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Christie McWilliams-Abendroth

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SECONDARY ADVANCED ACADEMIC COURSES: INSTRUCTORS' ATTITUDES AND DIFFERENTIATED PRACTICES FOR GIFTED STUDENTS IN HETEROGENEOUS AP AND IB COURSES

A Dissertation Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
of the Requirements for the Degree

Doctor of Education

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May 2014

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McWilliams-Abendroth, Christie. *Secondary Advanced Academic Courses: Instructors' Attitudes and Differentiated Practices for Gifted Students in Heterogeneous AP and IB Courses*. Unpublished Doctor of Education Dissertation, University of Houston, May 2014.

Abstract

Advanced secondary academic programs such as Advanced Placement (AP) and International Baccalaureate (IB) were traditionally reserved for challenging gifted and high-ability students to engage in college-level coursework while still in high school. The landscape of secondary gifted services is changing, however. College admissions formulas now have expanded to include participation in advanced coursework, and several financial, accountability, and scholarship incentive programs have been developed across the United States at federal, state, and local levels to entice students with a wider range of ability levels to enroll in AP and IB courses. Consequently, AP and IB classes have become a "cornerstone of American high school reform" and increasingly are becoming more heterogeneous (Bruley, 2014; Bunnell, 2009; Colangelo et al., 2004; College Board, 2014; Gallagher, 2009, p. 117; "National Inventory," 2006). With AP and IB courses continuing to serve as the most prevalent method of secondary gifted services, there are growing concerns that as these classes become more heterogeneous, their appropriateness for gifted students will decrease (Callahan, 2003; Gallagher, 2009; Lichten, 2000; Winebrenner, 2006).

Secondary Advanced Academic Courses: Instructors' Attitudes and Differentiated Practices for Gifted Students in Heterogeneous AP and IB Classrooms responds to this concern. This dissertation study explored AP and IB instructors' attitudes toward gifted education, how frequently they differentiated curriculum and instruction for their gifted students, and how their attitudes as well as contextual variables ultimately impacted their differentiated classroom practices. A survey invitation was delivered electronically to a national, random sample of 9,787 AP and IB instructors, and 377 surveys were returned, yielding a return rate of 3.85%. Respondents expressed their attitudes toward gifted education by completing Gagné and Nadeau's Attitude Scale (Gagné, 1991-a), indicated how frequently they used specified instructional practices for both their gifted and non-gifted students by completing Archambault et al.'s (1993) Classroom Practices Teacher Survey, and completed a teacher information questionnaire collecting contextual data. Data were analyzed using descriptive statistics, exploratory factor analysis (EFA), and structural equation modeling (SEM). Additionally, participants' optional comments were categorized, and a set of themes emerged from the data.

The data suggested AP and IB instructors' attitudes about gifted education ranged from ambivalent to very positive overall. Instructors reported ambivalent attitudes concerning school acceleration and the perception that gifted education is elitist. They reported somewhat positive attitudes about the social value of gifted persons, the idea that gifted students need more than what the regular school program can provide, and the idea that gifted students need equal opportunities for learning compared with other student groups. They showed very positive attitudes about the need to offer and support gifted education.

AP and IB instructors indicated they offered multiple types of differentiated practices several times per a month, sometimes daily, with their gifted students. The data showed instructors encouraged higher-level questions daily, modified the curriculum and instruction and allowed students to pursue individual interests several times a month, and assigned projects and reports slightly more than once a month. Instructors rarely, if ever,

assigned seatwork or provided learning or enrichment centers. With the exceptions of seatwork and learning or enrichment centers, when the frequencies of these practices with gifted students were compared with the frequencies of these practices with non-gifted students within the same class, the differences seemed quite small, as instructors reported engaging in all activities only slightly more with their gifted students as compared with their non-gifted students. Although the differences seemed small, however, they were statistically significant. Optional comments instructors provided indicated that they treated all students the same because they felt the AP and IB course content is sufficient to meet gifted students' needs, the curriculum does not allow time to differentiate, and non-gifted students are as equally capable as gifted students.

Only one attitudinal factor significantly influenced instructors' classroom practices with their gifted students. Educators with more positive attitudes about the need to offer and fund special educational services for the gifted more frequently offered differentiated activities for their gifted students in all measured areas. No contextual variable examined in this study had a significant impact on any of the classroom practices factors. Two contextual variables, however, significantly impacted instructors' attitudes. Having 0-3 years of experience teaching gifted students had a statistically positive effect on instructors' attitudes about school acceleration. Additionally, having some degree of training in gifted education, as opposed to no training, had a statistically significant positive effect on attitudes about gifted students' being equally important to serve compared with other student groups.

Although respondents indicated they offered differentiated activities for their students several times a month, sometimes daily, their providing only slight modifications for gifted students as compared with their non-gifted students support other studies suggesting modifications for gifted students typically are limited (Draper & Post, 2010; Hertberg-Davis, Callahan, & Kyburg, 2006; MacFarlane, 2008). This study also adds to the conversation about instructors' attitudes toward gifted and how attitudes may influence classroom decisions, as research in this area has shown mixed results (Copenhaver & McIntyre, 1992; Cramond & Martin, 1987; Gagné, 1983; Megay-Nespoli, 2001; McCoach & Siegle, 2007).

When considering that only slight modifications for gifted students are being made in mixed-ability AP and IB classrooms, and considering that instructors' justifications for their lack of differentiation revolved around "rigid" AP and IB requirements, it seems logical this problem should be addressed by the entities responsible for the programs and AP and IB teacher preparation–the College Board and the International Baccalaureate. With an increasing diverse student body in terms of preparation and ability, it is imperative that AP and IB instructors not only help all students be successful in an accelerated and rigorous environment, but also understand how to provide optimal learning experiences for gifted students within this changing landscape.

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List of Acronyms

AICE……………………………………Advanced International Certificate of Education
AMOS…………………………………………………..Analysis of Moment Structures
ANOVA……………………………………………………...Analysis of Variance
AP…………………………………………………………......Advanced Placement
APIP.………………Advanced Placement/International Baccalaureate Incentive Program
APTIP………………………………………………..…A-Plus Education Partnership
CAS………………………………………………….....Creativity, Action, Service
CFA……………………………………….………..Confirmatory Factor Analysis
CLEP…………………………………………...College Level Examination Program
COF………………………………………...……….Classroom Observation Form
COS-R……………………………………………Classroom Observation Scale–Revised
CPS……………………………………………………………..Chicago Public Schools
EFA…………………………………………………..….Exploratory Factor Analysis
HISD…………………………………………...Houston Independent School District
IB…………………………………………………………....International Baccalaureate
IBO……………………………………………...International Baccalaureate Organization
INTASC…………………....Interstate New Teacher Assessment and Support Consortium
MDR……………………………………………………………...Market Data Retrieval
NAGC……………………………………….……..National Association for Gifted Children
NCES………………………………………………..National Center for Education Statistics
NEA...National Education Association
OLS………………………………………………..………Ordinary Least Squares
REACH………………….........…..................……...………Rewarding Achievement
SEM…………………………………………………………Structural Equation Modeling
SPSS……………………………………………...Statistical Package for the Social Sciences

Chapter I

Introduction

All, regardless of race or class or economic status, are entitled to a fair chance and to the tools for developing their individual powers of mind and spirit to the utmost. This promise means that all children by virtue of their own efforts, competently guided, can hope to attain the mature and informed judgment needed to secure gainful employment, and to manage their own lives, thereby serving not only their own interests but also the progress of society itself.

– A Nation at Risk

(National Commission on Excellence in Education, 1983, para. 1)

Maria Fuentes,[1] a 2012 graduate from Jefferson Davis High School in Houston Independent School District (HISD), won a new car–a Dodge Caliber–for participating in Advanced Placement courses. “I can’t believe I won this car! This is a dream come true for me and my entire family,” said Fuentes (as cited in Houston Independent School District (HISD), 2012). Fuentes' family did not own a car, and she and her mother took the city bus to attend HISD’s Cool to Be Smart celebration. At this event, students who took at least five Advanced Placement (AP) or International Baccalaureate (IB) courses and the corresponding exams could win a new vehicle, thousands of dollars in scholarships, and technology such as laptops and iPads (HISD, 2012).

Fuentes participated in the AP program because of the “risk and challenge”

(M. Fuentes, personal communication, September 12, 2013). She enrolled nine AP courses while in high school: Calculus, Microeconomics, Macroeconomics, Government, English Language and Composition, English Literature and Composition, Spanish Language and Culture, United States History, and World History, and she took the corresponding exams, hoping to receive a passing score of 3 on a 1-5 scale and subsequent college credits (M. Fuentes, personal communication, September 12, 2013). Grade-wise, Fuentes fared well in her courses, earning primarily A's and B's: four A's, three B's, and one C. Her exam performance, however, did not reflect her above-average grades. Although she received a passing score of a 4 and subsequent college credit for the AP Spanish exam, she scored primarily 1s on the other eight exams. Fuentes was not disappointed, though. She stated:

> The AP courses better prepared me for college since I was exposed to material that was highly-challenging for a high-school student to take. Now as a college student, I feel that I'm reviewing and better understanding AP class material that I did not understand in high school. (M. Fuentes, personal communication, September 12, 2013)

Winning the car as a result of her hard work dramatically impacted Fuentes' sense of accomplishment and as well as her family's life. This was the first time her family ever owned a vehicle. Fuentes stated that winning the car gave her a strong sense of satisfaction: "I felt a step closer in later on achieving my dreams of attending college. Winning a car made me strongly believe that dreams can come true" (M. Fuentes, personal communication, September 12, 2013). Currently, Fuentes attends the University of Houston, where she is majoring in elementary education and planning on becoming a teacher who motivates young children to attend college. She praised AP and IB incentive programs such as the Cool to Be Smart program because they motivate students to take advanced courses, which, at the very least, better prepares them for college (M. Fuentes, personal communication, September 12, 2013).

Fuentes is not alone. High-school students across the nation have similar opportunities to both enroll in challenging courses they might not otherwise have been eligible for decades ago and win prizes and cash awards for their participation. Like Fuentes, Daniel Horschler, David Zwoboda, and Eric Phillips, for instance, each won a new car in 2012 for their participation (Avary, 2012; Boudreau, 2012; “GCS Graduate,” 2012). While Horschler, Phillips, and Zwoboda had to make a passing score on their AP or IB exam(s) to be entered into the drawings for new vehicles and other prizes, namely computers and other electronics, Fuentes simply had to enroll in the AP courses and take the exams. Her score(s) did not affect her eligibility.

* * *

Advanced secondary courses such as those affiliated with the AP or IB program were traditionally reserved for challenging high-achieving and high-ability high-school students to engage in college-level coursework. They remain the most frequent delivery method for secondary gifted services, but these courses have expanded and now typically include students of all abilities (Colangelo, Assouline, & Gross, 2004; Gallagher, 2009; *State of the States*, 2013). To increase college enrollment, success, and matriculation, education policymakers are pushing to increase AP and IB participation among students of all ability levels, particularly low-income and minority students who are underrepresented in advanced classes (Byrd, 2007; College Board, 2014; Givens, 2012; "National Inventory," 2006; U.S. Department of Education, n.d.-b).

Students' academic readiness for college has long been recognized as a significant predictor of college completion. Consequently, encouraging all students to participate in college-level coursework while in high school through programs such as AP and IB is a common approach to increasing college readiness (Colangelo et al., 2004; Dougherty, Mellor, & Jian, 2006). Ensuring college readiness is particularly important now, as approximately 25% of all students entering four-year institutions require some form of remediation, and evidence suggests this percentage grossly understates the need for student remediation in postsecondary institutions nationwide (Kurlaender & Howell, 2012).

Although AP and IB instructors maintain flexibility in determining how their course content is presented, course descriptions, objectives, and exams are designed to cover the same breadth of information and assignments as their corresponding college courses (College Board, n.d.-e). Students who take and pass the exams demonstrate their ability to succeed with college-level work (Dougherty et al., 2006), and merely taking the course appears to positively influence college graduation rates. In fact, one study indicated that students passing an AP exam in a core subject have a 64% probability of graduating from college, whereas students not enrolled in an AP class have only a 17% probability (Dougherty et al., 2006). Other variables besides course participation certainly contribute to the likelihood of graduating. Nevertheless, college admissions formulas have expanded to include students' participation in college-level coursework while still in high school, and states and districts are increasingly encouraging students with a wide range of abilities to enroll in these advanced classes, not just the gifted and high-achieving (Gallagher, 2009; "High School Grades Matter Most," 2014).

To entice students to enroll in AP and IB courses, a significant number of financial, accountability, and scholarship incentive programs have been developed at federal, state, and local levels for both students and their teachers ("Advanced Placement Classes for All," 2011; Alpert, 2013; Byrd, 2007; College Board, n.d.-h; Florida Department of Education, n.d.; Florida House of Representatives, 2011; Givens, 2012; Holstead, Spradlin, McGillivray, & Burroughs, 2010; International Baccalaureate, n.d.-g; Isensee, 2012; Jackson, 2010; Mellon, 2012; "National Inventory," 2006; National Math and Science Initiative, n.d.; Pope, 2012; Schoof, 2013; "Students Can Win," 2011; Texas Education Agency, n.d.; U.S. Department of Education, n.d.-a, n.d.-b; Wagner, 2014). Providing incentives for student enrollment for districts, campuses, instructors, and the students themselves is a growing trend intended to expand access and help raise standards and rigor. For example, the U.S. Department of Education provides millions of dollars annually to increase student access to AP and IB courses (Byrd, 2007; "National Inventory," 2006; U.S. Department of Education, n.d.-b), spending 21.5 million dollars for the 2012-2013 academic year alone (U.S. Department of Education, 2012). States often offer test fee subsidies for eligible students or even pay the entire exam fee for all students (College Board, n.d.-h; Givens, 2012; Hammond, 2014; Isensee, 2012). Some states, like Indiana, reward campuses with bonuses for AP performance and factor AP participation rates into their accountability formula (Pope, 2012). State governments, foundations, and associations at times reward instructors by offering financial incentives ranging from $50 to $500 per student who passes ("Advanced Placement Classes for

All," 2011; Holstead et al., 2010; Isensee, 2012). Students, too, may receive cash awards, scholarships, electronics such as laptops and iPads, and for a lucky few, like Maria Fuentes, new vehicles (Avary, 2012; Boudreau, 2012; "GCS Graduate," 2012; HISD, 2012).

