environment many gifted and academically advanced students find boring and unstimulating (Gallagher, 2004).

***Gifted education in Florida.*** Formalized gifted education in Florida began in 1956 with state legislation providing local and state funding for the creation of specialized gifted programs within each local school district. In 1968, control of gifted education came under the oversight and direction of the ESE division of FLDOE. In 1983, the push to identify and serve underrepresented populations in gifted education began, paving the way for additional gifted identification methods such as Plan B.

Teacher professional development in gifted education, as an endorsement added to the state teaching certificate, began in 1992 when the FLDOE realized that professional development for teachers in gifted education was necessary to properly educate gifted students. Funding for secondary gifted services and allotments to school districts for specialized gifted instructors started in 2006. And in 2014, the ACCEL law was passed to require that every school, not just district, offer various acceleration options for academically advanced students (FLDOE, 2017a).

### **Barriers to Gifted and Accelerated Education Implementation**

***Highly qualified teachers.*** Under the No Child Left Behind Act, by 2006 all teachers were required to attain the classification of *highly qualified*, and schools and teachers are now subject to accountability measures to produce yearly progress testing outcomes that educators' jobs could depend on (Gallagher, 2004). According to the National Board for Professional Teaching Standards (2002, as cited in Coleman et al., 2012),

[A professional is] characterized by certain attributes. Chief among those are a body of specialized, expert knowledge together with a code of ethics emphasizing service to clients. The knowledge base typically provides substantial, but not complete, guidance

for professional practice. Professionals possess expert knowledge but often confront unique, problematic situations that do not lend themselves to formulaic solutions. (p. 27)

If teachers of gifted and advanced students are to be considered highly qualified professionals in their areas of education, they must be equipped with knowledge about gifted education and the accelerated programs they are assigned to teach and trained on the attributes necessary for working with specialized populations of learners. Ideally, this additional educational training should resemble that of those teachers who work with the specialized population of learners diagnosed with learning exceptionalities. If the term *highly qualified* was to be required to apply to gifted pedagogy, educators who work with gifted and talented students would require continuing educational development in this area (Gallagher, 2004).

However, little in the way of specific teacher preparation for gifted educational intervention is available to teachers who specifically work with gifted students or simply have them added to their classrooms as a part of the push for more inclusion reforms. Even fewer teachers receive training in gifted education and advanced learners prior to specifically working with gifted and talented students (Coleman et al., 2012). According to Gallagher (2001), there is a lack of evidence that gifted and talented students actually receive appropriately challenging educational opportunities, due in part to a lack of teacher preparation for those offering academic enrichment experiences and a lack of quality time spent in intervention environments that are actually effectively helping them grow academically.

Dare, Dare, and Nowicki (2017) found that teachers must understand what motivates high-ability students in order to adequately influence their motivations to learn, a concern for those not trained in gifted educational methods. This is especially true in the upper secondary

grades since much focus in gifted education is typically placed in the elementary years with occasional focus in the middle school years.

The typical means of gaining professional development for educators who wish to learn more about how to educate gifted and talented students is often through earning an endorsement that is added to their state teaching certificates. These professional development classes are typically short course options that are fragmented in approach and lack a true authority teaching them (Gallagher, 2001). However, some states, like North Carolina, have created state-wide programs of training modules aimed to educate teachers about their gifted students' needs (Gallagher, 2001). Since teacher self-efficacy and confidence has been linked to the potential to risk attempting new instructional methods, the need to offer effective and appropriate professional development for educators to grow their familiarity with new pedagogies as well as developing the skills to use those new methods exists (Dixon, Yssel, McConnell, & Hardin, 2014)

**Funding.** Gallagher (2015b) argued that educational policy reflects social policy and that U.S. public policy is typically concerned with eminent need issues. Social policy seems to greatly influence the funding for educational reform. Since gifted education is often viewed as undemocratic, egalitarian, and discriminatory against underrepresented minority groups, funding is often not seen as necessary and an eminent need (Gallagher, 2015b). Furthermore, legislators have been reluctant to provide funding, questioning if gifted education goes against civil rights that guarantee equal opportunity and justice. This controversial look at gifted education has long stymied any consistent and adequate funding for gifted programming from the national level.

**Rural school challenges.** Researchers have argued for changes in how teachers are prepared to work with gifted and accelerated students if they are to meet the requirement of

*highly qualified* (Coleman et al., 2012; Gallagher, 2001, 2004). The recruitment and retention of highly qualified and academically specialized teachers is increasingly more difficult for rural and smaller school districts. Ultimately, researchers have found that the need for retaining and training highly qualified teachers in rural settings is even more difficult, given the lack of resources to offer competitive salaries and access to educational resources that larger, more urbanized school districts are able to offer (Burney & Cross, 2006; Kettler et al., 2016; Lawrence, 2009; Seward & Gaesser, 2018). This lack of qualified educational personnel greatly impacts gifted and high-achieving learners who live in rural areas and attend smaller, rural school districts.

Much like gifted education, rural populations and schools are difficult to define due to the variations in setting, resources, and priorities. Due to the potential for low socioeconomics in rural settings, which can result in fewer resources, researchers have examined the impact this lack of resources on gifted students in rural communities (Azano et al., 2017; Burney & Cross, 2006; Kettler et al., 2016; Lawrence, 2009; Seward & Gaesser, 2018). Most educators agree that the typical assumption of rural schools is that they have less financial and personnel resources, with smaller student populations, and are a distance from an urbanized center of commerce, historically with bases in agrarian cultures (Kettler et al., 2016). According to the National Center for Educational Statistics, approximately 20% of students in the United States are educated in schools classified as rural (Kettler et al., 2016).

Rural schools are often identified as schools with less resources available than larger, urban schools. As such, there is often a challenge to offering and scheduling advanced courses, especially in the secondary years. Lack of student participation and qualified teachers affect decisions about time allocation, teachers, and resources for advanced courses such as AP

(Burney & Cross, 2006; Kettler et al., 2016; Seward & Gaesser, 2018). For example, Graham (2015, as cited in Kettler et al., 2016) found that rural school districts were less likely to offer advanced mathematics than urban and suburban school districts, concluding that funding and lack of available, qualified teachers hampered the ability to offer such courses in many rural districts. Kettler et al. (2016) offered the concern that gifted students attending rural high schools were afforded less options to participate in advance programs such as AP, IB, or dual enrollment courses.

Additionally, Gagnon and Mattingly (2016) found that not only were gifted rural students less likely to take AP courses, they were also less successful on the accompanying examinations. The lack of advanced coursework throughout gifted and advanced students' academic careers often sets them at a disadvantage to their peers in urban and suburban schools who were given more educational opportunities starting at an earlier age and continued throughout their academic years. For rural students with limited academic acceleration options, once they were accelerated twice in a subject area they often *ran out* of courses to take (Seward & Gaesser, 2018). The fragmented and limited approach to offering acceleration courses at rural schools could indicate a benefit to rural schools adopting holistic curriculum programs such as AICE or IB to mitigate this potential lack of course options, yet funding and teacher preparation concerns often prohibit such undertakings.

Social emotional concerns for rural gifted students also exist in correlation to academic performance. Because rural students often have emotional connections to their homes and families, they may be reluctant to leave those areas and pursue education or careers in more urbanized areas (Seward & Gaesser, 2018). This attachment to their roots and families is often at odds with their desires to pursue challenging careers and academic options. Some gifted

students reported an additional stress of choosing between their roots and leaving to attend university, with many choosing to stay in state for educational options, feeling torn between two desires. These students reported needing support from their schools to assist them with college and career planning, also understanding the pull of their cultural roots. However, with smaller faculty and staffs with less resources, this school support often never occurred for gifted students, as time was more often allocated to students identified as presenting more at-risk behaviors (Seward & Gaesser, 2018).

Lauen, Barrett, Fuller, and Janda (2017) found that rural high schools on average send less students to postsecondary institutions than urbanized schools serving other types of disadvantaged groups, potentially due to low socioeconomic influences in the rural areas. The lack of funding in rural schools often hinders student learning of those who attend rural, low-income schools, potentially due to the lack of funding for programs that could positively advance their learning. Gifted students also expressed emotional concerns; fitting in at college and not being as prepared as other students were barriers to their continuing education (Seward & Gaesser, 2018). Since rural students have often grown up in tight-knit communities with students referring to their schools as an extension of their family group, this increased their concerns about fitting in at college and adjusting to a larger institution.

### **Academic Underachievement**

Just as giftedness is a multifaceted, spectrum qualification, academic underachievement is a multifaceted problem, and some educators would posit that gifted students have the potentially highest risk of underachievement (Kem & Navan, 2006; Kurt & Chenault, 2017). Gifted student academic underachievement is typically defined as a discrepancy between students' cognitive abilities and academic performances, typically exhibited by earning school

grades below what could reasonably be expected of their intellectual abilities (Figg et al., 2012; Schmitt & Goebel, 2015; Shaunessy-Dedrick et al., 2014; Siegle et al., 2016).

**Underachievement.** Figg et al. (2012) examined Delisle's terminology of what is labeled as conventional underachievers and selective consuming underachievers. The conventional underachiever is the student who engages in behavior that has been previously been defined as a gifted underachiever. Selective underachievers are those who take what they want from school, ignoring the rest, but are still learning in some capacity. Typically, these selective learners also enjoy learning outside of school, yet learning is based primarily on personal interest level. Figg et al. discovered there is a difference between achievers and traditional underachievers, yet not so with selective underachievers. Selective underachievers could not be separated from the underachievers. Yet, the selective underachievers were shown to have higher academic self-perception than underachievers. This study seems to indicate that teachers need to be aware of the level of underachievement and implement interventions accordingly to prevent and mitigate the gifted student underachievement tendency.

**Lack of academic stimulus.** Due to the multilayered concept of underachievement, many arguments exist as to the causes of underachievement. However, one of the main arguments for what greatly influences gifted students to underachieve is a lack of appropriate rigor and challenge in academic courses, which can lead to boredom and refusals to engage in menial or repetitive tasks (Kurt & Chenault, 2017; Schmitt & Goebel, 2015; Siegle et al., 2016). When gifted students are engaged in appropriately challenging tasks, they are more likely to remain in school and engage with academic tasks (Schmitt & Goebel, 2015).