Increasing access to advanced and rigorous courses to students with a variety of abilities and potentialities responds to the landmark report, *A Nation at Risk* (1983), which asserted American schools were failing because student achievement, literacy, and critical thinking skills had exponentially declined and called to give all students a "fair chance" for "developing their individual powers of mind and spirit to the upmost" (National Commission on Excellence in Education, 1983, para. 1). Encouraging greater student participation in advanced courses certainly appears to provide greater preparation and motivation for postsecondary education (Coca et al., 2012; Colangelo et al., 2004; Dougherty et al., 2006; Duevel, 1999; Ewing, 2006; IB Global Policy & Research Department, 2010). Advocates of gifted education, however, are worried about potential unintended consequences of this trend. With more heterogeneous AP and IB environments, concerns have grown that gifted learners may not be appropriately served (Gallagher, 2009; Johnsen, Haensly, Ryser, & Ford, 2002).

Statement of the Problem

Advanced, college-credit-bearing programs such as AP and IB still remain the most prevalent option for high-school gifted learners (Gallagher, 2009; Hertberg-Davis & Callahan, 2008; Hertberg-Davis, Callahan, & Kyburg, 2006; *State of the States*, 2013). Although the programs themselves were not designed specifically to meet gifted students' unique needs, the basic program structure typically attracts students with similar attributes to the gifted (Duevel, 1999; NAGC, n.d.-d; *State of the States*, 2013). The instructors, though, may or may not have preparation in how to meet the needs of their gifted students. The Higher Education Opportunity Act of 2008 requires teacher candidates to:

> possess teaching skills and an understanding of effective instructional strategies . . . to meet the specific learning needs of all students, including . . . students who are gifted and talented . . . and differentiate instruction for such students.
> (Pub. L. No. 110-315. §2, 122 Stat. 3133)

However, no federal mandate requires districts to identify or serve gifted students. Because states must determine the degree of legislation, if any, regarding gifted education services in public schools, teacher preparation and training in gifted education as well as the kind and quality of gifted services that must be provided vary among states and districts (VanTassel-Baska & Brown, 2007). In some states and/or districts, teachers are required to have over 30 hours of preparation in gifted and talented education; in other areas, no preparation is required (*State of the States*, 2013). Despite any possible disconnect between AP and IB courses and the gifted students they serve, the courses do respond to secondary gifted students' need to accelerate learning, and acceleration remains "the most effective curriculum intervention for gifted children" (Colangelo et al., 2004, p. 2; Steenbergen-Hu & Moon, 2011).

The recent influx of students with a much broader range of potentials and abilities into AP and IB classes has changed the landscape of secondary gifted services, though. AP and IB student bodies are increasingly becoming more heterogeneous (Bruley, 2014; Bunnell, 2009; Colangelo et al., 2004; College Board, 2014, Gallagher, 2009; "National

Inventory," 2006). While mixed-ability arrangements may benefit student outcomes in the aggregate, they may not be the best option for gifted learners, which has generated concern that the levels to which gifted students' needs are met within these courses consequentially may be decreasing (Gallagher, 2009). Strong research evidence supports the importance of homogeneous grouping for gifted students, as grouping gifted students with their like-minded peers allows for more appropriate and effective instruction which matches gifted students' rapidly-developing skills and capabilities (NAGC, n.d.-a). The National Association for Gifted Children (NAGC, n.d.-a) states:

> To abandon the proven instructional strategy of grouping students for instruction at a time of educational crisis in the U.S. will further damage our already poor competitive position with the rest of the world, and will renege on our promise to provide an appropriate education for all children. (para. 5)

Furthermore, while research shows gifted learners can be served appropriately in mixed-ability classrooms through differentiated instruction, current studies show their needs often are not addressed in these environments (Draper & Post, 2010; Hertberg-Davis, Callahan, & Kyburg, 2006; Hutchinson, 2004; MacFarlane, 2008; Roberts & Inman, 2007). Even though the College Board and International Baccalaureate offer standardized teacher training for AP and IB instructors, respectively, these trainings focus on consistency in program and course delivery and do not address specific differentiation practices for gifted students within these classes. Consequently, there are increasing concerns that as AP and IB classes grow in number and become more heterogeneous, their appropriateness for gifted students will decrease (Callahan, 2003; Gallagher, 2009; Lichten, 2000; Winebrenner, 2006).

Purpose of the Study

With the changing secondary advanced academics landscape, it is not clear how AP and IB instructors throughout the United States now perceive gifted education, to what extent they differentiate for their gifted learners, and what factors may influence their instructional choices. Some studies have examined instructors' attitudes and classroom practices independent of one another and/or have used small or non-random samples–revealing mixed or unclear attitudes toward gifted education and limited use of differentiation for gifted students, if any (Archambault, Westberg, Brown, Hallmark, Emmons, & Zhang, 1993; Draper & Post, 2010; Hertberg-Davis, Callahan, & Kyburg, 2006; Hutchinson, 2004; MacFarlane, 2008; Olenchak, 1999, 2000, 2001; Westberg, Archambault, Dobyns, & Salvin, 1993; Westberg & Daoust, 2003). Although some research has presented instructor attitudes toward giftedness as a potential barrier to providing appropriate instruction for gifted students (MacFarlane, 2008), little is known about the relationship between attitudes toward gifted education and accompanying practices with gifted students, particularly in the AP and IB classrooms. Therefore, the purpose of this study is to explore the relationships among instructors' attitudes toward gifted education, the extent to which they differentiate curriculum and instruction for their gifted learners, and what factors may influence those attitudes and classroom practices.

Need for the Study

This study responds to concerns about increasing heterogeneity in AP and IB courses. Gallagher (2009) noted that as AP and IB classes increasingly serve a larger base of mixed-ability students, concerns increasingly grow that the focus of the courses is shifting to help the more typically developing students succeed, which may negatively impact gifted students. Consequently, gifted students may be accommodated less and have fewer opportunities for meaningful learning.

The results and conclusions from this research contribute to existing literature surrounding gifted education, secondary advanced academic courses, teacher attitudes, and differentiation. Furthermore, determining how AP and IB instructors typically serve their gifted students in heterogeneous settings and factors that may influence their instructional decisions contributes to a better understanding of what interventions will most likely impact instruction for gifted students and/or future discussions and research. Subsequently, results from this study may assist instructors, administrators, and policymakers in better aligning AP and IB instruction with best practices in gifted education.

Overview of the Research Study

This study explored AP and IB instructors' attitudes toward gifted education, the extent to which they differentiate curriculum and instruction for their gifted learners, and what factors may influence those attitudes and classroom practices. Market Data Retrieval (MDR, n.d.) distributed the survey invitation to a national, random sample of 9,787 AP and IB instructors. Participants self-assessed their attitudes and instructional practices using a three-part survey instrument comprised of Gagné and Nadeau’s Attitude Scale, Opinions About the Gifted and Their Education (Gagné, 1991-a); the Classroom Practices Teacher Survey (Archambault et al., 1993), which assesses the extent to which gifted students receive differentiated instruction in regular classrooms; and a questionnaire collecting contextual data.

Research Questions

The following research questions guided this study:

Research question one. What are AP and IB instructors' attitudes toward gifted education as measured by self-reported ratings on Gagné and Nadeau’s Attitude Scale, Opinions About the Gifted and Their Education (Gagné, 1991-a)?

Research question two. To what extent do AP and IB instructors differentiate curriculum and instruction for their gifted students as measured by self-reported ratings on Archambault et al.’s (1993) Classroom Practices Teacher Survey?

Research question three. How do AP and IB instructors’ attitudes toward gifted education influence the extent to which they differentiate for their gifted students?

Research question four. How do contextual variables influence AP and IB instructors’ attitudes toward gifted education and extent to which they differentiate for their gifted students? Contextual variables include the course taught (AP, IB, or both), years of experience teaching gifted students, training in gifted education, and whether or not gifted students are identified on the instructors' campuses.

Importance of the Study

The role of advanced academic courses such as AP and IB now is shifting. What once served as the "curricular gold standard for secondary education" (Byrd, 2007, p. 7) geared toward serving the nation's most capable students has become "a cornerstone of American high school reform” (Gallagher, 2009, p. 117). This study’s results provided a snapshot of instructors' attitudes and classroom practices when working with gifted learners within this new and evolving context. Although the results do not prove a causal relationship exists between or among variables, an underlying assumption is that, if a relationships exists, changes in one variable may lead to changes in another, prompting appropriate interventions and/or future discussions and research that ultimately will lead to better serving gifted students in mixed-ability environments.

A variety of parties may find the results useful. The College Board and International Baccalaureate, who offer formal training for AP and IB instructors, respectively, should consider the study's results while developing training expectations and components. Data also may be useful to administrators, gifted program coordinators, and department chairs. They might consider the results when deciding how to best serve their gifted students and creating professional development opportunities for instructors serving gifted students in heterogeneous classes. Teacher educators may use the results as they prepare pre-service teachers to address students’ diverse academic needs. Additionally, these results may prove valuable for educational policy. By understanding the link among contextual variables, teacher attitudes toward giftedness, and differentiated practices, decision makers who are concerned about meeting gifted students’ needs at the state and local levels can design more appropriate policies to serve gifted students and influence teacher behavior.

Definition of Terms

Several key concepts and terms used throughout this study require definitions to clarify their meaning. The concepts and terms include:

Acceleration: Acceleration is a delivery model of gifted services that involves moving a student more rapidly through the standard curricular sequence. Acceleration may involve beginning kindergarten or college early, grade-skipping, speeding up the pace at which material is presented and/or expected to be mastered within the classroom, and/or presenting higher-level topics and/or courses to younger students such as presenting eighth-grade algebra to a group of sixth graders (Colangelo et al., 2004; Gallagher, 2009; Schiever & Maker, 2003).

Advanced International Certificate of Education (AICE): Developed at the University of Cambridge in 1996, the Cambridge Advanced International Certificate of Education Diploma is an international, pre-university curriculum and examination system. Many colleges and universities worldwide honor the AICE Diploma by granting students college credit and/or advanced standing based on exam scores (Cambridge International Examinations, n.d.).

Advanced Placement: Advanced Placement courses are college-equivalent courses offered at the secondary level. Taught by high-school instructors, these courses satisfy a college-level course description and curriculum. The College Board (n.d.-c) currently offers 35 exams across 20 subject areas. Students may earn college credit at most four-year colleges by making a score acceptable by their college of choice (College Board, n.d.-e).

Cluster grouping: Cluster grouping refers to placing 5-10 high-ability students together in a regular, mixed-ability class under the assumption the teacher has received training in gifted education and differentiates the curriculum for these gifted students (Davis & Rimm, 2004).

College Board: The College Board (n.d.-a) is a not-for-profit membership organization whose goal is to promote excellence and equity in education, ensuring all students have the opportunity to prepare for, enroll in, and graduate from college. The College Board oversees multiple programs and services pertaining to college readiness and success, including the SAT and Advanced Placement (AP) Program (College Board, n.d.-a, 2014).

College Level Examination Program (CLEP): Developed by the College Board (n.d.-g), the College Level Examination Program offers 33 exams in five subject areas. Students who take and pass CLEP exams may earn up to 12 college credits at 2,900 colleges and universities.

Confirmatory factor analysis: Confirmatory factor analysis is a statistical method used to test hypothesized factor structures and confirm that the data fit the model (Schumacker & Lomax, 2010).

Differentiation: Differentiation is an approach to curriculum and instruction where instructors take group and/or individual student differences into account to design appropriate opportunities for each student to engage with content to develop essential skills (Tomlinson & Jarvis, 2009).

Dual enrollment and dual credit: Dual enrollment and dual credit courses allow participating students to receive simultaneous credit for both a high-school and college course based on their actual college-level coursework rather than a final test (Thomas, Marken, Gray, Lewis, & Ralph, 2013). These terms are used inconsistently and interchangeably throughout the literature. Generally, dual enrollment courses are located on the college campus whereas dual credit courses are located on the high-school campus.

Early college: An early college program blends the high school and college curriculums, compressing the time it takes students to complete a both high-school diploma requirements and the first two years of college (Early College Designs, n.d.).

Early College High School Initiative: Partner organizations of this initiative have started or redesigned early college high schools that serve low-income youth, first-generation college students, English language learners, students of color, and other groups underrepresented in higher education. Students may earn a high-school diploma and an associate’s degree or up to two years of credits toward a bachelor’s degree free of charge (Early College Designs, n.d.).

Enrichment: Enrichment refers to curriculum that has been altered to offer a richer, more varied educational experience based on the learners' characteristics. The goal of enrichment activities and programs is to challenge students by offering the curriculum in greater depth or breadth. Examples of enrichment activities may include after-school classes, resource rooms, interest clubs, programs such as Odyssey of the Mind, and additions to the regular classroom curriculum (Schiever & Maker, 2003).

Exploratory factor analysis: A type of factor analysis, exploratory factor analysis is a statistical method used to explore which observed variables relate to factors by finding a model that fits the data (Schumacker & Lomax, 2010).

Factor analysis: To lower the number of observed variables and ease data analysis and interpretation, factor analysis helps determine which set of observed variables share common variance and can be represented by a theoretical construct, also called a factor or latent variable (Schumacker & Lomax, 2010).

Giftedness: This study used the term “gifted” generally to mean gifted learners identified by their school districts. Since not all school districts identify gifted students and multiple interpretations of giftedness exist (*State of the States,* 2013), however, the National Association of Gifted Children's (n.d.-e) definition of giftedness was used:

> Gifted individuals are those who demonstrate outstanding levels of aptitude (defined as an exceptional ability to reason and learn) or competence (documented performance or achievement in top 10% or rarer) in one or more domains. Domains include any structured area of activity with its own symbol system (e.g., mathematics, music, language) and/or set of sensorimotor skills (e.g., painting, dance, sports). (para. 4)

International Baccalaureate (IB): The International Baccalaureate is a non-profit, educational foundation offering four programs for students ages 3-19 in 143 countries that helps students "develop the intellectual, personal, emotional and social skills to live, learn and work in a rapidly globalizing world" (International Baccalaureate, n.d.-a, para. 2). The programs include the IB Primary Years Programme, IB Middle Years Programme, IB Diploma Programme, and IB Career-Related Certificate (International Baccalaureate, n.d.-h).

International Baccalaureate (IB) Diploma Programme: This program consists of a two-year liberal arts curriculum designed to reflect learning associated with elite European secondary schools. Students must meet all requirements as well as pass rigorous examinations in each subject area to receive the internationally-recognized IB diploma (Bailey & Karp, 2003; Byrd, 2007; International Baccalaureate, n.d.-h). Students must take courses in six subject groups and earn a set number of points awarded for their performance on internal and external assessments as well as other requirements: a passing score on a 4,000-word extended essay, successful completion of an interdisciplinary Theory of Knowledge course, and successful completion of the Creativity, Action, Service requirement, which requires students to be involved in extracurricular activities and community service (Byrd, 2007; International Baccalaureate, n.d.-b). Universities may provide college credit for the successful completion of the Program and qualifying scores on IB assessments (Byrd, 2007).

Pre-AP: Also referred to as SpringBoard, the Pre-AP program was developed by the College Board (n.d.-i) to increase student participation in the AP program by preparing English language arts and math students beginning in sixth grade for AP and college success. Using AP courses and college-level work, the College Board backmapped the skills and knowledge students need to be prepared for college and scaffolded the skills among grades 6-12. Thirty-six states and 850 schools have implemented pre-AP programs (College Board, n.d.-i).

Structural equation modeling: Structural equation modeling involves using various types of models to depict relationships among observed variables and quantitatively testing the hypothesized models to determine how well the sets of variables define constructs and how the constructs related to each other (Schumacker & Lomax, 2010).

Chapter II

Literature Review

What we want is to see the child in pursuit of knowledge, and not knowledge in pursuit of the child.

– George Bernard Shaw

Introduction

Chris Harris[2] was identified as gifted and began participating in his district's gifted program in the fifth grade (personal communication, November 2, 2013). At this level, gifted students remained together for instruction in multiple subjects. When Harris entered high school, however, gifted students had the opportunity to meet during one class only, with the majority of gifted services delivered through mixed-ability AP courses and within the regular classroom. Although the AP curriculum was accelerated and the students bright and motivated, Harris still did not feel challenged:

> One of the things that always rubbed me the wrong way about AP courses is that I found the majority of students to be the type of people who only knew how to follow orders. In high school, exams were basically information regurgitation. I can't tell you how many of my friends who did way better than me grade-wise in high school crashed and burned in college because they weren't as smart as they were told. (personal communication, November 2, 2013)

Although Harris enrolled in multiple AP courses, he did not obtain college credit for those courses or pass any AP exam. Harris either dropped the AP course, stayed in the class but did not take the AP exam, or took the AP exam and failed because he either did not have time to bubble in his answers or did not think he would perform well and chose to draw pictures of a giant monster destroying the downtown area on his answer sheet instead.

Looking back, Harris has strong feelings about his high-school AP experience. He knew he was smart enough for AP, but he didn't like the environment, lack of individual attention, and pressure to live up to the ultimate standard of the AP exam. He described public school as "a numbers game:"

> So many students are capable of developing critical thinking skills but get left behind, despite legislation promising that no child will be left behind. Throwing as many kids into AP helps no one but the administrative officials who receive more funding in exchange. Students have their own needs, and individual assessments are needed. (personal communication, November 2, 2013)

Now, Harris is a University of Houston Honors College graduate with a bachelor's degree in political science and minors in politics and ethics. He works as an associate producer for Houston Matters, a public affairs radio talk show that is the National Public Radio affiliate. He said he had a better college experience compared with high school, for he feels like he had professors who wanted him to grasp the material and who focused on his individual interests and needs throughout the process–the key that was missing during high school. Harris advised, "If you really want someone to succeed, you have to understand just what makes them tick" (personal communication, November 2, 2013).

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Harris wished his teachers had focused less on teaching the prescribed content and more on teaching individual students, ensuring each student learned new content and pursued new knowledge each day. His story not only illustrates George Bernard Shaw's sentiment, but also it reflects typical attributes of gifted learners, educational challenges they face in school, and concerns that the trend to broaden the range of students enrolled in AP and IB classes may affect services for gifted learners.

In examining AP and IB instructors' attitudes toward gifted education, the extent to which they differentiate for gifted students like Harris, and what factors may influence their attitudes and classroom decisions, it is first necessary to examine multiple areas of literature. This literature review explores the nature and needs of gifted students, secondary strategies and programs commonly used to meet those needs, the trend to expand access to AP and IB courses, instructor perceptions of gifted education, differentiation used in mixed-ability classrooms, and the impact of contextual factors on instruction for gifted students.

Characteristics and Needs of Gifted Students

Generally, gifted and non-gifted students have the same needs. They move through the same developmental stages, though gifted students often develop cognitively and affectively faster than their same-age peers. They may face similar challenges at home such as poverty or substance abuse. Some characteristics, however, tend to appear regularly in studies of gifted individuals, although all traits will not apply to every gifted student and gifted students differ from each other in their abilities, interests, motivation, habits, and any other possible characteristic. The literature is clear that because several cognitive and affective attributes appear more often among gifted individuals, they subsequently possess unique needs (Davis & Rimm, 2004; Freeman, 2006; NAGC, n.d.-e, n.d.-f; Roberts & Boggess, 2011; Robinson, Reis, Neihart, & Moon, 2002).

Cognitive characteristics. Gifted students typically exhibit above-average general intellectual ability and advanced creativity. Roberts and Boggess (2011) compared gifted students to high-speed Internet, which has a faster processing time than dial-up service. Characteristics relating to general intellectual ability include but are not limited to having an extensive and detailed memory, using developmentally-advanced vocabulary and communication skills, processing and learning information quickly, understanding abstract ideas and complex concepts, finding and solving difficult and unusual problems, exhibiting curiosity and the willingness to learn, and seeing connections and relationships (Davis & Rimm, 2004; Johnsen, 2011; Roberts & Boggess, 2011). Advanced creativity may also indicate giftedness. The key characteristic associated with creativity is divergent thinking: rather than arriving at a single conclusion, a divergent thinker produces many ideas or ones different from the norm (Johnsen, 2011).

Additionally, gifted students may show potential or demonstrate accomplishment in one or more specific content or talent areas, including leadership. They may exhibit an intense, sustained interest in these fields, may be able to concentrate for long periods of time on related projects, and may persistently ask questions and want to learn more. In artistic areas, students may pick up skills with little or no instruction, possess high sensory sensitivity, demonstrate confidence in the specific area, and use the artistic form to communicate (Johnsen 2011; Roberts & Boggess, 2011). Gifted students generally exhibit strong leadership skills as well. These skills may include exemplary organizing and planning, having a vision, finding problems, viewing problems from multiple perspectives, showing responsibility and confidence, influencing others' behavior, persuading others through communication, and cooperating well (Johnsen, 2011). These characteristics do not comprise a comprehensive list. Furthermore, gifted students may demonstrate only some of these characteristics or may show potential in one area rather than many. Characteristics of giftedness also may be more difficult to identify among culturally-different students or students who are twice exceptional (Davis & Rimm, 2004; Johnsen, 2011).

Affective characteristics. From a social and emotional perspective, research has yielded consistent conclusions that gifted students are as well-adjusted as any other student group (Elijah, 2011; Freeman, 2006; Reis & Renzulli, 2004; Robinson et al., 2002; Roberts & Boggess, 2011). No research suggests they are any "less hardy" (Robinson, 2002, p. xiv), more vulnerable, or more flawed than their same-age peers. In fact, any serious maladjustments such as behavior disorders and suicide appear no more–or sometimes less–frequently, as many gifted children have greater resilience to negative life events (Neihart, 2002). Additionally, as with other student groups, gifted students exhibit a practically unlimited range of individual personal characteristics (Robinson et al., 2002).

However, Robinson et al.'s (2002) landmark compilation of research examining the social and emotional lives of gifted students uncovered common affective characteristics. Gifted students may possess advanced perceptiveness (Neihart & Olenchak, 2002; O'Connor, 2002) awareness of being different (Reis, 2002; Rimm, 2002;

Ford, 2002), nonconformity and questioning of authority (Neihart & Olenchak, 2002), and anxiety caused by advanced knowledge (Reis & McCoach, 2002). They frequently show a need for mental stimulation (Neihart & Olenchak, 2002; O'Connor, 2002; Reis & McCoach, 2002; Rogers, 2002, "Effects of Acceleration"), preoccupation with understanding select subjects (Gross, 2002), multipotentiality (Greene, 2002, Reis & McCoach, 2002), and a desire to become all they are capable of becoming (Gross, 2002). Some exhibit perfectionist tendencies and the need for precision (Greene, 2002; Reis, 2002; Schuler, 2002). Many show heightened sensitivity and emotional intensity (Hébert, 2002; Keiley, 2002; O'Connor, 2002) and/or are introverted and have an internalized locus of control (Gross, 2002; Keiley, 2002; Silverman, 2002). Asynchronous development of physical, intellectual, social, and emotional aspects is common (Silverman, 2002). Additionally, females tend to exhibit self-doubt (Reis, 2002; Reis & McCoach, 2002).

These affective characteristics, when present, can have a positive impact on the individual's well-being. For instance, gifted students may show healthy perfectionism, where they consistently want to exceed and put forth their best (Robinson et al., 2002). However, gifted students may face situations that can constitute sources of risk to their social and emotional development and pose challenges, particularly when their home or school environments are non-responsive or unsupportive to the pace and level of their thinking (Cross, 2004; Freeman, 2006; Reis & Renzulli, 2004; Robinson et al., 2002). For example, they may never learn strategies to cope with challenges, have difficulty finding friends who share their understandings, experience loneliness, and/or succumb to pressures to be like everyone else (Robinson et al., 2002). If left unchallenged, they may lack goals, motivation, direction, or self-regulatory strategies and exhibit boredom, apathy, and/or disruptive behavior (Elijah, 2011; Freeman, 2006). Ultimately, failure to respond to these affective components may compromise actualization of their full potential (Robinson et al., 2002). In fact, the first national report on gifted education, known as the *Marland Report*, stated:

> Gifted and talented children are, in fact, deprived and can suffer psychological damage and permanent impairment of their abilities to function well which is equal or greater than the similar deprivation suffered by any other population with special needs served by the Office of Education. (Marland, 1971, p. xi-xii)

There is good news, though. Redesigning or modifying the context or environment can offer challenge, flexibility, and acceptance that gifted students need and lessen or eliminate these risks (Robinson et al., 2002), and a variety of programs and instructional strategies exist to meet gifted students' needs in the academic environment.

Definitions of Giftedness

Due to multiple interpretations of giftedness, no one universally-accepted definition exists. Definitions vary by state, district, organization, and researcher. Most definitions convey that the development and experiences of gifted children are unique from those of their non-gifted peers (Elijah, 2011). Although some common foundational definitions generally appear throughout the literature, state and district definitions of giftedness vary widely, if they exist at all.

Foundational definitions of giftedness. Several foundational definitions are recognized in the field. The federal definition of giftedness aligns with research recognizing that intelligence may be exhibited in many forms and talents may be expressed in a variety of ways. Originally developed in Marland's (1971) report to Congress, the federal definition of gifted and talented students underwent multiple modifications and currently is included in the Elementary and Secondary Education Act (2002), also known as No Child Left Behind:

> 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.

Another prominent definition of giftedness was developed by the National Association for Gifted Children (NAGC), an organization that supports gifted learners and develops policies and practices responding to their unique needs. NAGC (n.d.-f) defines gifted individuals as follows:

> Gifted individuals are those who demonstrate outstanding levels of aptitude (defined as an exceptional ability to reason and learn) or competence (documented performance or achievement in top 10% or rarer) in one or more domains. Domains include any structured area of activity with its own symbol system (e.g., mathematics, music, language) and/or set of sensorimotor skills (e.g., painting, dance, sports). (para. 4)

Other conceptions of giftedness exist as well. For example, Joseph Renzulli (1986), an educational psychologist, argues gifted behavior results from an interaction among three factors: above-average general and/or specific ability, high levels of task commitment, and high levels of creativity–a model referred to as the Three Ring Conception of

Giftedness. Gifted and talented children possess or have the potential to possess these traits and apply them to a valuable area of human performance. Francoys Gagné (2003), a Canadian professor, separates giftedness from talent. He defines giftedness as untrained natural intellectual, creative, socioaffective, or sensorimotor abilities and talents as learned capabilities. Sternberg (2003) recognizes analytic giftedness, or academic talent; synthetic giftedness, or creativity; and practical giftedness, or application of these abilities to everyday situations. He views giftedness as a balance of these three abilities. Many more definitions of giftedness exist, and most recognize that gifted students have unique characteristics and needs that, if left unmet, will inhibit them from maximizing their learning.

State and district definitions of giftedness. The federal government does not require states and districts to use a specific definition of giftedness to identify and serve their gifted students, as almost all decisions about gifted programming are made at state and local levels. Therefore, state and district policies in serving the gifted are uneven, sometimes nonexistent (*State of the States*, 2013). Every two years, NAGC collects data from U.S. states and territories regarding their support for gifted students, including their policies, programs, services, and practices and publishes this information in their biannual *State of the States in Gifted Education* report (*State of the States*, 2013). Of the 42 states, District of Columbia, and one territory, Guam, who responded to the questionnaire (referred to collectively as “states” from here onward), 40 states have a formal definition for giftedness, and 32 states have a mandate for identification, services, or both. Of the states with mandates, 28 states mandate the identification of gifted students and 26 require districts to accommodate for their gifted students' needs (*State of the States*, 2013).