Fear of failure in advanced courses and perfectionistic tendencies can also influence gifted students' motivation to gravitate toward academic underachievement. Some gifted



students will refuse to attempt a challenging academic task and accept the zero rather than risk attempting the task, potentially failing, and facing the possibility of imperfection (Grobman, 2006; McHugh, 2006). A lack of familiarity with challenging coursework or previously never having to develop appropriate study skills due to a continual lack of challenging academic tasks can also add to the motivation for underachievement in gifted students. As such, it is important that students be placed in appropriately rigorous courses, a concept supported by Vygotsky's ZPD (Kem & Navan, 2006; Stoltz et al., 2015).

**Teacher impact.** Teachers have been reported as playing significant roles in the achievement, or underachievement, of students. Teachers who held high expectations for their students' performances had a significant impact on high academic performance (Gunal & Demirtasli, 2016). Gifted students responded negatively to teachers, often those teaching general education classes, who were not seen as experts, enthusiastic, or invested in their students (Kurt & Chenault, 2017; Robertson, 2013; Vanderbrook, 2006). Gifted students who viewed their teachers as such refused to complete menial tasks or consistently underachieved, often only doing just enough work to pass the class with the lowest possible grade. These types of underachieving gifted students exhibited a lack of true potential to learn in these classes, yet this was not the case across all academic areas (Figg et al., 2012). Teachers who do not engage gifted students in rigorous tasks or are seemingly unconcerned with student learning can influence, and perhaps even encourage, gifted underachievement. This amount of influence over student performance indicates that educators must be knowledgeable in gifted student interventions and advanced curriculum while implementing these strategies in both the general education and accelerated classrooms (Azano et al., 2017; Siegle et al., 2016).

When surveyed, gifted students who were identified by faculty and administration as struggling in school were three times more likely to mention the role of the teacher in their achievement or lack of achievement than gifted students who were not identified as struggling, highlighting a need for teachers to be aware of the difference that they can make in preventing underachievement. Teachers must monitor the perceptions of such students at risk for underachievement, as these perceptions can shape the quality of education for students (Shaunessy, Suldo, et al., 2006).

A lack of teachers prepared to work with gifted students and to offer effective differentiated instruction for gifted students can also be attributed to budget cuts, since professional development for teachers is often limited and programs viewed as extraneous are some of the first to be cut. Specialized gifted programs are one of these first resources to be cut in a public-school district, as beliefs exist that such programs are superfluous to the general educational classroom when schools are only required to provide an adequate education. This lack of funding and program implementation potentially limits the support that gifted students receive, while possibly unintentionally creating gifted underachievers (Azano et al., 2017; Siegle et al., 2016). Additionally, underserved populations of gifted students are at an increased risk of underachievement, especially those in rural areas, a prime area for budget cuts in lower socioeconomic areas (Azano et al., 2017; Siegle et al., 2016).

### **Academic Motivation**

Gifted and advanced students tend to view advance courses with high-quality curriculums and expert teachers worthy of their engagement and effort as they are provided various challenging academic tasks (Azano et al., 2017; Cross & Coleman, 2014; Heuser et al., 2017; Hertberg-Davis & Callahan, 2008; Park et al., 2014; Robertson, 2013; Shaunessy-Dedrick et al.,

2014). Gifted students must be matched with educational acceleration options that enhance their academic abilities and talents (Dare et al., 2017). If this match between academic acceleration and academic ability is not reached, students may not reach their potential (Dare et al., 2017). Additionally, gifted student perception of their learning environments positively correlates with their academic motivation (Erisen, Sahin, Birben, & Yalin, 2016). However, it is of note that motivation levels lowered as grade levels increased. Erisen et al. (2016) partially attributed this correlation to the influence of peers and the structure of educational opportunities that were inappropriate for their ability levels.

Gifted students who were academically accelerated have been shown to exhibit a higher locus of control than students who were not accelerated or students who were not identified as gifted (Perrone, Wright, Ksiazak, Crane, & Vannatter, 2010). Student motivation and control seems to be heightened when placed in appropriately challenging academic learning environments (Ersin et al., 2016; Kem & Navan, 2006), which seems to agree that appropriate academic placement is concurrent with Vygotsky's ZPD and can enhance the greatest amount of student learning, supporting the argument for differentiated learning environments when appropriate.

### **Student Perceptions of Learning**

In their literary review inquiry, Park et al. (2014) synthesized studies examining gifted students' perceptions of advanced coursework, especially regarding AP courses and the IB Diploma Programme courses. Student perceptions included comfort in *sameness*; difficulty belonging outside of advanced courses; the impact of teacher perception, mentorship, and specific conception of teacher; skill set; and future rewards over current learning. While Park et al. covered 20 different studies and spanned different decades, the major themes of peer

relationships, teacher-student relationships, self-image, concept of success, and future preparation appear universal to gifted students enrolled in advance coursework. These themes should encourage educators and administrations to consider how to incorporate these ideals into their schools to offer the best possible academic environments for advanced students and justify the use of such programs.

**Teacher influence.** Teachers greatly influence the academic development of their students, which is especially true for gifted and advanced students. Positive student perceptions of teachers' levels of involvement and care for their students seem to have positive impacts on student learning (Cross & Coleman, 2014; Robertson, 2013; Vanderbrook, 2006). Vanderbrook (2006) found that students connected with teachers who showed them respect, and students viewed teachers who extended respect to students as role models. Students reported that these involved teachers had large positive impacts on their performances both in AP and IB courses, along with their subsequent examination preparation.

According to gifted students, teachers have a great deal of influence over whether students struggle. Additionally, how students respond to struggling in teachers' classes seems to indicate that higher student motivation exists in teachers' classrooms who display the aforementioned characteristics. This theme of teacher support reveals that teachers in both the general education and advanced course classrooms must build supportive relationships with students and exhibit passion and knowledge in their given subject areas if they want to create authentic and appropriate learning environments (Vanderbrook, 2006, p. 146).

As teachers learn more about gifted and talented students' needs, educators are more likely to continue to integrate the necessary academic supports for students, such as accelerated or advanced curriculums, even within the general education classroom. This tendency to

integrate more options for gifted students as educators learn about gifted student needs supports the argument for continuing professional development for teachers (Schmitt & Goebel, 2015). Since studies have shown that increases in teacher efficacy are tied to implementation of new instructional methods, the more teachers increase in their abilities to offer differentiated instruction with the support of educational administrations the more likely appropriate gifted pedagogies will be embedded in the general and advance classrooms (Dixon et al., 2014; Nurenberg, 2016).

**Learning environment impact.** Many gifted students report feeling more comfortable in appropriately challenging learning environments (Hertberg-Davis & Callahan, 2008; Robertson, 2013). Gifted students seemed to show a preference for homogenous grouping in advanced courses. They reported feeling that homogenous grouping allowed them to escape the feeling of *isolation* they felt when placed in classrooms where they were the only gifted student or pointed out for being the student with the good grades (Kem & Navan, 2006). Moreover, for secondary gifted students, homogenous grouping can often mean grouping with students who are in advanced courses and are motivated to learn, not necessarily only those students with the formal gifted label.

Academic homogenous grouping of students has been shown to have positive impacts on gifted student learning. Homogeneous grouping in such programs as Governors' Schools has been termed a "natural learning environment" (McHugh, 2006, p. 184) for gifted and talented students. Foust et al. (2009) proposed that "one of the most efficient ways educators can deliver that more appropriate curriculum is by grouping gifted students with students of commensurate ability," lending credence to the idea that homogenous grouping is advantageous to gifted and high-achieving students (p. 290). Gifted students also reported feeling more respected and

treated more responsibly in AP or IB courses than in general education secondary-level courses. For them, the perception of harder coursework and higher expectations from teachers translated into respect and support of their abilities to achieve (Foust et al., 2009; Shaunessy, Suldo, et al., 2006).

Many educators are against homogenous grouping, believing that it is formalized tracking of students and leads to elitist mindsets and exclusion of other student groups. Yet, the utilization of such methods for gifted accommodation can yield high learning results (Gallagher, 2015a, 2015b, 2015c). However, where tracking is placing students in paths that are hard to leave during their academic careers, homogenous grouping simply refers to placing students of like ability in groups or classes, a process that is easily changed as student need evolves and learning increases. This look at homogenous grouping would allow for grouping of students motivated and capable of handling increased workloads and greater in-depth study of material, not just exclusively gifted classified students, such as one would find in most acceleration options in the secondary grades.

**Measuring students' perceptions of the learning environment.** Given that a large portion of the educational research literature is based on qualitative studies of gifted student perceptions, studies quantitatively measuring gifted students' perceptions of course quality is more limited, perhaps due to a lack of appropriate instrumentation designed to work with secondary students. In 2004, Gentry and Owen adapted and validated a quantitative Likert scale, specifically designed to measure secondary students' perceptions of secondary-level course quality. Building on the initial work of Gentry and Gable, the My Classroom Activities scale for measuring elementary students' perceptions of their classes was adapted to work with secondary students for their perceptions of secondary courses of study (Gentry, Gable, and Springer, 2000).

Gentry and Springer (2002) adapted the survey to create their secondary-level student survey instrument. Student Perceptions of Classroom Quality (SPOCQ) was first used with advanced and nonadvanced students to compare their perceptions of course quality in advanced courses and standard-level courses (Gentry & Owen, 2004). Given the nature of the validation studies done with advanced and gifted learners in secondary settings, the instrument is considered a good fit by confirmatory factor analysis (CFA) to be used for quantitatively measuring gifted students' perceptions of their courses.

Following the initial validation study with advanced and nonadvanced secondary students, Gentry and Owen (2004) further refined the instrument for use specifically with secondary students to survey their perceptions of secondary-level course quality. The instrument measures five subscale aspects that have been shown to impact student perceptions of their learning environments: appeal, academic self-efficacy, challenge, choice, and meaningfulness. All these aspects of perception have been shown in both previous and current research to have an impact on how gifted students perceive their learning environments and that perceptions are often correlated with academic performance (Kurt & Chenault, 2017; Schmitt & Goebel, 2015; Siegle et al., 2016).