Generally, states and districts that recognize gifted students base their definitions on the federal definition (NAGC, n.d.-f), although states may differ in the categories of giftedness they recognize. For instance, some states and/or districts may recognize intellectual giftedness only, while others may recognize several categories (Roberts & Boggess, 2011; *State of the States,* 2013). According to the *2012-2013 State of the States in Gifted Education* report, state definitions include multiple areas, most of which include the intellectually-gifted (38) and academically gifted (24). Other areas may include the creatively gifted (24), the performing/visual arts (21), and/or other, specific academic areas (22). Of the states with formal definitions of giftedness, seven states do not require local education agencies to use the same definition (*State of the States*, 2013). Because of the disparity in defining, identifying, and serving gifted students among states, gifted program existence, funding, and quality vary widely.

This study uses the term "gifted" generally to mean gifted learners identified by their school districts. However, since not all school districts identify gifted students and multiple interpretations of giftedness exist, the NAGC (n.d.-f) definition of giftedness was used:

> Gifted individuals are those who demonstrate outstanding levels of aptitude (defined as an exceptional ability to reason and learn) or competence (documented performance or achievement in top 10% or rarer) in one or more domains. Domains include any structured area of activity with its own symbol

> system (e.g., mathematics, music, language) and/or set of sensorimotor skills (e.g., painting, dance, sports). (para. 4)

Providing this definition of giftedness aided study participants who may have not been familiar with gifted education and typical attributes of gifted students.

Identification of Gifted Students

Just as definitions of giftedness vary widely, Davis and Rimm (2004) noted the criteria and procedures for identifying gifted students are inconsistent, which accounts for the lack of specific national data. NAGC (n.d.-c) estimates approximately 6% of the nation's K-12 student population is gifted, consisting between three and five million students (*State of the States*, 2013). Of the states that identify gifted students, 22 states allow the criteria for identification to be determined at the local levels, whereas the criteria in other states are determined either by the state alone or by a combination of the state and local levels and/or other policy (*State of the States*, 2013). Some programs rely entirely on intelligence test scores and/or achievement tests, admitting any student scoring above a pre-set score or selecting the top 3-5%. Other programs rely on multiple criteria including but not limited to test scores; teacher, parent, peer, or self-nominations; checklists or rating scales; and authentic assessments such as portfolios or performances. Other multidimensional approaches seek to identify students performing high in any one of the five components of the U.S. Department of Educations' definition of giftedness: general intellectual ability, specific academic talent, creativity, leadership, or talent in the visual or performing arts. The most popular programming model is Renzulli's talent pool strategy, where 15-20% or more of a school's population is identified according to multiple criteria (Davis & Rimm, 2004).

Renzulli (2011) noted that since he developed his Three Ring Conception of Giftedness in 1978, leading scholars such as Paul Torrance, Robert Sternberg, Howard Gardner, David Lohman, and Benjamin Bloom have reinforced the argument for a more flexible approach for identifying gifted students and viewed giftedness as something that can be developed in far more students than identified by an IQ score. Renzulli (2011) argued that several states and districts continue to emphasize IQ and other cognitive ability tests. However, because the "administrative tidiness" of a test cutoff system avoids the use of subjective information, some state departments of education reimburse districts based on their number of identified students and limit the funds allocated to gifted programs (p. 61). Furthermore, parents of traditionally-served and mostly middle-class students typically oppose gifted programs serving students who show their potentials in nonconventional ways. Renzulli (2011) recommended three changes to traditional gifted identification procedures: 1) identifying gifted students by using campus-level norms concerning ability and achievement test scores rather than making comparisons with amalgamated norm groups, 2) providing state funding for total district enrollments in gifted programs, and 3) developing weighting system for the three sets of characteristics in his Three Ring Conception of Giftedness so that test scores are not disproportionally emphasized.

The most recent data gathered for the *State of the States in Gifted Education* report (2013) indicated the majority of states use at least two indicators and/or methods in identifying gifted students. Using a multiple criteria model was most frequently required (25 states), with 20 states specifying at least two types of required information. The most frequently required criteria were IQ scores (18), achievement data (16), and state-approved assessments (14). Seven states also reported using nominations. The percentage of identified students per state varied from 1.9% in West Virginia to 15.5% in Virginia. Three states limit the percentage of students districts may identify as gifted to 3-5% (*State of the States*, 2013).

Delivery Methods of Gifted Services

With state and local levels governing education, services and delivery methods for gifted students vary widely as well. Twenty-six states mandate that districts provide services for gifted students, but particular components of gifted services typically are dictated at local levels and are inconsistent among and within states. Only 16 states require districts to include one or more specific components of gifted programming, usually differentiated instruction (12) and/or contact time (10) (*State of the States*, 2013). Enrichment and acceleration opportunities typically are used to meet gifted students' academic needs, but there are varied approaches to both (Davis & Rimm, 2004; Schiever & Maker, 2003).

Enrichment. Enrichment experiences are those where the content depth, breadth, and/or complexity is altered, during or outside of the school day, to offer a richer educational experience based on the learners' needs and interests. These experiences may include but are not limited to independent study projects, learning centers, resource rooms, field trips, interest clubs, Saturday or summer programs, mentorships, homogeneous grouping opportunities, or academic competitions such as Odyssey of the Mind (Davis & Rimm, 2004; Schiever & Maker, 2003).

Acceleration. According to research presented in the landmark report, *A Nation Deceived: How Schools Hold Back America's Brightest Students*, the most effective curriculum intervention for gifted students, academically and socially, is acceleration (Colangelo et al., 2004; Steenbergen-Hu & Moon, 2011). Acceleration involves moving a student more quickly through the curriculum. Opportunities for acceleration may include but are not limited to moving faster through academic content within the classroom; grade or subject skipping; entering middle school, high school, or college early; taking correspondence courses; participating in projects and activities as part of a pullout program during the school day; attending a special residential high school; or earning college credit(s) through exams administered through programs such as AP and IB (Colangelo et al., 2004; Davis & Rimm, 2004; Schiever & Maker, 2003). Other programs offering examinations that may result in college credits include the College Board's (n.d.-g) College Level Examination Program (CLEP), which provides exams in 33 subjects and works with more than 2,900 colleges and universities, and the University of Cambridge's Advanced International Certificate of Education (AICE) Diploma, which provides an international curriculum tailored to students' individual interests and college credits by exam (Cambridge International Examinations, n.d.). With the exception of accelerated courses at the secondary level such as AP, Colangelo et al. (2004) note that many educators have negative attitudes toward acceleration despite an abundant amount of research suggesting its success.

Common delivery methods by grade level. Delivery methods for gifted services tend to vary based on the grade level. At the elementary level, gifted services are most commonly delivered through the resource rooms, regular classrooms, or cluster classrooms (*State of the States*, 2013). As gifted students enter secondary school, services begin to be delivered more frequently through advanced courses. At the middle school level, gifted students are primarily served through honors/advanced coursework as well as within the regular classroom. The most common way gifted students' needs are met in high school is through advanced courses leading to college credit through programs such as AP, IB, and dual enrollment programs (*State of the States,* 2013), although other credit-bearing programs exist as well such as CLEP exams, the AICE Diploma, and early college high schools. The most recent report from the National Center for Education Statistics, *Dual Credit and Exam-Based Courses in U.S. Public High Schools: 2010-11*, concluded that the majority of schools offer AP, IB, and dual enrollment courses. Eighty-two percent of high schools reported they had students enrolled in dual enrollment courses, and 69% reported they had students enrolled in AP or IB courses (Thomas et al., 2013).

Advanced Academic Course Options for High-School Gifted Students

Traditionally, students enrolled in college only after successfully completing all high-school coursework. Incoming university students typically took a variety of core courses as freshmen and sophomores. Over 50 years ago, however, high-school students began to have opportunities to obtain college credit, and options for college-level learning programs have continued to expand. AP, IB, and dual enrollment courses now allow students to begin college with as many as 30 credit hours successfully completed, and these courses offer opportunities for content acceleration, which benefits gifted and high-ability students (Colangelo et al., 2004; Gallagher, 2009; Johnstone & Del Genio, 2001; Steenbergen-Hu & Moon, 2011). College-credit-bearing, high-school courses can be particularly attractive in the midst of rising college costs and subsequent student debt. In fact, average tuition and fees at four-year institutions have risen 50.7% over the last decade, with inflation factored in, and U.S. student loan debt surpassed $1 trillion in 2013 (College Board, 2013-b). Although these programs offer the same credits students receive by successfully completing the traditional college courses, the curriculum and assessment associated with each program substantially differ (Johnstone & Del Genio, 2001).

Dual enrollment courses. Students wishing to obtain college credit may have the option to participate in one or more dual enrollment or dual credit courses. Participating students receive simultaneous credit for both a high-school and college course based on their actual coursework rather than solely on or in conjunction with a final, one-shot, timed test such as CLEP, AP, or IB (Thomas et al., 2013). Dual credit programs vary widely depending on state and local requirements, program structures, and funding. Because these are official college courses, the course credits permanently appear on both the college and high-school transcripts. Some courses may be located on the high-school campus, typically referred to as dual credit, and other courses may be located on the college campus, typically referred to as dual enrollment. However, these terms are used inconsistently and interchangeably throughout the literature.

Options available for gaining college credit within a state or school district vary depending on state legislation and the willingness for districts and colleges to work together. Currently, 29 states have specific policies allowing dual enrollment, and no states have policies prohibiting it. Thirteen states leave the choice to allow dual enrollment up to local-level decision makers either because no state policy exists or the policy explicitly leaves the decision to the local education agencies (*State of the States*, 2013). Sixty-three percent of participating schools have established student requirements for enrolling in dual enrollment courses, and the requirements vary widely (Thomas et al., 2013). Dual credit partnerships may exist between the local school district(s) and public or private universities, community colleges, or technical colleges (Andrews, "Lessons Learned," 2000), and dual enrollment courses may focus on academic or technical/vocational areas (Thomas et al., 2013).

Although little national data regarding dual enrollment programs exist, it is clear these programs have grown since the 1970s due to the increasing number of partnerships among higher education and high schools. The National Center for Education Statistics reported that during the 2010-2011 academic year, more public high schools offered dual enrollment courses than any other type of program leading to college credit, and 82% of public schools reported they offered these courses to over two million participating students (Thomas et al., 2013).

Early college high schools. Similar to dual enrollment programs, early college high schools offer another way students can earn college credits while still in high school. Early college is based on the idea that academic rigor and the opportunity to save time and money will motivate students to work hard and undertake challenges (Early College Designs, n.d.). Whereas students can earn as many or as few college credits as they wish in a dual enrollment program, students enrolled in an early college program can simultaneously earn a high-school diploma as well as either an associate's degree or up to two years of college credits toward a bachelor's degree. The format depends on the course: some are taught by college professors at the high school, some are hybrid online courses, and some involve students attending class on the college campus one day a week while working via computer on the remaining days (Early College Designs, n.d.). In

2013, more than 400 early colleges existed in the United States and served an estimated 100,000 students (Spencer, 2013).

Advanced Placement and International Baccalaureate programs. Although dual enrollment and early college participation among all students continues to grow, advanced courses offered through the AP program and, increasingly, the Diploma Programme of the International Baccalaureate Organization (IBO) continue to attract gifted students where programs are available. Limited research exists on the appropriateness of these programs for gifted students, however. Although these courses are often the "highlight of high school for many academically advanced students," the course offerings alone "may not be enough" (Colangelo et al., 2004, p. 33). Still, AP or IB programs are used most often to meet gifted students' needs in most high schools (Hertberg-Davis, Callahan, & Kyburg, 2006; *State of the States*, 2013). Although a higher percentage (82%) of public schools offer dual enrollment opportunities compared with AP and/or IB courses (69%), AP and IB programs collectively serve more students–approximately 3.5 million (Thomas et al., 2013). Furthermore, literature suggests these programs offer the most challenge for high-school students (Gallagher, 2009, Hertberg-Davis, Callahan, & Kyburg, 2006), and Byrd (2007) states AP and IB programs "represent the curricular gold standard for secondary education" (p. 7). Thus, NAGC (n.d.-b) promotes AP and IB programs as appropriate options for gifted students in group settings:

> [B]oth AP and IB programs by virtue of their structure and content offer

> college-level work. As long as students meet prerequisites and accept the rigors of such programs, gifted and other learners can and should take advantage of such group-oriented programs. (para. 3)

Advanced Placement. The AP program has grown from serving a small number of students at select private high schools to serving over one million students with the potential to succeed at approximately 60% of the nation's high schools (College Board, n.d.-c, 2014; Gallagher, 2009). The AP program began over 65 years ago when professors from top-tier colleges in the nation, including Harvard, Princeton, and Yale, and instructors from elite prep schools, including Andover, Exeter, and Lawrenceville, met to discuss how they could work together as part of a continuous process (Byrd, 2007; Rothschild, 1999). Their report recommended that secondary schools "recruit imaginative teachers," "encourage seniors to engage in independent study and college-level work," and use achievement exams "to allow students to enter college with advanced standing" (as cited in Byrd, 2007, p. 8). In 1954, a small group of gifted students participated in a pilot program and took experimental AP tests in five subjects (Gallagher, 2009; Rothschild, 1999). Three years later, the AP program allowed students in primarily American elite private high schools to earn credits for college-level coursework and avoid curricular repetition (Gallagher, 2009). Now, the AP program allows *all* students with the potential to succeed to engage in college-level coursework and earn college credit through examination (College Board, 2014). In 2013, over 18,000 high schools administered 3,153,014 AP tests in 35 subjects to 1,003,430 students (College Board, 2014). The AP program remains the most frequently used delivery method of gifted services in high schools (NAGC, n.d.-d; *State of the States*, 2013).

AP courses cover multiple subject areas, and each course covers the information, skills, and assignments present in its corresponding college course (College Board, n.d.-e; Ewing, 2006). All courses follow a national curriculum published in the College Board's manual, *AP Course Descriptions*, and course objectives are developed by college faculty and AP instructors (College Board, n.d.-e). To receive college credit, students must demonstrate their ability to perform at a college level by passing the course's timed test at the end of the year, a test that represents the culmination of college-level work in that discipline. A qualifying score on an AP exam may give the student college credit in the exam's subject area if the individual's college or university of choice accepts AP scores (College Board, n.d.-c, n.d.-e; Ewing, 2006).

The number of colleges and universities accepting AP scores continues to grow overall. Currently, over 90% of U.S. colleges and universities have AP policies granting students with qualifying AP scores course credit(s), placement, or both, and 3,578 colleges and universities received AP scores for credit, placement, or admissions consideration in 2013 (College Board, n.d.-c, 2014). Historically, a score of 3, 4, or 5 on a 5-point scale has yielded college credit (Ewing, 2006); however, an increasing number of colleges are raising their minimum score to a 4 or 5 (Byrd, 2007; Ewing, 2006). Some top-tier colleges such as Dartmouth College, however, recently have changed policies and no longer provide college credits for AP scores, claiming these courses are not equivalent to a true college course (Adams, 2013; Platt, 2013).

Soon, students attending participating schools may also have the opportunity to participate in the AP Capstone program and receive a special diploma in addition to potential college credits (College Board, n.d.-d; Dawson, 2014). The first high-school diploma program the College Board (n.d.-d) has created, the two-year AP Capstone program combines AP courses with a research seminar and independent research course, where students study a globally-significant topic of their choice. To receive the AP Capstone diploma, students must pass three AP tests with a minimum score of 3, produce a team project and individual presentation on their topic and pass a written exam in the research seminar, and complete a 15-20-page research paper on their topic during their second-year independent research course (College Board, n.d.-d; Dawson, 2014; Rhor, 2012). The AP Capstone program officially will launch during the 2014-2015 academic year among nearly 100 schools worldwide after the successful pilot program was completed involving 17 campuses. Currently over 100 universities across the United States and Canada recognize the Capstone diploma (College Board, n.d.-d). Receiving a Capstone diploma may increase students' chances of acceptance to their desired university and serve as an additional incentive for students to participate in the program.

International Baccalaureate. Founded in 1968 in Geneva, Switzerland, as a non-profit educational foundation, the International Baccalaureate created the IB Diploma Programme to serve as a vehicle for internationally-mobile students to attend schools abroad, earn college credits by successfully completing the program and passing the exams, and seamlessly transfer back into their home university systems (Bailey & Karp, 2003; Coca et al., 2012; Duevel, 1999; International Baccalaureate, n.d.-c; Porter & Banchero, 2013). Since then, the program has grown substantially and expanded into elementary and middle schools due to national school systems searching for ways to improve curriculum and rigor and prepare students to succeed in an expanding global community (Duevel, 1999; International Baccalaureate, n.d.-c; Porter & Banchero, 2013).

Overview of the IB Programme. Today, over half of the schools offering the IB Programme are state schools, and the IB Programme now offers four programs internationally for students ages 3-19 designed to help them develop intellectual, personal, emotional, and social skills to thrive in a global world. The programs include the Primary Years Programme for students ages 3-12, the Middle Years Programme for students ages 11-16, the Diploma Programme for students ages 16-19, and a Career-Related Certificate for students ages 16-19. The goal of all IB programs is to "develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world" (International Baccalaureate, n.d.-e, para. 1). IB programs promote educating the whole person and emphasize intellectual, personal, emotional, and social growth through all domains of knowledge to prepare students for lifelong, active, and responsible citizenship. The IB learner profile describes IB learners as those who strive to be inquirers, knowledgeable, thinkers, communicators, principled, open-minded, caring, risk-takers, balanced, and reflective (International Baccalaureate, n.d.-e).

IB Diploma Programme. As with AP courses, the IB Diploma Programme remains a popular option for high-ability, secondary students seeking to gain college credits through their high-school classes (Gallagher, 2009; Hertberg-Davis & Callahan, 2008; Hertberg-Davis, Callahan, & Kyburg, 2006; NAGC, n.d.-d; *State of the States,* 2013). As with the AP program, though, the IB program was not designed specifically to respond to gifted students' unique needs and students do not have to be gifted to complete the program (NAGC n.d.-d; Duevel, 1999; Gallagher, 2009). Duevel (1999) noted that the basic structure of the IB diploma program attracts students with attributes similar to the gifted: high levels of motivation, task commitment, intelligence, independence, management skills, and desire to understand. Since 1999, however, the IB program has grown to include a broader spectrum of students.

Both public and private-school students in grades 11 and 12 may participate in the IB Diploma Programme where it is offered. Although students can earn a certificate for passing an IB exam in a single subject that may award them college credit for the corresponding college course (Theokas & Saaris, 2013), the overall IB Diploma Programme consists of a two-year program of coursework typically beginning in eleventh grade for American students, and the curriculum is designed to reflect learning associated with elite European secondary schools (Bailey & Karp, 2003; Byrd, 2007; Coca et al., 2012; International Baccalaureate, n.d.-b, n.d.-c). Students are required to take courses across six core subject areas (Coca et al., 2012; International Baccalaureate, n.d.-b). They may opt to engage in the Standard Level, requiring 150 classroom hours, or the Higher Level, requiring 240 classroom hours and allowing students to explore interest areas with greater depth and rigor (Byrd, 2007). Additionally, IB Diploma students must complete three core requirements that help broaden their educational experience and challenge them to apply their knowledge. They must successfully complete a Theory of Knowledge course, which encourages critical thinking and reflecting on the nature and kinds of knowledge; participate in creativity, action, and service (CAS) activities, which allow them to engage in the arts, physical activity, and community service–learning from real experiences; and complete an extended essay, which allows them to independently research a question relevant to one of the subjects they are studying (Coca et al., 2012; International Baccalaureate, n.d.-b).

Students are assessed at the classroom level as well as externally. They complete in-school assessment tasks evaluated initially by classroom teachers and then by external IB moderators or examiners. They also take written exams in each subject area at the end of the Programme that are scored by external IB examiners. To obtain the IB Diploma, students must earn a set number of diploma points awarded for their performance on internal and external assessments, passing score on the 4,000-word extended essay, successful completion of the Theory of Knowledge course, and successful completion of the CAS requirement. Students must earn at least 24 points out of a possible 45 (Byrd, 2007; Coca et al., 2012, International Baccalaureate, n.d.-d). Although the IB program differs significantly from the AP program, universities may provide college credit for the successful completion of the Programme and qualifying scores on IB assessments in the same way they grant credit for AP courses (Byrd, 2007).

The availability of the IB program continues to grow both worldwide and within the United States. In 2013, the IB program was offered in 147 countries at 2,399 campuses (International Baccalaureate, n.d.-h), and 1,651 of those campuses are in the United States, including 1,493 public schools (Porter & Banchero, 2013). At the secondary level, although the AP program maintains a significantly greater presence than the IB program in the United States (Bunnell, 2009), the prevalence of the IB Diploma Programme is growing substantially (Bunnell, 2009; International Baccalaureate, n.d.-c, n.d.-h; Porter & Banchero, 2013). From 1997 to 2007, the number of Diploma Programmes in the United States increased from 227 to 624 (Byrd, 2007). The IB Diploma Programme saw almost a 10% increase in student participation between

2007-2012, with almost 5% growth from 2011-2012 alone. In 2013, 2,399 schools worldwide offered the Diploma Programme, with 783 of the campuses in the United States (International Baccalaureate, n.d.-h). Currently, 1605 colleges and universities in the United States recognize the IB Diploma and have submitted their acceptance policies to International Baccalaureate, and many other colleges and universities recognize the IB Diploma but have not submitted their policies (International Baccalaureate, n.d.-f).

Clearly, multiple college-credit-granting high-school opportunities exist and vary among states and districts. This study focuses on two of these options: the AP and IB programs. Although AP and IB programs differ from each other significantly, they both are based on a consistent national or international curriculum, respectively, unlike dual enrollment programs and other credit-by-examination opportunities. They both use an externally-graded exam and offer consistent training and support for teachers (Theokas & Saaris, 2013). The AP program is the most frequently used delivery method of gifted services in high schools (*State of the States*, 2013). The IB program, although it is offered to a much smaller number of students than other college-credit bearing programs, is also a frequent delivery method of gifted services where available, and it has the reputation of being a "model of quality" (Bunnell, 2009; *State of the States*, 2013).

Neither AP nor IB programs were designed to address the unique needs of gifted learners specifically and neither may be sufficient for gifted learners, though. In fact, NAGC (n.d.-d) asserts it is a "myth" that AP courses by themselves adequately serve gifted students:

> While AP programs across the country have been beneficial to many students in offering rigorous courses where they may not have been offered before, . . . they

> are only one component of a complete and effective gifted education program. They lack the comprehensive differentiated continuum of services necessary to meet the wide-ranging needs of gifted students. AP programs by themselves cannot substitute for gifted education services. They were designed to make college more accessible and appealing for high potential secondary students, offering college credit without college costs. While the classes are rigorous, the goal is not focused on maximizing potential. (para. 1)

However, the literature on both programs suggests that AP and IB provide the most rigor and challenge and the majority of secondary, gifted students receive services through these courses (Hertberg-Davis & Callahan, 2008; Hertberg-Davis, Callahan, & Kyburg, 2006; NAGC, n.d.-d; *State of the States*, 2013).

Push to Expand Access to AP and IB Programs

AP and IB programs traditionally served primarily gifted and high-ability students, but the trend has shifted. Beginning in the mid-1980s, a reform movement has focused on abolishing ability grouping in favor of heterogeneous classroom environments. Homogeneous grouping became viewed as ineffective, discriminatory, and unfair in principle to deny access to more complex academic content based on students' abilities (Oakes, 1985). In 2001, No Child Left Behind legislation intensified the focus to promote more equitable access to rigorous courses and close the achievement gap.

Federal, state, and local governments and education entities now generally encourage a much broader range of students with varying abilities to participate in AP and IB programs, particularly students typically underrepresented in advanced courses.

For instance, over the last decade, the College Board has advertised that the AP program can benefit not only bright and/or college-bound students, but also all students who want to work hard:

> The AP Program isn't just for the top students or those headed for college. The only requirements to take an AP course are a strong curiosity about the subject you plan to study and the willingness to work hard. (as cited in Gallagher, 2009, p. 113)

The AP program's significant expansion is built on the College Board's (2014) deep conviction that students' background, location, and socioeconomic statuses should not impede their accessing the rigor and benefits of the AP program.

Districts and campuses have responded accordingly. New Haven School District in Connecticut, for instance, has seen a significant rise in AP participation because it now has an open-door policy for AP classes. Seventy percent of their students are failing the exams, but administrators say it is more important that students are exposed to AP material than whether they pass the exam (Bruley, 2014). At other campuses, such as Cooperative Arts and Humanities High School, the demographic makeup of AP courses now resembles that of the entire student body due to a larger percentage of minority students becoming interested in college due to AP exposure. Director of College and Career Pathways Dr. Dolores Garcia-Blocker states:

> The research shows that kids who take Advanced Placement courses and at least have a glimpse of what it is like to take a college-level course and college-level work tend to persist in college and earn their college degrees. (as cited in Bruley, 2014, para. 8)

While Garcia-Blocker would like to see improvement in AP scores over time, she said their low AP scores are not a primary concern or a determinant of the program's success (Bruley, 2014).

Expanding access to the IB program is encouraged as well. In 2006, 18 states made special efforts to increase access to the program for underrepresented, underserved, low-income, rural, and/or ethnic minority students ("National Inventory," 2006). Additionally, in 2007, the America Competes Act authorized the training of more high-school instructors to teach both AP and IB courses in math, science, and critical foreign language in high-need schools to expand low-income students' access to AP and IB coursework (Bunnell, 2009). The push for AP and IB program expansion has resulted from a variety of factors, including shifting college admissions formulas, positive correlations with college performance, and a general decline in student achievement, particularly among underrepresented groups.

College admissions formulas. Although initially both AP and IB programs gave select students opportunities to place out of a few college classes, their function changed when taking these courses became a significant factor in the college admissions process (Byrd, 2007; Gallagher, 2009). College admissions directors began to use student participation in the most rigorous courses offered by the campus, students' grades in those courses, and their accompanying AP or IB exam scores as part of the admissions formula in the mid-1980s. In fact, these components were among the top 10 admissions criteria (Gallagher, 2009). Espenshade, Hale, and Chung (2005) examined 45,000 admissions applications from three "highly selective private research universities that represent the top tier of American higher education" (p. 272) and found that, when AP courses were offered on the high-school campus, students who took at least one AP course and respective exam were over 31% more likely to be accepted than those without. They also noted the admission advantage is "statistically significant and cumulative the more AP examinations a student has taken" (p. 276).

At times, the most significant factor in the college admissions decision is students' enrollment and success in the most rigorous courses, not their exam scores (Badger, 2014; College Board, n.d.-b; "High School Grades Matter Most," 2014). The *2014 State of College Admission* report compiled by the National Association for College Admission Counseling reveals that college admissions offices currently value getting good grades in rigorous, challenging courses matters more than standardized test scores, class rank, and demonstrated interest in attending ("High School Grades Matter Most," 2014). Doug Badger (2014), Director of Admission at Grinnell College since 2009, agrees. A small, selective, liberal arts institution, Grinnell College admits approximately 26-27% of applicants. The most important factor for admission is the student's academic record, consisting of the rigor of and grades in the classes the student took if and when they were available. Badger (2014) said this is the best indicator of how the student will fare in college. Standardized test scores, including grades on AP and IB exams, are less important than the curriculum, grades, recommendation letters, extracurricular activities, and the essay.

The high-school's curricular offerings play a very important role in determining if a student seized opportunities for rigor and challenge. Consequently, research suggests the more advanced courses a high-school offers, the more difficult it will be for the students to gain admissions into more selective colleges. Espenshade et al. (2005), for instance, found a negative correlation between the number of AP tests given per high-school senior and admissions outcomes. They noted:

> A student has the best odds of being accepted by an elite college if he or she comes from a high school where no AP tests are taken (and, presumably, where no AP courses are offered). These odds steadily deteriorate as a high schools' academic climate improves. If a student with the same academic credentials applies from a high school where the average number of AP tests per senior is between 0.4 and 0.8, the odds of admission are 36 percent lower. And at the most competitive high schools–those with more than 1.5 AP tests per senior–the same applicant has 53 percent lower odds of admission. (p. 279)

Espenshade et al.'s (2005) study supports previous studies' conclusions that a school's academic context matters, that "[i]t is better to be a big frog in a small pond than a small frog in a big pond" (p. 269-270).