Wu et al. (2018) complete further validation of this instrument. The SPOCQ instrument was validated for use with various grade-level gifted students attending university-based enrichment residential programs during the summer months to survey gifted students' perceptions of accelerated courses offered outside of the traditional school setting. CFA confirmed that the scale was a good fit to survey gifted students' perceptions of course quality. However, the validation testing did also confirm that some questions on the SPOCQ were classroom-based and, therefore, do not apply to residential programs. The instrument was

adjusted for a better fit for such programs following initial CFA to create an instrument with good fit for such programs. The school-based survey is a public access survey offered from Purdue University for download and use (Wu et al., 2018).

### **Secondary-Level Advanced Programs**

Since gifted education is often associated with intervention and services in the elementary grades, most secondary gifted students are funneled into advanced courses, often without the support of educators who are well versed in gifted educational pedagogy, specific cognitive and emotional needs of gifted students, or additional stress and impact that advanced courses can add to students (Brown & Garland, 2015). The typical educational philosophy is that participation in advanced programs or individual accelerated courses will adequately address gifted and talented students' academic needs (Schmitt & Goebel, 2015). Honors-level classes, AP courses, and IB Diploma Programme are typically accepted course options for gifted students who remain on high school campuses, while dual enrollment or Governor's Schools provide advanced coursework off site from the traditional high school campus.

Additionally, acceleration programs in the secondary years are not limited to gifted students, as they often are comprised of both gifted and highly-achieving students who can also need additional academic acceleration or options for in-depth study of academic material. While these courses are technically heterogeneously grouped, gifted and non-gifted students, secondary-level accelerated courses are often more similar in grouping for academic ability levels than standard high school courses. These accelerated, collegiate preparatory programs and courses are viewed as alternatives to general education courses and are more advanced than honors courses (Shaunessy-Dedrick et al., 2014). Students with the highest academic potentials need to participate in courses that offer advanced and challenging material. Also, in order to be



best prepared for secondary advanced coursework, advanced students should have been receiving academically challenging material throughout the elementary and middle school years (Burney & Cross, 2006).

**Dual enrollment.** Dual enrollment is the simultaneous earning of high school and collegiate credit through participation in collegiate courses, typically during the years of Grade 11 and 12 (Lauen et al., 2017). This advanced option is typically without a set program of study, such as for degree-seeking students enrolled in college full time. Colleges and universities work with the local school district to offer courses, and most courses taken are introductory level. Many dual enrollment programs require a minimum GPA to apply along with a minimum college entrance exam score, such as the ACT or SAT. Typically, students must maintain a set GPA to continue taking collegiate courses. Dual enrollment can help to expose learners to college, easing the transition from high school to institutions of higher learning, especially for students who are first-generation collegiate students (Lauen et al., 2017)

Typically, dual enrollment courses can be taken at the high school campus or the local college campus, yet some are offered as distance learning courses, exposing students to the structure of online courses. Early admission to university while still enrolled in high school, or of high school-appropriate age, has long been an accepted means of grade acceleration, allowing students to complete their senior year of high school on a collegiate campus rather than in attendance at their local high school (Rogers, 2007). Early enrollment in college has been shown to positively impact high school outcomes and raise enrollment in 4-year programs, with the additional benefit of raising high school graduation rates (Lauen et al., 2017). Additionally, this type of intervention has been used in lieu of specialized gifted intervention offered when other resources are not possible within the K-12 setting (Rogers, 2007).

**Governor's School.** Based on their design and educational philosophy, Governors' Schools are legally required to provide attending students with challenging and engaging educational opportunities (McHugh, 2006). Participation in Governor's Schools' programs typically exposes students to advanced mathematics and science courses and occasionally will offer acceleration in all core subjects (McHugh, 2017). Since Governor's Schools' curriculums address the national standards for gifted students, it is considered a viable option for gifted acceleration (Walker & VanderPloeg, 2015).

Typically, Governor's Schools serve a larger region than a typical public high school, with students attending from various school districts. Additionally, Governors' Schools can offer acceleration services that can be monetarily split between the districts or funded by individual grants—an advantage considering the high likelihood of gifted student education programs cut from budgetary concerns. This program has been used by several states' departments of education such as Virginia and Georgia as an acceleration accommodation for gifted students (McHugh, 2006; Walker & VanderPloeg, 2015). Governors' Schools provide the option for students to spend half of the academic day at their local high schools and the other half of the school day at the Governor's School. The program also offers summer residency programs for advanced coursework outside the standard academic year and curriculum.

Governors' Schools, while offering advanced coursework, also typically allow for more homogeneous grouping of high-ability students than standard high school classrooms, which has been shown to have a positive impact on gifted student learning and classroom perception (Foust et al., 2009; Robertson, 2013; Walker & VanderPloeg, 2015). As both acceleration and homogenous grouping are typically accepted gifted interventions, an additional benefit to the Governor's School program is, due to the structure and potentially small nature of the school,

students often remain with the same teacher or group of teachers for multiple academic years. The extended time with teachers allows more time for the student-teacher relationship to develop and strengthen (Walker & VanderPloeg, 2015).

In a comparative study of gifted students enrolled in Governor's Schools for half of an academic day and attending local high schools for the remainder of the academic day versus gifted students enrolled only in advance courses at their local high schools, Robertson (2013) found that students reported that participation in Governor School programs were a "strong fit" due to the "challenging investigation setting" (p. 475). Students enrolled in the Governor's School reported both higher satisfaction rates than those at the local high school and preferences for classes offered at the Governor's School. Graduates of Governor's Schools also reported satisfaction with the academic rigor offered through such a program (Walker & VanderPloeg, 2015). These schools invite students to take risks and learn for the sake of learning, and the more cohesive setting of the Governor's School can help to support such learners as gifted and advanced students (McHugh, 2006).

**Advance Placement.** AP courses offer a chance for students in high school courses to sit end-of-course examinations that can potentially earn collegiate credit upon passing. *U.S. News and World Reports* considered the amount of offered AP examinations and percentage of passed AP examinations in their report on the best high schools (Judson & Hobson, 2015). Historically, achievement on these exams has been a prediction model for collegiate success (Judson & Hobson, 2015; Kettler et al., 2016; Wilson & Adelson, 2012).

A product of The College Board Corporation, AP examinations have been used in the United States for approximately the past 50 years. In 2012, the number of administered exams had increased by 500% over the past two decades (Judson & Hobson, 2015). Often used as an

acceptable acceleration method for gifted students, participating students typically report that engagement and challenge are present in their AP courses (Judson & Hobson, 2015; Schmitt & Goebel, 2015). Participating students report that there is a higher maturity level of students enrolled in AP courses, presence of academic challenge, and more homogenous grouping in these courses than their standard-level or honors-level courses (Schmitt & Goebel, 2015; Shaunessy, Suldo, et al., 2006).

However, Judson and Hobson (2015) pointed out that growing trends in declining AP examinations pass rates have appeared in the last decade of testing, prompting questions of whether this program of study is still one of the most appropriate for gifted students over other more selective programs of study. The researchers attributed this downward trend partially to the increase in participation, speculating that administrators and educators are becoming less selective in their choices for student participants and teacher preparation in AP courses. This potential indication of more heterogenous grouping within AP examination courses generates questions if gifted students are receiving rigorous instruction and being placed in challenging learning environments that are appropriate for their need for homogenous grouping and accelerated coursework due to the possibility of lessening the workload with less capable students enrolled in these courses. Additionally, Judson and Hobson acknowledged that with the inclusion of participation in advance courses as an influence of school grading systems, AP courses have replaced traditional honors courses, further bringing into consideration the likelihood of more heterogenous grouping and lack of student preparation for academic rigor required by the nature of the examination course.

Unlike the AICE or IB Diploma Programme options, AP is not yet a holistic program of study. For this acceleration method, only individual course offerings are available, not a

complete program of study for the secondary academic years. From this view, AP seems to share more in common with the individualized style of taking courses like dual enrollment, regardless of the examination component.

**International Baccalaureate.** The IB Diploma Programme was originally designed to provide children of diplomats and international corporation employees a high-quality education that would be recognized by the major universities of the world. From its inception in 1967, the IB Diploma Programme provides students with a rigorous and international education. While the program's curriculum is not written specifically for gifted students, the IB Diploma Programme has been used as a viable, advanced academic option for secondary gifted and high-achieving students. Much of the research conducted with gifted students in the program seems to indicate that it is an appropriate placement for gifted and advanced learners (Shaunessy, Suldo, et al., 2006; Tookey, 2000; Vanderbrook, 2006). The comprehensive curriculum assesses students in five major areas: literature, second world language, social sciences and humanities, experimental sciences, and mathematics. In addition to the five core areas, students complete an independent research project and the Extended Essay; participate in the extracurricular and service areas Creativity, Action, and Service; and complete a 2-year interdisciplinary course title Theory of Knowledge. Students are encouraged to select topics that are "within their capacity" (Tookey, 2000, p. 59)—a concept concurrent with Vygotsky's ZPD.

The IB Diploma Programme offers students challenging courses over multiple academic years and culminates in examinations for university credit during the final year of secondary school. For some gifted students, it is the first time they reported being challenged in an academic setting (Vanderbrook, 2006). In a qualitative study of five gifted females enrolled in IB courses, these students used the term "challenge" about coursework when required to spend

time and energy to understand a concept, a struggle, or an academic task that they had not faced prior to participation in IB courses (Vanderbrook, 2006).

“IB students engage in critical thinking, seeking out primary sources and continually questioning and challenging. They display an interdisciplinary approach to solving global issues, entrepreneurship, and understanding what future scenarios are possible” (Hill & Saxton, 2014, p. 50). In a study covering the years 1996 and 2000, Taylor and Porath (2006) found graduates from an IB Diploma Programme in British Columbia, Canada, predominately cited the IB Diploma Programme as helpful and beneficial to college and university achievement and rated the program as extremely high, indicating a positive benefit to the academic well-being and preparation of gifted students.

The IB Diploma Programme, while not a program specifically designed for gifted student accommodation, is an appropriate venue in which to educate secondary gifted and accelerated students because of their in-depth study of key academic concepts (Shaunessy, Suldo, et al., 2006; Tookey, 2000). Furthermore, students who were enrolled in the IB Diploma Programme had a greater positive outlook on school, teacher-student relationships, and higher motivations than those of their peers in general education courses. They also maintained a higher GPA, even though these students were enrolled in more rigorous and difficult courses. The self-efficacy of the IB gifted students was reportedly higher than their peers, with more positive anecdotes on school climate and peer behaviors (Shaunessy, Suldo, et al., 2006).

While it is of note that gifted students in an IB Diploma Programme showed high levels of stress due to their academic loads, gifted students in an IB Diploma Programme also were more likely to discuss specific strategies for managing stress, an emotional preparation necessary for university study and career (Shaunessy & Suldo, 2010). Since a successful IB Diploma

Programme exposes students to a university-level curriculum with differentiated levels of courses and examinations, this program can be considered conducive to the academic development of gifted and advanced students (Tookey, 2000).

### **AICE Program**

**Cambridge International Examinations.** CIE is a part of the University of Cambridge in London, England, and a division of the UCLES, which has administered examinations since 1863 (Eason et al., 2004). The U.S. public-school system began offering CIE qualifications in 1995, better known as the AICE diploma. The AICE diploma program is an internationally accepted curriculum and examination program, operating in over 160 countries (Eason et al., 2004). Courses are offered at two levels—Advanced Subsidiary (AS) and Advanced (A). AS Levels earn half a year collegiate credit (3 hours), where A Level courses earn a full year’s worth of collegiate credit (6 hours). Passing levels on these examinations, called papers, are ranked A to E; students who did not reach a passing level are assigned a grade of U. The lowest passing grade mark, E, on AICE examinations has been correlated to a grade of C in the corresponding collegiate courses and a grade threshold of 3 on AP Examinations (Blazer & Research Services, Miami-Dade County Public Schools, 2011). Florida legislation mandates that all public universities and colleges accept all passed examinations for comparable collegiate course credit, and many of the private colleges and universities in Florida have followed suit. Successful completion of the diploma program earns students the fullest amount of the state scholarship, Florida Bright Futures (Education Code, 2018).

**Diploma program.** To earn the AICE diploma, students must pass a variety of examinations in three core areas—Mathematics and Sciences, Languages, and Arts and Humanities—earning a minimum of one credit in each area. An optional category,

Interdisciplinary Studies, is also available to schools that decide to include those two AS Level courses in their program designs. In addition to passing examinations in the three core areas, students must pass AS Level Global Perspectives, a research-focused course requiring that students complete a group research project, a videoed individual presentation, an individual research paper, and a seat examination, with all projects being set by the students and based on student interest. To earn the AICE diploma, students must earn a minimum of 7 credits across the three required areas of study with AS Level Global Perspectives required as one of the 7 credits. AS Level passes earn students 1 point; A Level passes earn 2 points. The diploma is awarded at three different levels: Pass (140-249 points earned), Merit (250-359 points earned), or Distinction (360-420 points earned). Points are earned based on the grade mark for each passed examination, and all levels of the diploma are eligible for the state scholarship, Florida Bright Futures (Educational Code, 2018).

CIE sets its own examination questions and papers, and these examinations are created to reflect international context since various cultures and countries use this curriculum. Some countries utilize the program as the entirety of the country's curriculum (Eason et al., 2004). Additionally, the methodology of the examinations rang in length from 2 hours to 12 and span multiple examination days. Examination formats are varied and include essay, short answer, laboratory practical, and oral practical.

Additionally, the CIE inclusive policy is that all students should receive a challenging educational experience (UCLES, 2018), a policy very attractive to parents and educators of gifted and high-achieving high school students. Participating students must complete the AICE diploma examination series within a 25-month period, and the time begins when they sit their first papers. In the United States, this time frame typically means that students begin testing in



the sophomore (10th) year of high school and complete the diploma in the senior (12th) year. Although the diploma can be completed by students in as short as one examination series for students who are highly accelerated into all AICE courses, many students take at least 2 years of testing to earn the diploma. Additionally, the flexibility and wide range of available examinations make this an attractive offer to high schools looking to offer varied, advanced options for a diverse population of learners.

The flexibility of completing examinations in multiple areas of study allows schools to tailor the program of study to individual student needs. Students who are stronger in certain academic areas may complete more classes and examinations in a given area of study while completing only one required examination in weaker academic areas. Ultimately, students are exposed for all areas of study since they are required to sit and pass examinations in all core areas to complete the diploma requirements, creating an environment of both student choice and mandatory exposure in various academic areas. This flexibility of scheduling and diploma completion seems to speak to the diversity of ability seen in gifted education when one views the gifted classification as a spectrum qualification.

The AICE curriculum is included in the *Washington Post* Challenge Index (Eason et al., 2004). The program is touted to be comparable to AP and IB coursework in rigor and collegiate preparation, although the nature of the diploma program seems to be more comparable to the holistic aspect of the IB Diploma Programme and assessment construction (Shaunessy-Dedrick et al., 2014), yet no research with secondary students exists to support this assertion. Part of the rigor of the curriculum seems to be the inclusion of an international perspective, as course syllabi and schemes of work reflect the importance of cultural influence on learning and communication, especially in the subject areas of Arts and Humanities and Languages.

**CIE educator professional development.** Teachers sit professional development courses offered on their syllabi, taught by the assessment examiners, and are provided access to online databases of academic resources and prior examinations; therefore, it is likely that students are receiving quality instruction in preparation for these examinations (UCLES, 2018). Additionally, due to the nature of the extended essay style of the majority of AICE examinations, there can be little *teaching to the test* as with standardized state testing, as students must present their answers in essay or short answer format without the possibility of guessing that exists on standardized multiple-choice examinations. The goals of AICE syllabi are to develop creative and critical thinking that can be applied to a variety of testing and learning situations with the intent to create literate and educated learners, and these goals are reflected in all AICE syllabi and teacher development offerings.

**Research with AICE student participants.** To date, research studies about the AICE diploma program have focused on the collegiate success impact that participation in AICE courses can have during the secondary years of school (Rodeiro et al., 2017; Shaw, 2011; Shaw & Bailey, 2011; Shaw, Warren, & Gill, 2014). High school graduates who completed the AICE diploma program showed an increased likelihood to complete postsecondary study within 125% of the expected timeframe for completion of university programs (Rodeiro et al., 2017).

Additionally, perceptions of collegiate students who had participated in AICE diploma programs and teachers who taught the AICE curriculum indicated that they felt the program can be considered a suitable advanced curriculum designed to accelerate student learning through university-level preparatory work (Shaw, 2011). Students at Florida State University who had completed the AICE program were found to have, on average, when controlling for SAT scores, a .478 higher GPA than students who took no advance course program in high school and a .142

higher GPA than IB students, indicating that the program did prepare them for university-level academic work (Shaw & Bailey, 2011; Shaw, Warren, et al., 2014).

Recent research conducted with collegiate-level students seems to indicate that the AICE program can be considered a viable and comparable acceleration program along with the other, more established programs, to prepare secondary-level students for university-level study (Shaw, Warren, et al., 2014). However, no research exists with secondary gifted students currently enrolled in the AICE program to examine their perceptions of the program or of AICE course quality to claim it is a viable gifted intervention placement.

### **Summary**

Gifted and advanced students comprise a unique set of learners many of whom require intervention and special services to develop their academic abilities. To leave such students underserved and ignored is to disregard a vital part of the future of innovation in this country (Gallagher, 2015a, 2015b, 2015c). As indicated in multiple studies, there is a need to allow students of similar high academic abilities time to study and collaborate, time that may not be feasible to allot in the general education classroom (Foust et al., 2009; Robertson, 2013; Walker & VanderPloeg, 2015). Placing students in rigorous academic courses that complement their natural talents and abilities is necessary for them to thrive (Hertberg-Davis & Callahan, 2008; Robertson, 2013). This placement seems to agree with Vygotsky's theory of the ZPD for maturing the learner beyond what is capable without challenge and support (Rogers, 2007).

Furthermore, advanced secondary course offerings, such as AP classes, IB Diploma Programme, dual enrollment, or Governor's Schools have shown positive influences on advanced students' academic progresses and continuations into university study and are well-known and accepted as viable acceleration models for accommodating the advanced needs of

gifted secondary learners by many state departments of education and educators who are familiar with acceleration and gifted intervention (Shaunessy-Dedrick et al., 2014). It is the purpose of the current study to see if a similar perception exists for the CIE program. Given the similarity of the AICE diploma program curriculum to the IB Diploma Programme curriculum in its holistic design and international perspective, many educators, especially in Florida, claim the AICE program is an appropriate accelerated option for gifted and high-achieving students, yet no research to date has explored the perceptions of gifted learners currently enrolled in the courses to examine the effectiveness of the program on student motivation and performance in regards to course quality.

## **CHAPTER THREE: METHODS**

### **Overview**

This chapter provides an overview of the research methodology and data analysis for this research study. Chapter Three includes the research design, research question, hypothesis, settings and participants, instrumentation, and data analysis procedures. The purpose of this research study is to examine if potential differences exist between gifted students' and non-gifted students' perceptions of AICE course quality. The SPOCQ assessment developed by Gentry and Springer (2002) and refined for use by Gentry and Owen (2004) was used to measure student perceptions of the AICE diploma program courses. This instrument was appropriate for use in this study given that the original use and design of the SPOCQ was for a similar study, and a secondary validation study was conducted solely with gifted students (Gentry & Owen, 2004; Wu et al., 2018). The study used both a one-way MANOVA to determine if there are differences between overall gifted student perceptions versus nongifted student perceptions and to determine if potential differences exist for each of the subscale aspects for the independent variable groups.

### **Design**

This study used a nonexperimental, quantitative, casual-comparative research design to examine the differences in gifted and non-gifted students' perceptions of course quality for AICE courses taken during the upper secondary years of school, typically in Grades 10 through 12. A causal-comparative designed research study involves identifying cause-and-effect relationships by forming groups of individuals in whom the independent variable is present or absent and then assessing the differences. A casual-comparative design was appropriate for this study because it is a nonexperimental study where the independent variables are in categories and examining for potential differences on dependent variables (Gall, Gall, & Borg, 2007). Since the casual-

comparative study was appropriate for this study, the researcher sought to determine if there is a difference between the perceptions of gifted students and non-gifted students toward classroom quality in AICE level courses, as well as any differences present based on the five subscale aspects of the assessment: appeal, academic self-efficacy, challenge, choice, and meaningfulness.