To gain admittance into a selective university, today's high-school students know they must take more challenging classes such as AP and IB even if they have slightly lower grades than what they would make in lower-level courses. The more advanced courses their campus offers, the more advanced courses they should take (Espenshade et al., 2005; Gallagher, 2009). AP and IB courses have become less of an opportunity and more of a requirement for college admittance, a college gatekeeper; thus, all college-bound students in general, not merely the gifted, are pressured to enroll in AP and IB programs (Gallagher, 2009).

Links to college preparation, enrollment, and success. AP and IB courses have become part of college and university admissions formulas also because studies suggest students with successful AP and IB experiences appear to enroll and fare better in college than those without. College enrollment and success is of particular concern due to the high percentage of students requiring remedial instruction and lower college enrollment and success among low-income students.

Need for college remediation. When college admissions formulas began to shift in the mid-1980s to include students' participation in AP and IB courses, the landmark report, *A Nation at Risk,* had just been published. This report claimed that between 1975 and 1980, the number of four-year-college remedial mathematics courses in which students were enrolled increased by 72%, constituting 25% of all mathematics courses taught (National Commission on Excellence in Education, 1983). This need for college remedial work may have been connected to other findings disclosed in *A Nation at Risk*. The research found that high-school students' achievement on the SAT and other achievement tests had declined dramatically and many 17-year-olds lacked higher-order intellectual skills: 13% qualified as functionally illiterate, nearly 40% could not draw inferences from written material, 80% could not write a persuasive essay, and 66% could not solve a math problem that included multiple steps (National Commission on Excellence in Education, 1983). Although percentages of students requiring college remedial work seemingly have decreased since then, the percentage is still large. In 2011, the College Completion Agenda Progress Report reported that 37.6% of first- and second-year undergraduate students require remedial coursework in college (as cited in College Board, 2013-a).

Lower college enrollment among low-income students. Statistics concerning college enrollment and success among low-income students also cause concern. According to a 2010 report to Congress and the Secretary of Education, *The Rising Price of Inequality*, initial enrollment rates of academically qualified low-income high-school graduates in four-year colleges shifted downward from 54% to 40% between 1992 and 2004 (Advisory Committee on Student Financial Assistance, 2010). Persistence of low-income students five years after entering a four-year college fell from 78% to 75%, and their peers from moderate-income families earned a degree nearly twice as often (Advisory Committee on Student Financial Assistance, 2010). The most recent data from the National Center for Education Statistics (n.d.) shows only 52% of low-income students enroll in either a two- or four-year college or university after high school as compared with 68% of all high-school graduates. Once enrolled in a postsecondary institution, only 47% of enrolled low-income students graduate within six years as compared with 58% of the general population (National Center for Education Statistics, n.d.). To increase bachelor's degree attainment among qualified low-income high-school graduates, *The Rising Price of Inequality* report suggests addressing income-related inequalities in academic preparation, access, and persistence (Advisory Committee on Student Financial Assistance, 2010).

AP and IB connection to college success. In addition to AP and IB programs potentially easing the total cost of a college education for participating students, the programs appear connected with college attendance, success, and persistence among students of all income levels. One study examined the impact of Chicago Public Schools' (CPS) IB programs on postsecondary outcomes of a diverse group of students.

In 1997, CPS, comprised of a racially and socioeconomically more diverse student population than the IB program has historically served, announced they would open 13 IB Diploma Programmes to “upgrade the quality of the neighborhood high school and to stop the brain drain” (as cited in Coca et al., 2012, p. 3). More than a decade later, Coca et al. (2012) measured the effect of the IB Diploma Programme, comparing students who graduated with the IB Diploma between 2003-2007 with other students who would have been highly likely to participate in the Programme if they had lived in a different part of the city. They gathered quantitative data to estimate the IB Diploma Programme’s effects on college enrollment and persistence and used student interview data from a longitudinal, qualitative study to investigate students’ college experiences. Results showed that when compared with a matched comparison group, IB Diploma graduates were 40% more likely to enroll in a four-year college or university and 50% more likely to attend a more selective college. Additionally, graduates were significantly more likely to persist in four-year colleges for two years and reported their IB experiences taught them the skills and behaviors needed to excel in college (Coca et al., 2012).

A multitude of other studies surrounding both AP and IB programs indicate engaging in college-level work while in high school is connected to greater successes while in college as well. In reviewing the literature surrounding the impact of the AP program on student outcomes, Ewing (2006) found that studies ranging from the 1970s to 2002 generally showed that students exempting introductory courses resulting from their successful exam performance experienced positive results in subsequent courses. The studies showed that AP scores were “valid indicators of a student’s readiness for placement into a course beyond the introductory college course,” not that they directly impacted a student's college success (p. 2). Students scoring a 3 or above and who exempted the introductory course performed as well as or better in second-, third-, fourth-, and even fifth-level courses than students who took the introductory course. Additionally, higher AP scores generally correlated with higher course grades (Ewing, 2006). The College Board (2014) also reported that students who score a 3 or higher on an AP exam generally earn higher GPAs while in college, perform as well or better in subsequent college courses compared with non-AP students, are more likely to graduate from college within five years, and have higher graduation rates (College Board, 2014).

In 1986 an extensive earlier study on the effectiveness of the IB program was performed at the University of Florida, which enrolls more IB diploma holders than any other university worldwide (Rice Center for College Readiness, n.d.). William Kolb, the University of Florida's director of admissions, analyzed data for the 1996 freshman class and found that IB diploma holders were better prepared for college and their grade point averages (GPA) dropped significantly less during their first year of college compared with former AP students and students with no AP or IB background. IB students' GPAs declined from a 3.8 to a 3.3, whereas AP students' GPAs dropped from a 3.9 to a 3.1 and non-IB or AP students' GPAs dropped from 3.6 to 2.6 (Rice Center for College Readiness, n.d.). A later study by Panich (2001) compared 1,816 University of Florida's students GPAs over a three-year period. She matched compared GPAs of students who entered the university with IB credits with the GPAs of other students with comparable SAT verbal and math scores, including students with IB experience, but no diploma, and students with no IB experience at all. She found that IB diploma holders consistently maintained the highest freshman GPA (Panich, 2001).

Other studies on the impact of IB programs on college performance show similar results. To assess the value of holding an IB diploma, Linda Duevel (1999) investigated whether earning the IB diploma predicted university success among U.S. students. She surveyed all IB diploma holders graduating from U.S. high school between 1974-1997 and obtained academic graduation statistics on IB diploma holders from registrars at 13 “leading American research universities” (p. 29). Data showed 92% of IB diploma holders earned bachelor’s degrees, and 87% of these degrees were earned in five or fewer years. IB diploma holders indicated the two most beneficial aspects of the IB program included the challenge and university preparation. Over half of the respondents indicated the IB program impacted their careers by influencing their majors and nurturing their awareness of global, social, and environmental topics and desire to work internationally. Duevel concluded:

> Results indicated the IB experience contributed to university success due to the two-year duration, integration of topics offering breadth and depth, necessity of strong productivity/study skills throughout high school, perseverance, maintaining balance while exposed to academic pressure, emphasis on developing strong, writing, research, analytical thinking skills, and development of a global perspective. (p. viii)

Additionally, the IB Global Policy and Research Department (2010) reported results from a study documenting the college performance of 1,547 high-school students enrolled in an IB program at the University of California (UC) system. Descriptive analyses revealed that IB students earned higher grades and graduated at higher rates than UC students overall. Data also revealed the IB students performed better than a comparison group of non-IB students that were matched based on their high-school academic performance, ethnicity, family income, and the year they enrolled. This trend surfaced across all income groups. Performance in a high-school IB program was shown to significantly predict college achievement and matriculation, particularly among students pursuing the social sciences and engineering fields (IB Global Policy & Research Department, 2010).

Achievement gap. The push to expand access to AP and IB courses exists also because of a continuous achievement gap. National and state assessment data have exposed a pattern that black, Hispanic, and low-income students lag behind white, Asian, and middle-class students (Theokas & Saaris, 2013). Proponents of heterogeneous grouping, including the National Education Association (NEA), believe that channeling underrepresented student groups into lower tracks causes them to receive lower-quality instruction (NEA, n.d.). At the high-school level, restricting access to the more rigorous courses such as AP and IB to gifted and high-achieving students overlooks other students with the potential to succeed–many of whom belong to traditionally underrepresented groups. These gaps reach beyond standardized assessments, affecting high-school graduation rates, college attendance rates, and college success. The effects of these gaps are costly, as economists demonstrate that lack of college education "will increasingly lock citizens out of the middle class . . . [and] produce a drain in our economy" (Theokas & Saaris 2013, p. 1).

The strongest predictor of a student's college success is if the individual participated in a rigorous high-school program, typically AP and IB courses, where the achievement gap is still present (Theokas & Saaris 2013). Although states have progressed in narrowing equity gaps for underserved minorities and low-income students, these populations still remain underserved overall (College Board, 2014). Theokas and Saaris (2013) noted that "virtually every analysis finds continued gaps in participation rates in these [AP and IB] courses by race and family income levels" (p. 1). When looking at both AP and IB programs combined, Theokas and Saaris (2013) estimated more than half a million low-income students and/or students of color who could benefit from these advanced courses are "missing" (p. 1).

The College Board (2014) reported that hundreds of thousands of students in the class of 2013 who showed potential to succeed in an AP class graduated having never participated in an AP matched course (p. 7). Potential and readiness can be measured in whatever way(s) a district chooses. Many schools consider students' grade point averages or letter grades in prerequisite courses for admission to an AP course (College Board, 2014). However, the College Board (2014, n.d.-f) provides educators and administrators with AP Potential, a web-based tool allowing campuses to identify students likely to score a 3 or higher on a given AP exam based on students' Preliminary Scholastic Aptitude Test and National Merit Scholarship Qualifying Test scores. Although most states are making progress in decreasing the achievement gap, the data still reveal striking inequities. Using AP Potential, the College Board (2014) reported that in 2013, 286,403 students did not take the matched AP course for which they showed potential. In particular, African American students with the same AP readiness as their white and Asian peers were significantly less likely to participate in an AP course (College Board, 2014). To help close the achievement gap and increase the percentage of 25- to 34-year olds who hold an associate's degree or higher to 55% by 2025, the College Board (2013) cited three efforts as critical: “increasing rigor in the nation’s classrooms, promoting equitable access to these rigorous academic experiences, and ensuring that students develop the knowledge and skills critical for success in college and careers” (p. 14).

In response to the achievement gap in advanced academic courses, the Gates Foundation funded the Diploma Gap Study with McKinsey & Company to identify reasons for the gap within the IB Diploma Programme and provide strategic solutions to narrow the gap by 2020 (International Baccalaureate, 2009). The researchers found among all the qualified students, fewer than one in four actually participated in the program. However, the largest driver of the gap, outside of lack of program availability, was retaining qualified students, as less than half as many high-needs students were sufficiently prepared as non-high-needs students.

Most teachers and administrators in the study agreed that the IB curriculum can benefit all learners, though:

> IB program has significant potential to make a positive difference for many more high-needs students than we currently serve. In fact, they found that the Diploma Program . . . stands out among other high school curricula available today in the U.S. public education system because it offers a rigorous, aligned, integrated instructional system that is both appropriate and valuable for students of average skill proficiency, and transformative for minority and low-income, i.e., “high-needs,” students. (p. 2)

However, most schools’ IB programs in the study were run “as extensions of honors programs or programs for elite students," as the entrance requirements and complex application processes made it difficult for high-needs students to access the programs

(p. 4). The gap stemmed from perceptions that “IB is an elite program for a small number of high-achieving students, rather than a high-quality curriculum to be made widely accessible” (p. 4). The report's recommendations included that schools expand their IB programs by providing access for all and offer supports for high-needs students such as direct intervention programs instead of limiting participation to high-achieving students (International Baccalaureate, 2009).

Promoting equitable access to AP and IB courses has shown small but positive contributions to program participation. Research indicated that incentive programs such as the federal API program influenced the ratio of the number of AP and IB tests taken in public high schools, and the number of twelfth-graders enrolled at those schools increased (Holstead et al., 2010). Nationwide, overall AP exam participation has increased as well. For instance, in 2003, 514,163 students took an AP exam compared with 1,003,430 students in 2013 (College Board, 2014). Additionally, although an equity and excellence gap still persists for certain populations such as African Americans, the gap continues to decrease overall among minority and low-income students (College Board, 2014; Holstead et al., 2010). Nationwide, 58,489 AP examinees were low-income in 2003 compared with 275,864 in 2013 (College Board, 2014).

Also, the percentage of passing AP scores has risen since the development of incentive programs. For example, the AP passing rate at schools participating in the National Math and Science Initiative program has improved significantly, particularly among females and minority students. The pass rate on AP math, science, and English exams increased by 72% during the first year of the program, showing tremendous improvement. Over a three-year period, the average increase was 144% compared with a nationwide 23% (Schoof, 2013). Nationwide data indicate low-income students scoring at least a 3 on the AP exam have increased significantly as well, from 9.8% in 2003 to 14.7% in 2009 (Holstead et al., 2010).

Districts in large cities such as Houston, Chicago, and Tampa are using the IB program to turn around low-performing schools and attract middle- and high-income families who might otherwise choose private schools (Porter & Banchero, 2013). Houston Independent School District, for instance, had 10 schools that offer the IB program during the 2012-2013 academic year, including two campuses where most students qualify for free or reduced lunch. Five additional low-income campuses are currently undergoing the IB conversion process. Why? Brian Doyle, principal at Northline Elementary, where 97% of students qualify for free or reduced-price lunch and two-thirds are English language learners, stated, “We felt we needed something that would give us a kick in the pants” (as cited in Porter & Banchero, 2013). Chicago Mayor Rahm Emanuel stated in 2012 that the city would nearly double its current IB program offerings over the next few years by offering the program at 11 high-school and six elementary campuses in low-income and middle-class communities. As support for this growth, Emanuel referenced a study by the Consortium on Chicago School Research that examined the impact of the IB program at 12 local high schools between 2003-2007. Results showed students who graduated with an IB diploma were 40% more likely to attend four-year colleges than their peers with a traditional diploma (Coca et al., 2012; Porter & Banchero, 2013). In Florida, IB program offerings have grown from five in 1987 to 131 in 2013 (Porter & Banchero, 2013). Stephen Hegarty, spokesperson for Hillsborough County Public Schools in Tampa, commented, “We have to compete with private schools and charter schools and we think IB is an attractive option" (as cited in Porter & Banchero, 2013).

One district successfully closed the achievement gap altogether by providing automatic access to AP and IB courses. Beginning in 2010, all secondary students in Washington's Federal Way Public Schools scoring proficient or above on the state exam have been automatically enrolled in AP and IB ("Advanced Students," 2011; Theokas & Saaris, 2013). Instead of opting in to the program, students can opt out only with a parent's permission. The district saw an immediate 70% increase in enrollment in advanced courses, and the district's ethnic diversity became more proportionally-represented in these courses as well ("Advanced Students," 2011). After one year of implementation, the influx of students into these classes did not damage the district's pass rate, as the pass rate increased by one percentage point (Bromberg, 2014). In 2013, the district achieved its goal and fully closed the AP and IB access gap (Theokas & Saaris, 2013). Principal Liz Drake feels the importance of the program lies in the students' learning to believe in themselves. "We really are creating a culture of students believing they can do it," Drake said. "Students who previously had no idea they had a chance of going to college [now] have the chance of a future" (as cited in Bromberg, 2014, para. 6).

These are only a few representative examples of how AP and IB programs continue to expand and include students with a broader range of backgrounds and abilities. Due to pressure for college applicants to have taken the most rigorous courses, pressure for districts to provide a more rigorous curriculum to better prepare high-school students for college demands, and pressure for districts to close the achievement gap, districts have created several initiatives and programs to encourage AP and IB participation and success among their students.

Incentives to Increase AP and IB Participation

Consequently, AP and IB programs have shifted "from being a standard for college admissions to being a cornerstone of American high school reform" (Gallagher, 2009, p. 117). To maximize student participation in AP and IB programs and increase access to the programs particularly among traditionally underrepresented groups, federal and state governments, organizations, and districts are providing financial, accountability, and scholarship incentives for program participation and success–for both teachers and students alike. In fact, depending on where they live, attend school, and/or work, students and teachers now can cash in on AP and IB programs. Teachers may receive cash bonuses for their students' exam scores, and students may receive exam fee assistance, payments for successful performance, and, like Maria Fuentes, even new vehicles.

National incentives. Students who typically could not have afforded to pay for AP and IB exams now have several opportunities to obtain necessary funds. Not only does The College Board (n.d.-h) offer AP exam assistance by a $28 fee reduction from the $89 test fee for low-income students, but also the federal government, as well as initiatives such as the National Math and Science Initiative, provides exam fee assistance and additional supports to increase AP and IB program participation.

Federal policymakers have devoted substantial funds to provide more students with access to first-rate curricula (Byrd, 2007; College Board, n.d.-h). In 2006, the U.S. Department of Education provided 33 grants totaling 17 million dollars to boost low-income students' participation in AP courses and gave over two million dollars to the North American IB program to assist with its expansion in Title I schools (Byrd, 2007). The U.S. Department of Education continues to provide financial awards and grants to state and local education agencies, enabling schools to expand access to pre-AP and AP courses and exams, particularly among low-income students who participate in the free-and-reduced lunch program (Holstead et al., 2010; U.S. Department of Education, n.d.-b). This funding, known as the Advanced Placement Incentive (API) Program, covers the cost of three-year grant awards for campuses. Remaining funds are distributed through a competitive process to state and local education agencies and used to promote the development and expansion of pre-AP and AP programs on secondary campuses where at least 40% of students come from low-income families (Holstead et al., 2010). API funds also have been used to expand access to the IB program such as in states like Oregon ("National Inventory," 2006). In 2012, additional federal funding became available that allowed most states to subsidize fully all exams taken by qualifying low-income students (College Board, n.d.-h). In August, 2013, alone, $28.8 million in grants was distributed among 42 states to cover costs for administering AP tests to low-income students (Alpert, 2013).

Besides the federal government, other initiatives exist that promote and reward participation in rigorous courses as well. For instance, the National Math and Science Initiative, a non-profit organization that launched in 2007, is working to improve student performance in science, technology, engineering, and math across the United States by promoting AP participation. To increase college readiness, teacher effectiveness, student participation, and student achievement in AP math and science courses, all students at participating high schools may enroll in AP courses no matter their prior academic performance (National Math and Science Initiative, n.d.). Participating campuses receive support for three years, totaling $500,000 per school (Schoof, 2013). The program offers extensive teacher training, including a mentor for each AP teacher, extra help for students on Saturdays, and awards for both teachers and students (Schoof, 2013). In fact, the program provides financial incentives, rewarding all students scoring at least a 3 as well as their instructors with $100 for each test passed ("Advanced Placement Classes for All," 2011). This initiative continues to grow annually. During the 2012-2013 academic year, 462 high schools throughout 18 states participated in the program (Schoof, 2013), and by 2013-2014 academic year, the initiative reached 560 within 22 states (National Math and Science Initiative, n.d.).

State incentives. Several states have implemented both mandates and incentive programs to increase access, participation, and success in AP and IB programs (Holstead et al., 2010). States have increasingly begun to require districts to offer college-credit-bearing transition courses such as AP or IB and encourage students of all abilities to enroll ("National Inventory," 2006). For example, Colorado and Michigan require that schools participate in the AP program to be accredited (Holstead et al., 2010). Indiana mandates that every high school offer at least two AP courses and every school district provide AP science and math courses to increase math and science proficiency (Holstead et al., 2010). Additionally, Indiana school districts must report the percentage of students taking AP exams and percentage scoring 3 or higher, as improvement in the percentage of AP scores is a criterion for placement in the top two categories of the state's school improvement and performance accountability system (Holstead et al., 2010).

Furthermore, states also have begun to ensure students receive college credit for successful performance, as seven states currently require all public colleges to accept AP and IB scores for course credits (Campbell, 2009; Isensee, 2012; Pope, 2012). In addition to mandates, several states offer financial incentives. Indiana, for instance, rewards campuses with bonuses for AP performance and factors AP into its accountability formula (Pope, 2012). Florida awards additional points for students' accelerated coursework, which translates into higher letter grades and more money and prestige for schools (Isensee, 2012).

All 50 state governments provide exam fee assistance for students who need it. They offer test fee subsidies, paying at least a portion for each AP or IB exam fee for eligible, low-income students and, in some instances, give schools additional exam fee subsidies (Givens, 2012; Holstead et al., 2010). Some states such as Oregon pay entire AP and IB exam fees for low-income students (Hammond, 2014). Three states pay entire AP exam fees for all students taking AP exams (Isensee, 2012). Several states allot qualified students a specified amount to be used toward exam fees. For instance, the Idaho State Department of Education announced in 2014 that all high-school juniors can access up to $200 per year to cover college-credit-bearing exams, and seniors may access up to $400 per year (Clark, 2014, "State Rolls Out").

Students participating in AP and/or IB courses may also be eligible to receive scholarships provided by their states. Several states such as Arizona, Kentucky, and Massachusetts include AP and/or IB performance as a prerequisite to receive certain scholarships (Holstead et al., 2010). In Florida, students who obtain the IB Diploma are automatically qualified for a Bright Futures Florida Academic or Medallion Scholars

Award. These awards are funded by the Florida lottery, and students can receive up to $103 per semester hour (Florida Department of Education, n.d.). Students who pass an AP exam in Minnesota can receive an Achieve Scholarship worth up to $1,200 (Holstead et al., 2010). Massachusetts waives tuition for eight semesters at a state postsecondary institution for any student passing two AP exams and maintaining a 3.3 GPA (Holstead et al., 2010). These are just a few examples of state-based scholarships and awards for students who participate and succeed in AP and IB programs.

Another way states encourage AP and IB participation, effort, and success is through rewarding both students and their teachers with cash awards. Students may receive financial rewards based on their exam scores, and teachers may receive bonuses for their students' meeting performance goals (Holstead et al., 2010; Jackson, 2010). For instance, the Texas Advanced Placement/International Baccalaureate Incentive Program (APIP) was established in 1993 to improve students' college readiness and matriculation by increasing their participation in rigorous courses such as AP. The program targets primarily low-income, minority-majority districts and funds exam fees, teacher training, and campus awards–which include financial incentives for students and their teachers for students’ AP and IB performance (D. Gonzales, personal communication, July 8, 2013; Holstead et al., 2010; Jackson, 2010; Texas Education Agency, n.d.). The students and the teachers have received between $100-$500 for each passing score (Holstead et al., 2010; Jackson, 2010).

After the first year of APIP implementation among Dallas high schools, results were promising and influenced similar incentive programs in other cities and states. The number of students at participating Dallas high schools taking AP exams in math, English, and science more than doubled, increasing from 269 to 729. By 2002, these schools reported 132 passing scores per 1,000 juniors and seniors, compared with 86 per 1,000 statewide and 80 per 1,000 nationwide (Jackson, 2010). Because of the program's "perceived success," by 2010 it had expanded to over 40 schools in Texas (p. 592). Additionally, New York City and New Mexico adopted similar programs, and schools in seven other states received grants to replicate APIP (Jackson, 2010).

The amount of funding for the Texas APIP program fluctuates annually, and the availability and amount of campus awards is not stable. As a general rule, schools interested in participating are put on a list and then possibly matched with or selected by a private donor who determines the size of the financial rewards and pays for 60-75% of the total program costs with the rest covered by the district (Jackson, 2010). Debbie Gonzales (personal communication, July 8, 2013), the Texas Education Association Curriculum Division Program Coordinator, explained that funding for the APIP campus awards is an estimate of the remaining funds after all test fee subsidies and teacher training reimbursements have been paid. Since APIP funding was reduced in 2011, however, the campus awards have not been funded since the 2010 exams.

Alabama, one of the states receiving grant money to replicate the APIP (Jackson, 2010), developed a public-private partnership called the Advanced Placement Training and Incentive Program (APTIP). APTIP provides financial stipends for both teachers and students who participate in the AP program. In addition to stipends, APTIP provides student study sessions, teacher training, and support from master teachers. A joint project of the state Department of Education and the A-Plus Education Partnership, the APTIP program served 76 public high schools during 2012-2013, and 97 schools participated in

2014 due to increased state funding. Participating schools saw a 101% average increase in passing AP scores, 14 times the national average, during their first year. Of the 8,793 math, science, and English AP exams that were passed among students enrolled throughout 221 Alabama high schools in 2013, 54% of these tests were passed by students in APTIP schools (Alabama State Department of Education, 2009; "State Department," 2013).

The largest state-sponsored financial incentives for schools and teachers can be found in Florida. Designed to promote participation in AP and IB courses and college enrollment among minority and underrepresented students, Florida's incentive program provides schools with $700 per student who passes an AP or IB exam with a score of 3 or 4, respectively, and their teachers with $50 for each student's passing score up to a $2,000 maximum reward (Florida House of Representatives, 2011; Holstead et al., 2010; Isensee, 2012; B. Sullivan, personal communication, October 31, 2013). At campuses with "D" or "F" ratings, teachers can receive an extra $500 for one student who passes with a $2,000 maximum (Florida House of Representatives, 2011; Holstead et al., 2010; Isensee, 2012).

Brian Sullivan, for instance, who teaches IB Spanish Language at Lecanto High School in Florida, received $2,000 in 2013. Of his 52 students, 44 made a passing score of 4 or above on the corresponding 2013 IB exam (personal communication, November 1, 2013). Sullivan received a $50 cash bonus per passing score up to the maximum $2,000. Sullivan said the incentive allows him to dedicate more energy to his IB classes rather than getting an additional job to supplement his salary, which is important since his students' test scores serve as 50% of his yearly evaluation and are directly tied to the campus' "grade" that helps determine the school's funding (personal communication, November 1, 2013).

District and campus incentives. Incentives for more students to enroll in advanced courses also exists at district and campus levels. School districts frequently offer weighted grades on a 5-point scale, rather than the traditional 4-point scale, for advanced courses. This policy motivates more students to enroll in AP and IB courses rather than reject the opportunity from fear that a more challenging class could negatively affect their GPA, class rank, and admission to college (Gallagher, 2009; Wind, 2014). Although local districts typically decide whether or not to weight grades, some states such as Washington are considering mandating districts to give additional weight to AP and IB courses (Devitt, 2014). Weighting grades naturally encourages students of mixed abilities who would like to attend college to enroll in AP and IB courses.

Several districts also offer tangible rewards for students who enroll in an AP or IB course and/or pass the exam(s). For instance, Houston Independent School District (HISD) (n.d.), the seventh-largest district in the United States, offers incentives for students to enroll in AP and IB courses, particularly minorities or those with low incomes, as part of their Cool to Be Smart program (“Advanced Placement Initiative,” 2008). Incentives include drawings for prizes such as new vehicles, laptop computers, and college scholarships (“Students Can Win,” 2011). Additionally, the district pays students' exam fees (Mellon, 2012). Superintendent Terry Grier unveiled the Cool to Be Smart program in 2011 and said:

> We want all our students who graduate from HISD to take rigorous courses such as AP or IB and be better prepared for college. By giving incentives, we want to

> encourage our students to work hard in school and continue with a higher education. We want it to be cool to be smart in HISD. (as cited in "Students Can Win," 2011, para. 2)

Former HISD students like Maria Fuentes, who won a new vehicle in 2012, have benefitted from this program. Although Fuentes only passed one of the nine AP exams she took, she stated the Cool to Be Smart program motivates students to take advanced courses, and her AP courses indeed better prepared her for college (personal communication, September 12, 2013).