Following Gentry and Springer's (2002) original work to convert the My Class Activities survey for elementary-aged students to an instrument appropriate for surveying course quality in secondary classrooms, Gentry and Owen (2004) refined the instrument specifically for use with secondary students in a study including 7,411 secondary-level student participants. Its initial use, following field testing and question refinement, was for a similar study comparing secondary student perceptions of course quality toward advance courses and non-honors courses. Additionally, this instrument has been validated for use specifically with gifted students in a study of perceptions of summer residential collegiate program courses (Wu et al., 2018).

Gentry and Owen (2004) designed the SPOCQ to *fill the gap* of need for quantitative measurement instruments designed specifically to examine student perceptions of classrooms, both in school and in enrichment settings. They offer the survey as a downloadable PDF file from Purdue University for use in academic settings (Wu et al., 2018). Gentry and Owen stated that the instrument is appropriate for use in surveying courses for school improvement as well as a general survey for overall course quality.

The independent variable for this study is gifted and non-gifted student enrollment in AICE courses. The dependent variables are the perceptions of gifted and non-gifted students toward classroom quality of the independent variables as measured by the SPOCQ (Gentry & Owen, 2004). Included in the dependent variable of student perceptions are the subscales for this instrument: appeal, academic self-efficacy, challenge, choice, and meaningfulness.

### **Research Question**

**RQ1:** Are there differences in student perceptions regarding course quality between gifted and non-gifted students who are enrolled in AICE classes?

### **Hypothesis**

The null hypothesis for this study follows:

**H<sub>0</sub>1:** There are no significant differences between gifted students and non-gifted students' perceptions of AICE classes regarding course quality.

### **Participants and Setting**

Participants for this study were taken from a convenience sample of secondary students who are enrolled in the AICE diploma program in Grades 10 through 12 during the 2019-2020 school year and attend a rural school located in northeast Florida.

The setting for this study is an application-only public-school magnet program that offers the AICE diploma program. The setting is a rural, Title 1 school located in small, Title 1 school district in northeast Florida. The research was conducted at a low-income, rural location because there is a need to justify the added expense of acceleration programs for rural school districts with limited resources, and surveying student perceptions is one way to add to the justification to keep or dismiss programs.

The local public-school district, based on Florida county lines, is comprised of four high schools, one junior senior high school, six middle schools, 10 elementary schools, and one K-12 self-contained ESE school. Two independent private Christian schools also are within the county lines and operate independently of the public-school system. The junior senior high school, which houses the original AICE program for this district, participated for this study and has offered AICE courses for the past 5 years, having graduated two classes at this point.

As a school of choice, School 1 is an application-only school, offering pre-AICE and AICE courses almost exclusively in Grades 10 through 12. The high schools in this district vary in academic quality per Florida school report card, from the surveyed school as an A to the three other high schools that are ranked as Cs (FLDOE, 2018). The school district provide the research with data points on individual school racial and ethnic demographics, gifted percentages, and free-and-reduced-lunch populations, which determines Title 1 status in Florida.

Table 1

*School 1 Ethnic and Racial Demographic Data (2019-20)*

Race/Ethnicity	%
White	76
Black or African American	11
Hispanic or Latino	5
Asian	2
Multiracial	5
Other	< 1

Table 2

*School 2 Ethnic and Racial Demographic Data (2019-20)*

Race/Ethnicity	%
White	51
Black or African American	38
Hispanic or Latino	8
Asian	< 1



Multiracial	3
Other	< 1

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Table 3  
*School 3 Ethnic and Racial Demographic Data (2019-20)*

Race/Ethnicity	%
White	66
Black or African American	13
Hispanic or Latino	14
Asian	< 1
Multiracial	5

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Table 4  
*School 4 Ethnic and Racial Demographic Data (2019-20)*

Race/Ethnicity	%
White	34
Black or African American	13
Hispanic or Latino	50
Asian	< 1
Multiracial	2

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Table 5

*District Gifted Student Data (2019-20)*

Variable	School %
Surveyed school	25
School 2	4
School 3	5
School 4	2

Table 6

*District Free-and-Reduced-Lunch Data (2019-20)*

Variable	% on free or reduced lunch
Surveyed school	40
School 2	60
School 3	66
School 4	68

Given that the AICE program educates the largest secondary-level gifted population in the district, sample size is attainable. Sample size needs to be reached within this one school as the demographics of the surveyed school are very different from the AICE programs at the surrounding districts. This district is a Title 1, rural district, whereas the surrounding districts are more affluent and suburban or urban in demographic make-up with well-established AICE and IB program options.

The total number of student participants was 99, split between gifted and non-gifted student participants, which qualifies the criteria for a MANOVA with a target alpha level of .05,

power of .50, and a medium effect size (Gall et al., 2007). Study participants included the following: 61 females, 35 males, and three individuals who did not disclose gender; 73% White/Caucasian, 7% Black/African American, 4% Asian, 9% Hispanic, and 7% other; 22 10th-graders, 42 11th-graders, 32 12th-graders, and three who declined to indicate grade level; and 30 gifted students and 69 non-gifted students participated. All student participants are enrolled in AICE courses.

Gifted student participants are classified under the FLDOE (2018) classification and non-gifted students identified participation in the AICE program. Student participants' ages are between approximately 15 to 19 years old—typical grade level ages. Student participants are enrolled in the AICE program courses as the predominate course classification for their academic schedules.

### **Instrumentation**

Originally designed by Gentry and Springer (2002), the SPOCQ was used to survey AICE student participants in the current study. This instrument is an adaptation of the My Class Activities, a survey instrument designed for use with elementary-aged students (Gentry & Springer, 2002). The SPOCQ was modified from the elementary-level survey to create an appropriate survey instrument for use in secondary classrooms and is appropriate to use for school improvement feedback and to survey perceptions of specific courses (Gentry & Owen, 2004).

In the validation study for this instrument, Gentry and Owen (2004) compared student perceptions of course quality between advanced/honors courses and non-honors courses. Wu et al. (2018) also validated this instrument for use with gifted students in residential collegiate summer programs and determined that this instrument partially fills the need for quantitative

measurement scales for examining larger groups of student perceptions. This initial use of the instrument, surveying student perceptions of advanced courses versus non-honors courses, and the latest validation with gifted students showed that it is appropriate for use in the current study as it was to be used to survey the perceptions of gifted and non-gifted students in advanced program courses.

The SPOCQ survey consists of 28 Likert-scale questions that range in answer options as follows: *strongly disagree* = 1, *disagree* = 2, *undecided* = 3, *agree* = 4, and *strongly agree* = 5. Combined possible scores can range from 38 to 190. The highest possible score of 190 means the student has *strongly agreed* with each statement where the lowest possible score of 38 would mean the student has *strongly disagreed* with each statement. Each question correlates to one of the five specific subscales and follows: appeal (3, 9, 19, 20, 25, 26, and 31), challenge (4, 8, 11, 15, 18, 27, and 33), choice (1, 5, 6, 12, 16, 17, and 22), meaningfulness (7, 10, 13, 24, and 29), and academic self-efficacy (2, 14, 21, 23, 28, 30, 32, and 34). The CFA was .997 with a root mean square error of approximation (RMSEA) of .051, indicating a good fit. Internal consistency reliability estimates showed alpha estimates for the individual subscales: appeal (.85), challenge (.81), choice (.81), meaningfulness (.81), and academic self-efficacy (.82; Gentry & Owen, 2004).

### **Procedures**

Along with Institutional Review Board (IRB) permission, the researcher requested and obtained written permission from the district superintendent and site-based administrator to administer this survey at the AICE school. Given the approximate age of student participants, a recruitment letter and parent consent/student opt-out form were used for AICE student participation.

Opt-out forms were requested to be returned to the school front office and placed in a sealed manila envelope until the researcher could collect them; however, none were returned. After accounting for partial responses, 99 valid responses were received; 16 responses were rejected due to missing items.

The researcher administered the survey during school hours. To preserve academic class time, the researcher was granted permission to administer the survey during the lunch hour, since the school has a 60-minute lunch period, which accommodated the administration of the survey without impacting academic time. Additionally, the researcher administered the survey in a nonacademic area to attempt to avoid classroom bias. Instructions, based on the original script written by Gentry and Springer (2002), were issued prior to the completion of the survey.

Students completed the 38 Likert-question survey and placed their answers in a box provided in the front of the room. The researcher administered the survey and had the students place the survey in the box so that anonymity was preserved. Basic demographic data were requested on the survey, but no personal identifying information was requested on the survey to further ensure anonymity. School personnel did not administer nor have access to any of the survey responses.

After the researcher collected the surveys, care was taken to protect the contents of the surveys. The surveys remained locked in the researcher's possession until the data were input into the researcher's password-protected computer for entry into the software program SPSS for data analysis. No school or district personnel had access to the individual survey responses. The researcher input student responses into SPSS for data analysis and ensured correct entry of answer choices. Upon the completion of the study, the paper copy of the survey responses will

be destroyed, and the electronic answers of the data will be maintained for 5 years in accordance with IRB policy.

### **Data Analysis**

The null hypothesis was tested using a MANOVA statistical test. A one-way MANOVA was used to account for the various subscales within the instrument. In nonexperimental research, MANOVA data analysis can be used to compare the means of multiple groups to evaluate the differences in patterns of means. A MANOVA test can be used to consider comparisons across groups, which is appropriate for this study and can reveal differences that would not be possible with conducting multiple analyses of variance (ANOVAs). Additionally, a one-way MANOVA was used instead of several one-way ANOVAs to lessen the possibility of a Type 1 error (Warner, 2013).

Tests for assumptions of normality, multivariate normal distribution, and homogeneity of variance-covariance were conducted to ensure that MANOVA assumptions are met. Box and whisker plots were used to identify extreme outliers for each variable. One extreme outlier existed for gifted student perceptions, which was removed for data analysis to continue. The Kolmogorov-Smirnov test was used to check for assumption of normality since the data set exceeds 50 participants. Assumptions of multivariate normal distribution were checked by a scatterplot matrix for each group. Homogeneity of variance were assessed using Box's M test of equality of covariance and Levene's test of homogeneity of variance.

Since a MANOVA is consider a robust test, analysis can proceed if assumptions are violated (Warner, 2013). The target-level alpha for this MANOVA is a .05 and a statistical power of .50 for a medium effect size (Gall et al., 2007). The effect size is reported with the eta

squared ( $\eta^2$ ) statistic and interpreted using Cohen's conversions. The thresholds of .10 for small effect, .25 for medium effect, and .40 for large effect were used.

## CHAPTER FOUR: FINDINGS

### Overview

The purpose of this study is to determine if a difference exists between the perceptions of gifted students and non-gifted students who are enrolled in AICE courses. This chapter includes the research question, hypothesis, descriptive statistics, and survey results. The intent of this chapter is to report the results of the MANOVA testing.

### Research Question

**RQ1:** Are there differences in student perceptions regarding course quality between gifted and non-gifted students who are enrolled in AICE classes?

### Hypothesis

The null hypothesis for this study follows:

**H<sub>0</sub>1:** There are no significant differences between gifted students and non-gifted students' perceptions of AICE classes regarding course quality.

### Descriptive Statistics

Student participants for this research study included 99 secondary-level AICE students: 61 females, 35 males (with three nondisclosed genders), 72 White/Caucasian, nine Hispanic, seven Black/African American, four Asian, and seven other, with 30 classified as gifted (one of which was rejected in data analysis as an extreme outlier) and 69 non-gifted.



Table 7

*Descriptive Statistics*

Group	<i>M</i>	<i>SD</i>	N
Gifted–Appeal	22.00	5.271	29
Non-gifted–Appeal	21.06	5.139	69
Gifted–Challenge	26.48	3.906	29
Non-gifted–Challenge	24.81	4.599	69
Gifted–Choice	25.10	4.246	29
Non-gifted–Choice	24.52	4.632	69
Gifted–Meaningfulness	17.38	3.600	29
Non-gifted–Meaningfulness	17.00	3.560	69
Gifted–Academic self-efficacy	30.03	5.435	29
Non-gifted–Academic self-efficacy	27.10	5.623	69
Gifted–Total score	137.66	20.347	29
Non-gifted–Total score	131.14	21.021	69

**Results**

A one-way between-groups MANOVA was performed to investigate for potential differences in perception of course quality between those students classified as gifted versus non-gifted students. Five subscales were included within the dependent variable of student perceptions and were used in data analysis: appeal, academic self-efficacy, challenge, choice, and meaningfulness. The independent variable of student perceptions was based on classification as gifted or not classified as gifted. Preliminary assumption testing was conducted to check for normality, linearity, outliers, and homogeneity of variance with no violations noted.

There was no statistically significant difference between gifted students and non-gifted students on the combined dependent variables,  $F(1, 96) = 2.154, p = .055$ ; Wilks's lambda = .876; partial eta squared = .124. When considering the results of the dependent variables separately, no individual dependent variable reached statistical significance for difference. The overall mean scores indicated that gifted students reported slightly higher levels of perceived classroom quality ( $M = 137.66, SD = 20.347$ ) than non-gifted students reported ( $M = 131.25, SD = 21.021$ ).

Table 8

*Multivariate Tests*

Effect classification	Value	<i>F</i>	Hypothesis <i>df</i>	Error <i>df</i>	Sig.	Partial eta squared
Pillai's trace	.124	2.154 <sup>b</sup>	6.000	91.000	.055	.124
Wilks's lamda	.876	2.154 <sup>b</sup>	6.000	91.000	.055	.124
Hotelling's trace	.142	2.154 <sup>b</sup>	6.000	91.000	.055	.124
Roy's largest root	.142	2.154 <sup>b</sup>	6.000	91.000	.055	.124

**Data Screening**

Data screening was conducted for both student groups' dependent variables (appeal, challenge, choice, meaningfulness, and academic self-efficacy), as well as total score. The results of each variable were analyzed and scanned for inconsistencies and outliers. No data errors were identified. One outlier for gifted student perceptions was identified and removed prior to the continuation of data analysis (see Figure 1 for box and whisker plot).

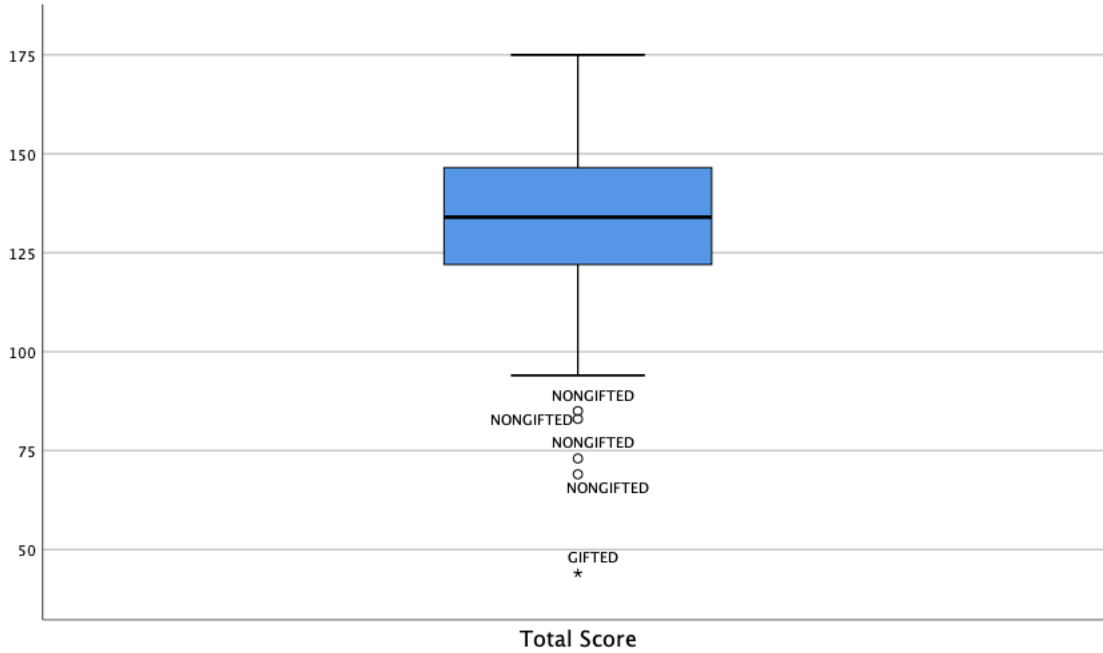


Figure 1. Box and whiskers total score.

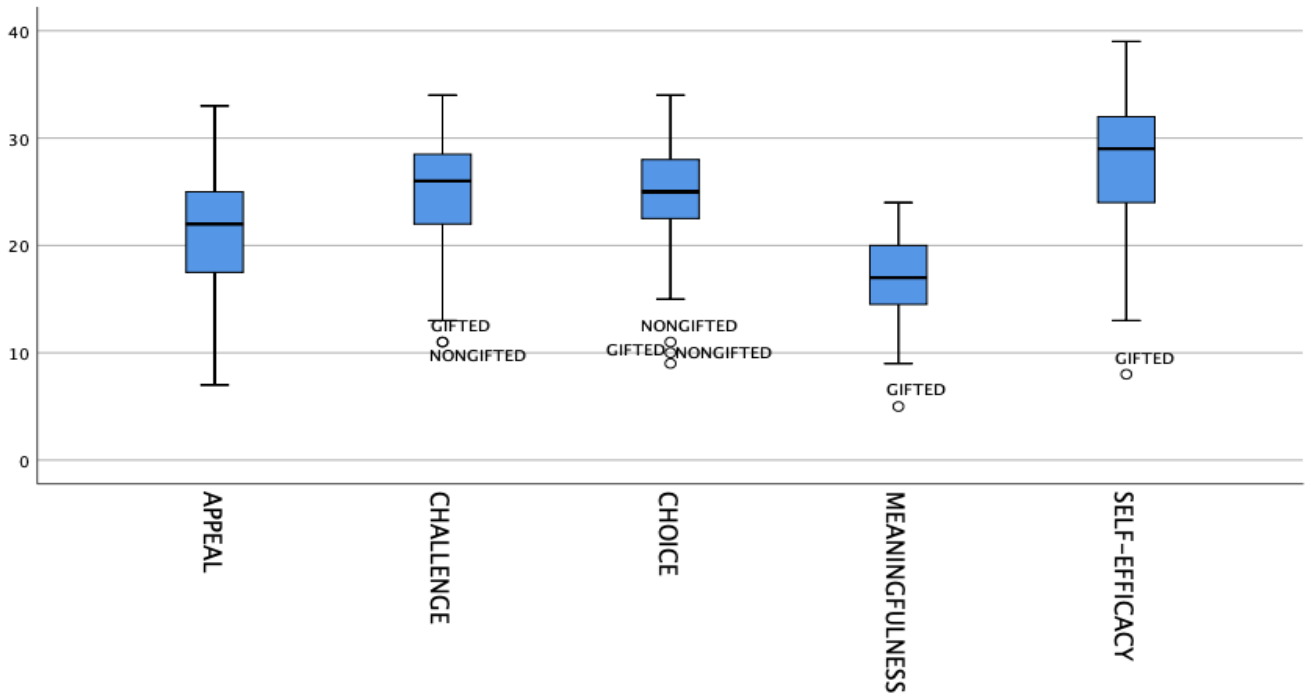


Figure 2. Box and whiskers dependent variables.

**Assumptions**

A MANOVA was used to test the null hypothesis. Assumptions of multivariate normal distribution were checked by a scatterplot matrix for each group (see Figure 3 for scatterplot matrix).

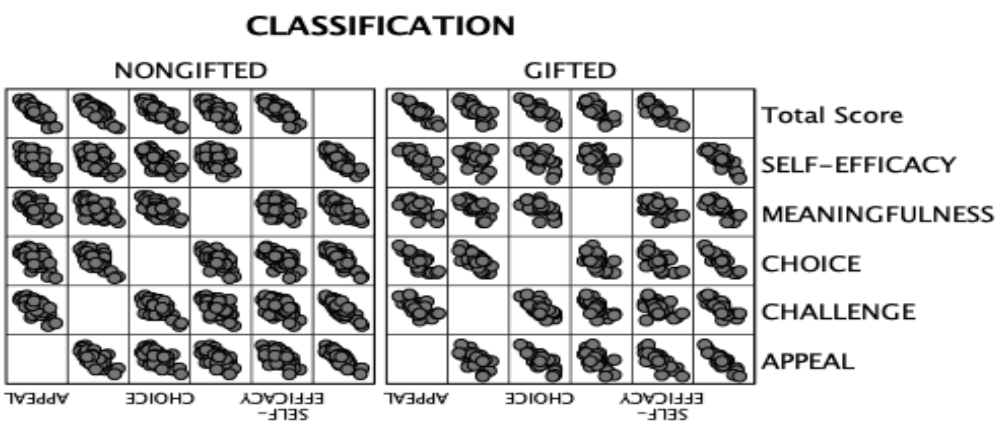


Figure 3. Scatterplot matrix.

A Kolmogorov-Smirnov test was used to determine normalcy due to the large sample size obtained. No violations of normality were found (see Table 10).

Table 9

*Kolmogorov-Smirnov Test*

Group	Kolmogorov-Smirnov		
	Statistic	<i>df</i>	Sig.
Gifted–Appeal	.149	29	.099
Non-gifted–Appeal	.109	69	.041
Gifted–Challenge	.082	29	.200*
Non-gifted–Challenge	.138	69	.002
Gifted–Choice	.145	29	.120
Non-gifted–Choice	.136	69	.003
Gifted–Meaningfulness	.178	29	.019
Non-gifted–Meaningfulness	.076	69	.200*
Gifted–Academic self-efficacy	.149	29	.101
Non-gifted–Academic self-efficacy	.056	69	.200*
Gifted–Total score	.130	29	.200*
Non-gifted–Total score	.094	69	.200*

\*This is a lower bound of the true significance.

Homogeneity of variance was assessed using Box’s M test of equality of covariance and Levene’s test of homogeneity of variance. The assumption of equal variance was met.

Therefore, the researcher continued with data analysis (sees Tables 11 and 12).

Table 10

*Box's M Test of Equality of Covariance*

Box's M	<i>F</i>	<i>df1</i>	<i>df2</i>	Sig.
23.712	1.031	21	11297.012	.421

Table 11

*Levene's Test of Equality of Error Variance*

Variable	<i>F</i>	<i>df1</i>	<i>df2</i>	Sig.
Appeal	.197	1	96	.658
Challenge	.833	1	96	.684
Choice	.249	1	96	.415
Meaningfulness	.119	1	96	.731
Academic self-efficacy	.581	1	96	.448
Total score	.035	1	96	.851

**Data Analysis**

A MANOVA was used to test the null hypothesis: the differences between gifted students' perceptions of AICE coursework and non-gifted students' perceptions. The data indicated a need to fail to reject the null hypothesis at a 95% confidence level, indicating no significant differences,  $F(1, 96) = 2.154, p = .055$ ; Wilks's lambda = .876; partial eta squared = .124, with a medium effect size. See Table 13 for test of between-subjects effects.

Table 12

*Test of Between Subjects Effects*

Source	Dependent variable	Type III SS	<i>df</i>	<i>MS</i>	<i>F</i>	Sig.	Partial Eta Squared
Corrected model	Appeal	18.120	1	18.120	.676	.413	.007
	Challenge	57.024	1	57.024	2.934	.090	.030
	Choice	6.909	1	6.909	.338	.562	.004
	Meaningfulness	2.938	1	2.938	.230	.632	.002
	Academic self-efficacy	175.653	1	175.653	5.664	.019	.056
	Total score	838.637	1	838.637	1.933	.168	.020
Intercept	Appeal	37855.426	1	37855.426	1411.985	.000	.936
	Challenge	53722.983	1	53722.983	2764.191	.000	.066
	Choice	50283.481	1	50283.481	2457.965	.000	.962
	Meaningfulness	24133.223	1	24133.223	1891.523	.000	.952
	Academic self-efficacy	66656.061	1	66656.061	2149.289	.000	.957
	Total score	1476412.19	1	1476412.19	3403.721	.000	.973
Classification	Appeal	18.120	1	18.120	.676	.413	.007
	Challenge	57.024	1	57.024	2.934	.090	.030
	Choice	6.909	1	6.909	.338	.562	.004
	Meaningfulness	2.938	1	2.938	.230	.632	.002
	Academic self-efficacy	175.653	1	175.653	5.664	.019	.056
	Total score	838.637	1	838.637	1.933	.168	.020

	Total score	838.637	1	838.637	1.933	.168	.202
Error	Appeal	2573.768	96	26.810			
	Challenge	1865.793	96	19.435			
	Choice	1963.907	96	20.457			
	Meaningfulness	1224.838	96	12.759			
	Academic self- efficacy	2977.255	96	31.013			
	Total score	41641.363	96	433.765			
Total	Appeal	47207.000	98				
	Challenge	64682.000	98				
	Choice	61730.000	98				
	Meaningfulness	29925.00	98				
	Academic self- efficacy	79817.000	98				
	Total score	1779728.00	98				
Corrected total	Appeal	2591.88	97				
	Challenge	1922.816	97				
	Choice	1970.816	97				
	Meaningfulness	1227.765	97				
	Academic self- efficacy	3152.908	97				
	Total score	42480.000	97				

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Because the data indicated a need to fail to reject the null hypothesis, there is no need to run further post hoc analysis testing.



## **CHAPTER FIVE: CONCLUSIONS**

### **Overview**

This chapter includes the discussion of the study, implications for the study, limitation of the study, and recommendations for future research. Given that the data reflected no statistically significant differences between gifted student perceptions and non-gifted student perceptions, there is still a need to consider the implication of use for the AICE program with recommendations for future research.

### **Discussion**

The purpose of this study was to examine if potential differences exist between gifted and non-gifted students' perceptions of AICE course quality. Using a casual-comparative approach to examine for potential differences, the researcher sought to determine if current AICE gifted students view this advanced course program differently from non-gifted students, while also examining if the program could be considered as a quality educational option for student engagement and performance.

Gallagher (2015 a, b, and c) classified the gifted population in American public-school systems as the forgotten demographic. Given that these students are a subpopulation of our schools, their perceptions have value to add in monitoring of the growth and academic performance of schools and school systems, making it important to survey their perceptions of the programs in which they are enrolled. Previous research has shown that positive student perceptions of classrooms have correlated with higher academic performance for gifted students (Kurt & Chenault, 2017; Schmitt & Goebel, 2015; Siegle, et al., 2016). Additionally, secondary schools have historically replaced specialized gifted instruction with advanced coursework (Schmitt & Goebel, 2015). This methodology is supported in the structure of the surveyed

school's district acceleration model, as the district added the AICE program to create a formalized acceleration option for the low-income, rural district that had historically used dual enrollment as its main acceleration model in the later secondary school years. Therefore, conducting research on student perceptions of the AICE program was appropriate.

Burney and Cross (2006) indicated a need for academic acceleration to cover all academic grade levels, not just during the advanced secondary course offerings. This school district implemented a similar strategy to put into place in reorganizing this school site and other elementary level schools. Cambridge acceleration option classrooms from Kindergarten through the AICE program, including the use of an accelerated junior senior high school to ensure academic rigor and acceleration, are offered.

While limited prior research has been conducted on the AICE diploma, other acceleration programs have been highly studied. Walker and VanderPloeg (2015) found that students enrolled in Governor's School spent several years with the same teachers and forged more positive relationships—a set-up similar to the surveyed school's structure of teachers' cycling through multiple grade levels, an intervention caused by the small nature of the school and limited number of teachers who are qualified to teach AICE courses, especially in the few A Level courses offered. This correlation of multiple years of experience with teachers could have influenced positive scores from students given the possibility of multiple years with the same AICE teachers, reflecting prior research of student teacher relationships factoring into academic success and motivation to succeed.

Gifted students enrolled in an IB Diploma Programme were found to have higher self-efficacy scores than peers who were not enrolled in IB courses (Shaunessy, Suldo, et al., 2006).

The prior IB research seems to correlate with the trends in this research, which reports that the highest overall individual subscore mean was for gifted students' academic self-efficacy.

Secondary teachers do not often receive professional development for gifted pedagogical intervention, which can potentially impact teacher effectiveness and consequently student perceptions of their courses (Coleman et al., 2012; Gallagher, 2001). Dare et al. (2017) also found that when teachers understand gifted students and their motivations, they have a higher impact on students and, therefore, on academic performance. While teachers at the surveyed school have only received marginal training on gifted student instruction, most of it occurring during the researcher's previous tenure at the school, they do receive professional development and teacher support for AICE syllabi in their assigned courses. The specific professional development and teacher support offered for AICE course syllabi and outcome expectations could have positively impacted student perceptions, as teachers who are prepared and knowledgeable have had results of better gifted student engagement and motivation, even without gifted pedagogy training, which could have influenced more positive responses on the SPOCQ (Figg, et al., 2012; Kurt & Chenault, 2017; Schmitt & Goebel, 2015; Siegle, et al., 2016).

The surveyed school is in a rural, Title 1 school district. Rural and underprivileged school districts typically have less resources, qualified personnel, and/or exposure to academic acceleration than do their suburban or urban school districts counterparts (Kettler et al., 2016; Seward & Goesser, 2018). As part of a low-income school district, many of the surveyed students have had less exposure to college and career options, meaning potentially less exposure to academic acceleration, than their peers in surrounding and more affluent school districts with longer established AICE programs and IB programs.

This lack of academic exposure and options could have impacted student responses, making a case for the overall positive responses that seem to indicate that most students likely responded as *agree* versus *strongly agree*. The lack of exposure and knowledge of other acceleration models could have promoted students to *agree* over *strongly agree*, thinking that they are not sure how highly to agree. Additionally, they simply are not familiar with any other type of academic excellence or more highly competitive programs and may have concerns of not being as prepared for collegiate experiences as students from other districts whom they see as better prepared from enrollment in IB programs or other more accelerated models like the AICE A Levels, keeping their answers as *agree* over *strongly agree*.

However, their overall agreement, as indicated by mean scores, seems to indicate that they do feel they are in an academically challenging program. Additionally, Seward and Goesser (2018) found that many rural districts simply run out of course options for students once they are accelerated beyond a grade level or two. The aspect of *agreement* over *strong agreement* could have been influenced by seniors who have worked at the AS Level for the past 3 years and feel they have mastered the rigor level of AS courses, also keeping their responses slightly lower as *agree* over *strongly agree*.

Considering that gifted motivation has previously been shown to correlate with student perception of courses being adequately challenging, and with higher self-perception adding to gifted motivation, scores of relatively high means for challenge, meaningfulness, and self-efficacy on the SPOCQ seem to support these previous findings (Erisen et al., 2016; Figg et al., 2012; Schmitt & Goebel, 2015). An overall mean of 137.66 for gifted students seems to indicate that they find their learning environment an appropriate placement, since they rank the course quality as an overall positive. Furthermore, Park et al. (2014) determined that several themes

emerge in studies surrounding gifted students, two of which are self-image and concept of success, which seem to directly correlate with gifted AICE students reporting their highest individual mean in academic self-efficacy. Foust et al. (2009) and Shaunessy, Suldo, et al. (2006) also found that when gifted students were placed in advanced courses their perceptions showed an increase in their beliefs in their ability to achieve, which also seems to agree with the report of higher self-efficacy scores on the SPOCQ than the other subscales, with a higher mean than non-gifted peers.

### **Implications**

While no significant differences were reported between gifted students and non-gifted students, the means of student perceptions ( $M = 137.66$  and  $131.25$ ) does indicate that the majority of AICE students rate AICE course quality as quality educational experience, as combined possible scores can range from 38 to 190. Since the highest possible score of 190 means the student has *strongly agreed* with each statement where the lowest possible score of 38 would mean the student has *strongly disagreed* with each statement, a mean score of 137.66 or 133.25, with a combined mean of 133.14, indicates more positive responses from students than negative. This score indicates it is highly probable that most students at least agreed with the statements, indicating overall good course quality, supporting the continued use of the AICE program as a viable acceleration option. Furthermore, gifted students reported a higher mean than both the overall total score ( $M = 133.14$ ) and non-gifted population ( $M = 131.14$ ). Although the difference was not statistically significant from non-gifted students' perceptions, it is of note that gifted students' perceptions, with one extreme outlier, is that of high course quality for their AICE courses, seeming to indicate that they do believe that they are placed in appropriately rigorous classes that will enable them to learn and grow academically.

Additionally, gifted students rank the course quality, as indicated by mean, more highly than do their non-gifted peers. This higher ranking from gifted student perceptions also seems to indicate that gifted students do see the program as an appropriate acceleration model for their academic needs.

While the results are not statistically significant for differences in perception, an argument can be presented that students, both gifted and non-gifted, see the AICE coursework as a high-quality education and an appropriate venue for acceleration. As the highest subscale mean was gifted students' perceptions of academic self-efficacy, the AICE coursework seems to align with students' beliefs about their ability to learn and grow in this academic environment, concurrent with Vygotsky's ZPD (Kanevsky & Geake, 2004, p. 183). Considering gifted students' highest subscale scores in academic self-efficacy, these results seem to support prior research that has shown academic motivation is influenced by appropriately rigorous academic tasks, placing the AICE program as a feasible option for acceleration (Hertberg-Davis & Callahan, 2008; Robertson, 2013).

Additionally, with a mean of 26.48 out of a possible top score of 35, gifted students' perception of challenge showed a positive trend, a characteristic that has shown to play a large role in student motivation for academic success (Figg et al., 2012; Kurt & Chenault, 2017; Schmitt & Goebel, 2015). With higher scores in both academic self-efficacy and challenge according to the responses on the SPOCQ, the AICE program could be considered an option for gifted student acceleration and placement.

Additionally, given the overall means of the survey responses, it seems that a case can be made, based on student perceptions, that gifted, as well as non-gifted but highly motivated

students, can benefit from placement in the AICE diploma program and perceive the courses as higher-quality courses.

### **Limitations**

Several limitations exist and have potential impacts on the results of the current study. The surveyed school is relatively young, having graduated only three cohorts during its time operating as a junior senior high school that offers the AICE program and, therefore, may have not developed the robust and rigorous curricular expectations that more established programs in the Florida may have developed due to their more extensive experience with the curriculum. The relative youth of this program may impact student perceptions that cannot be generalized to other more established programs.

Additionally, the small nature of the school's program and student enrollment also limits the diversity of courses offered. This size directly impacts the number of students who are eligible to take A Level courses, which does limit choice of program design for a more individualized approach to the diploma that other, larger AICE programs can offer. This lack of A Level course offerings may also affect student perceptions of the course quality, as the majority of the surveyed students only participate in AS Level courses; whereas, surrounding districts offer more options for A Level courses. This can call into question whether these data can be generalized across other AICE programs in Florida, or even nationally across the United States, to schools that offer more diverse course selections.

The small nature of the survey cohort of students, especially in relation to the surveyed gifted population, may have affected the results. According to Gall et al. (2007), 25 participants is an appropriate subgroup for an ex post facto, causal-comparative study. However, given that 30 gifted students participated in this study, the results may be inconclusive to slight differences

in a total population. Also, considering that the survey was conducted away from a formal academic setting may have influenced student perceptions, intimating that the student responses were not as formal since they were away from a more academically structured environment. This lack of structure may have influenced student responses and encouraged incomplete responses, as students may not have been as careful with their answers as, perhaps, they would have been if the survey had been administered in a classroom.

The surveyed school is in one of the lowest socioeconomic school districts in the state of Florida. This location could also limit the generalization of these results to areas outside of the rural, small district in which it is located. Other student populations in higher socioeconomic environments, located in urban or suburban school districts, and enrolled in similar courses may have different responses to this curriculum. Furthermore, considering that prior research has shown that rural and low-income school districts tend to offer less academically rigorous courses across all grade levels, the results in this district may not be generalizable to districts where more opportunities for academic rigor are available at the elementary, middle, and high school levels.

### **Recommendations for Future Research**

Because little prior research has been conducted with the AICE program at participating high schools across the United States, and most of the existing body of research has been conducted in partnership with Florida State University to look at collegiate preparation and subsequent academic performance, there is a need to continue to examine the viability of this international curriculum as an acceptable acceleration program for use with academically gifted and high-achieving students. Further research also needs to be conducted with collegiate programs outside of the Florida university system, as no research to date has been conducted with schools outside of the FLDOE or collegiate system.



While IB, AP, Governors' Schools, and dual enrollment programs have been studied extensively for academic achievement, university matriculation, and student perception, there is a need to continue to build the body of literature for the AICE program to consider it in comparable status with these more established and well-researched programs. Additionally, while this study considered perceptions of students from a quantitative lens, research capturing the qualitative experiences of these students is also needed. Further studies could consider the shared qualitative experiences of students during participation in the program, not just following secondary school graduation. Future studies could also consider the differences in perception, participation, and achievement across ethnic and racial populations, gender, and other student classifications, such as those students who are enrolled in ESE services other than gifted or have a 504 Plan to accommodate for other challenges to learning.

While this study focused on the perceptions of students, it would also be of interest to study teachers, administrators, and parents or guardians for their perceptions of the rigor and benefits of student participation in the program and academic attainment of student participants. Given the level of rigor expected from the program, it would be of interest to examine if similar perceptions are held across all levels of stakeholders.

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**APPENDIX A: SURVEY INSTRUMENT**

*Removed to comply with copyright.*

**APPENDIX B: IRB**

IRB Approval 3849.082119: Difference between Gifted and Non-Gifted Students' Perceptions of Advanced International Certificate of Education Course Quality

## **APPENDIX C: CONSENT/ASSENT FORMS**

### **PARENT/GUARDIAN CONSENT OPT-OUT FORM**

#### Differences between Gifted and Non-Gifted Students' Perceptions of Advanced International Certificate of Education Course Quality

This research study is being conducted by Kristin Hudson, a doctoral candidate in the School of Education at Liberty University. Your child was selected as a possible participant because he or she is a student in 11<sup>th</sup> or 12<sup>th</sup> grade and is enrolled in AICE level courses. Please read this form and ask any questions you may have before agreeing to allow him or her to be in the study.

#### ***Why is this study being done?***

The purpose of this study is to examine if gifted students perceive the quality of their courses differently between AICE level courses than non-gifted students enrolled in the same courses.

#### ***What will my child/student be asked to do?***

If you agree to allow your child to be in this study, he or she will be asked to do the following things:

To complete a 38-question measurement scale based on their perceptions of AICE courses.

They will be asked to complete the questionnaire during the school day, and completion of the questionnaire should take 20-30 minutes.

#### ***What are the risks and benefits of this study?***

Risks: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.



Benefits: Participants should not expect to receive a direct benefit from taking part in this study.

***Will my child be compensated for participating?***

Your child will not be compensated for participating in this study.

***How will my child's personal information be protected?***

The records of this study will be kept private. Research records will be stored securely, only the researcher will have access to the original records, and a data analyst will have access to the overall data sets.

- The surveys will be completed in the media center, and students will each submit their own answers to a folder in the front of the room to ensure anonymity of their responses.
  - o No identifying information will be asked for on the surveys.
- Data will be kept by the researcher in a locked safe, saved on a password-protected computer, and the data set will be entered into SPSS for processing, with the documents password protected as well. The researcher will not be able to identify individual students from the responses provided and will personally enter the data into the computer system. After three years, all electronic records will be deleted.

***Is study participation voluntary?***

Participation in this study is voluntary. Your decision whether to allow your child to participate will not affect his or her current or future relations with Liberty University. If you decide to allow your child to participate, he or she is free to not answer any question or withdraw at any time, prior to submitting the survey, without affecting those relationships.

***What should I or my child do if I decide to withdraw him or her or if he or she decides to withdraw from the study?***

If you choose to withdraw your child, you will need to do so before the survey is conducted. If your child chooses to withdraw from the study, he or she should simply not complete and submit the survey.

***Whom do I contact if my child or I have questions or problems?***

The researcher conducting this study is Kristin Hudson. You may ask any questions you have now.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, 1971 University Blvd, Green Hall 2845, Lynchburg, VA 24515 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

***Please notify the researcher if you would like a copy of this information for your records.***

***Please sign and return this form to your child's school only if you intend for your child to OPT- OUT of participation. Opt-Out:***

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Signature of Parent

Date

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Signature of Investigator

Date