A citywide, privately-funded program that began in 2007 offered financial incentives for students at 31 New York City schools with large minority enrollments. The Rewarding Achievement (REACH) program was designed to improve college preparedness and college graduation rates of low-income high-school students, particularly racial groups typically underrepresented in higher education (Holstead et al., 2010). This incentive program aimed to increase AP participation by offering students free AP workshops and other resources as well as $500-$1,000 REACH Scholar Awards to students scoring a 3 or higher on an AP exam (Holstead et al., 2010; Monahan, 2010). The program also rewarded schools with REACH Bonus Grants that could be used to improve academic programs, course offerings, and professional development (Holstead et al., 2010). From 2007-2010, students at participating schools took 39% more exams, and the number of passing scores increased by 21% (Holstead et al., 2010; Monahan, 2010). REACH co-founder Whitney Tilson cited the results as a success since more students enrolled in AP courses:

> Sometimes when they take an AP course, it blindsides them. They get a 1 or a 2, but going off to college with their eyes open and having the experience of doing a college-level class gives them confidence, the preparation. (as cited in Monahan, 2010)

Later data revealed the student incentives were not as effective as originally thought, however.

The REACH program was ultimately discontinued in 2012 (W. Tilson, personal communication, April 25, 2014). In 2010, students passed only 15 more exams than the previous year, less than a 1% increase (Holstead et al., 2010; Monahan, 2010). REACH staff studied the effects of their incentives by using control and experimental student groups and found there were ultimately no statistically significant differences in student outcomes–beyond just larger course enrollments–when student incentives were offered (W. Tilson, personal communication, April 25, 2014). Tilson said they learned incentives work best when offered to the teachers in conjunction with further training and support, as is done with the National Math and Science Initiative. However, the teacher unions in state of New York did not allow performance pay, so the REACH program was discontinued (W. Tilson, personal communication, April 25, 2014).

Some districts are rewarding both students and teachers simultaneously. Alabaster City Schools in Alabama, for instance, recently received grant funding, approximately $85,000 per school, to funnel more students into AP classes (Wagner, 2014). Beginning with the 2014-2015 academic year, students who earn a C or better in standard, on-level courses will be recommended for pre-AP courses that subsequently lead to AP course participation. Additionally, students scoring a 3 or higher on math, science, or English AP tests will receive a $100 bonus per qualifying exam. Students' teachers, too, will receive a $100 bonus for each student's qualifying score (Wagner, 2014).

Instead of offering incentives for AP and IB participation, some campus administrators heavily recruit all students to enroll in advanced courses. Woodside, a large arts magnet school in Virginia, is among a group of schools nationwide pushing to expand access to advanced math and science courses in response to low proficiency scores in these content areas (Toppo, 2012). School faculty and staff treat AP like a sports team, heavily recruiting students no matter their GPA, training them during after-school tutorials, paying for the exams, and making it difficult to drop the course(s) once enrolled. For a student to drop an AP course, the student must have attended at least three tutoring sessions, both the parent and teacher must sign a withdrawal form, and a parent must meet with a counselor to approve the withdrawal. Principal Sean Callender pushes the program when he talks with parents, and remarked, “If you’re getting good grades already, why don’t you step up to the next league?” (as cited in Toppo, 2012, para.11). Although the campus saw a 75% rise in the AP math and science participation rate since 2006, exam scores were “not the highest in Virginia” (para. 13). Callender said the school’s job becomes tough when students work hard yet score only 1s or 2s: “You kind of have to help them reflect on their year. You’re better off trying to convince them that they’re better off” (para. 14), that AP courses provide benefits even when students fail the test.

Administrators at some campuses go beyond heavily recruiting and instead sign all students up for advanced courses. Beginning in fall 2012, all ninth-grade students attending Tigard High School in Oregon are required to enroll in an advanced English course regardless of their previous academic performance (Merritt, 2012). The basic ninth-grade English class was eliminated, and all students now take Advanced Freshman English and may receive an honors designation on their transcript by completing additional requirements. Gifted and non-gifted students are heterogeneously grouped under the premise that “beneficial competition arises when students with various learning levels work together,” which raises the bar for all students by challenging those who have not been challenged previously (Merritt, 2012, para. 2). Likewise, students at Grand Valley High School in Parachute, Colorado, are automatically enrolled in AP English courses, and beginning in the 2014-2015 academic year, every social studies class will be an AP class as well (McKibbin, 2014). Principal Ryan Fink said students get "perseverance and grit" out of taking AP classes at Grand Valley (as cited in McKibbin, 2014, para. 13). Fink said the students will be "much better suited to be positive, contributing members of whatever community they end up in because they know how to persevere and show some grit when things get rough" (para. 14).

No matter how students score on AP or IB exams, their participation in the courses alone boosts their campus' local, state, and national rankings ("About the High School Challenge," n.d.; "America's Best High Schools," 2012; Bowie, 2014; Children at Risk, n.d., Mellon, 2012; Morse, 2013; Pope, 2012). For instance, the Children at Risk (n.d.) organization's staff rank all eligible high schools in Texas to help parents and students by providing them with a performance comparison of campuses and districts. Indicators include the number of AP and IB test-takers and the number of AP and IB tests passed, weighted at 5% respectively for a total weight of 10% (Children at Risk, n.d.).

AP and IB enrollment also is considered in *Newsweek*'s ranking of the top high schools in America ("America's Best High Schools," 2012). For years, the number of AP tests taken per graduate was the sole factor used to determine the rankings for the "Best American High Schools." In 2011, *Newsweek* developed a new formula that included additional criteria (Pope, 2012). Other factors include the four-year, on-time graduation rates (25%); percent of graduates accepted into college (25%); average ACT or SAT scores (10%); and the number of AP, IB, or AICE courses offered per student (5%). In addition, the *number* of AP, IB, or AICE tests taken per student accounts for 25% of the overall campus score and ranking. Actual performance on the AP, IB, or AICE exams accounts for only 10% ("America's Best High Schools," 2012).

Other high-school ranking systems rely even more heavily or solely on AP and IB course enrollment. For instance, the *U.S. News & World Report*'s college readiness index relies only on AP and IB test data, with an AP and IB test participation weight of 25% and the number of AP and IB exams passed weighted as 75% (Morse, 2013). Additionally, *The Washington Post's* Challenge Index, a system ranking how effectively high schools prepare students for college that began in the Washington, D.C., area in 1998 and expanded nationwide in 2011, relies solely on the number of AP or IB examinees, despite how examinees perform ("About the High School Challenge," n.d.). The formula involves dividing the number of AP, IB, or other college-level tests given by the campus by the number of graduating seniors. This measure reveals "the level of a high school's commitment to preparing average students for college" ("About the High School Challenge," para. 2). Districts such as Houston ISD are benefitting from these ranking systems, for although 70% of students' AP scores were 1s or 2s, the district almost doubled the number of AP tests taken annually (Mellon, 2012). Clearly, a campus or district potentially can achieve higher rankings by heavily marketing AP and IB courses to all students and offering attractive incentives.

Research on incentive programs. Little research exists examining the effects of incentive programs and what factors increase participation in AP and/or IB programs. Of the existing studies, the effect(s) of incentive programs is not yet clear. One qualitative study commissioned by the Thomas B. Fordham Institute involved more than 1,000 interviews with AP teachers nationwide to determine what factors explain the growth in AP programs and what impact this growth has on course quality (Farkas & Duffett, 2009). Teachers did not see financial or scholarship incentives as a significant motivating factor for student growth. They attributed the growth of the AP program primarily to student pragmatism. Ninety percent of the responding teachers said students enroll to strengthen their college applications rather than seek intellectual challenge, whereas only 32% saw AP enrollment as a result of students' intellectual aspirations. The teachers also felt AP growth is boosted by district and campus policies. For instance, most high schools have stopped gatekeeping in favor of open enrollment to improve their schools' rank and reputation, which attracts too many students who overestimate their abilities and parents who push their children to enroll. The study's results suggest that AP teachers believe program quality is still strong, including course rigor, exam integrity, and student scores. However, more than half of the teachers feel troubled by the students who cannot meet the course expectations or who only enrolled because of their parents as well as overall declining student aptitude and skills (Farkas & Duffett, 2009).

The report's forward, in fact, mirrored Gallagher's (2009) concern that as AP and IB classes become more heterogeneous, the course quality and rigor may wane. Authors Chester Finn, Jr., and Amber Winkler concluded:

> We find their [responding teachers'] views about AP growth to be conflicted, mostly positive toward the program's expansion yet tinged with concern that the quality of the AP student body is diminishing. "A little more gatekeeping, please," is one message we hear, if faintly . . . (p. ii). The United States has been succeeding in ensuring that the AP program is available to more students, including the disadvantaged among them. But we'd be wise now to make sure that further growth is judicious, not foolhardy. As we seek to substantiate school spending in economically challenging times, we need to know if the benefits accruing to students–whether they be willing, able, or willing and able–justify the program's costs. Similarly, if tough choices have to be made, who will (or should) benefit more in the long run–pupils deemed best able to handle the rigors of AP or those less able but nonetheless willing to take the plunge? Will the warning signs identified by teachers (e.g., students in over their heads) lead to eventual watering down or beefing up of the program? Will the progress of our brightest AP students turn "languid" even as we applaud the gains of middle or lower performing pupils? Or will we avoid all such revelatory data, honest analyses, and tough choices and simply hope, without knowing for sure, that we can be equal and excellent, too? (Farkas & Duffett, 2009, p. v)

Since the advanced academics landscape continues to shift, perhaps these questions are best left unanswered until more consistency in the population(s) served is reached.

A later study, however, suggests incentive programs do, in fact, encourage participation in AP and IB course and improve student outcomes. Jackson (2010) examined the effectiveness of the Texas APIP by comparing the change in outcomes of groups within the same schools before and after the APIP adoption to the change in outcomes in groups in comparison schools. Jackson (2010) found that the APIP significantly increased AP or IB course enrollment, the number of AP and IB exams taken, and the number of SAT scores above 1100, the number of ACT scores above 24, and the number of students who matriculated from college. The data indicate the improvements were largest for minority students and served as "the first evidence that a well-designed cash incentive program for students and teachers can improve short-term and longer-term outcomes" and that increasing student participation in rigorous courses can positively influence student outcomes (p. 594). Jackson's (2010) study did not examine AP or IB students' exam scores, and the long-term effects of the APIP on college and career outcomes remains unknown.

Misleading Statistics about Heterogeneous Grouping in AP and IB

Some researchers caution the numbers showing AP and IB program growth and increases in passing scores due to mixed-ability grouping may be misleading. Holstead et al. (2010) noted, “These positive nationwide trend data, however, may mask some negative data. Along with the increase in AP participation, a decrease in success rates has emerged” (p. 4). For instance, the percentage of students nationwide taking an AP exam and scoring a 3 or higher dropped from 64.4% in 2003 to 60% in 2009 (Holstead et al., 2010). Mirroring nationwide trends, Indiana’s AP accountability incentives have led to increased program participation, but the percentage of students scoring a 3 or higher has decreased slightly over time, and Indiana's focus on AP math and science courses did not produce results distinguishable from statewide results in other subjects (Holstead et al., 2010).

Other data may be misleading as well. For example, over a two-year period, HISD–where Dodge-Caliber-winner Maria Fuentes attended, took nine AP courses and exams, and passed only the Spanish Language test–almost doubled the amount of AP tests taken by students and saw a 36% increase in scores of 3 or higher. However, 20% of the increase in scores stemmed from the Spanish Language exam (Mellon, 2012). HISD, with a current overall 62.4% Hispanic and 20.8% bilingual student population (HISD, n.d.), has, according to Mellon (2012), assumedly encouraged its native Spanish-speaking students to take the test. Furthermore, 70% of students taking AP exams overall still scored 1s and 2s (Mellon, 2012).

Another example includes the state of Maryland, a leading participant in the AP program where campuses offer as many as 25 AP classes per school. In 2013, more than half of the state's high-school graduates had taken at least one AP class, and at least 30% had passed at least one exam–the highest rate in the nation (Bowie, 2013, 2014). However, *The Baltimore Sun* reporters examined students' grades for AP coursework and their 2012-2013 exam scores in the Baltimore area and found a troubling discrepancy (Bowie, 2013). In 19 high schools, more than 50% of students earning an A or B in an AP class failed the corresponding exam. At two schools with large numbers of minority and low-income students, failure rates exceeded 75%. In response, Steve Syverson, board member of the National Association of College Admission Counseling and former dean of admissions at Lawrence University in Wisconsin, said students may be lulled into a false sense of security when they pass an AP class but fail the exam and enter college having to take remedial classes. Syverson stated:

> The kids . . . are just doing what society is telling them to do. We just set those kids up for complete failure because they just get hammered when they get to college. (as cited in Bowie, 2013, para. 6)

Trevor Packer, head of AP for the College Board, has acknowledged this problem as well, stating that although the College Board believes most students benefit from AP classes, the program is misused in some schools when unprepared students are encouraged to participate. For instance, the College Board predicted that only 2,000 African American students in Maryland had a strong chance of passing an AP test based on other test scores, yet 20,000 African American students in Maryland took AP exams the previous year (Bowie, 2013).

Controversy Surrounding Mixed-Ability Grouping

Grouping students by ability was a controversial practice when first used over 100 years ago, and it remains a hotly debated topic today (Davis & Rimm, 2004; Kulik, 2003; Vogl & Preckel, 2014). Proponents for increased heterogeneous grouping in advanced courses feel it lessens social inequalities and improves regular students' academic outcomes. Advocates for gifted education, however, assert that increasing heterogeneity, deprives gifted students of homogenous grouping opportunities necessary to meet their unique learning needs. Furthermore, encouraging students with a wide range of ability and potential can cause unintended, negative consequences such as universities' no longer accepting AP or IB credits and campus' not having the resources to serve all eligible students.

Social inequalities. Proponents of mixed-ability grouping suggest it lessens social inequalities that have been exacerbated by homogeneous grouping. Respected voices in educational policy such as Jeannie Oakes and Linda Darling-Hammond argued that separating by ability encourages a caste system where student groupings are based more on ethnicity and socioeconomic status rather than academic ability (as cited in White, 2012). For example, the New York City public school system's gifted program was recently referred to as flawed because it reinforces racial separation and contributes to disparities in achievement (Baker, 2013). At P.S. 163, one of the elementary campuses, the gifted classes in 2013 did not reflect the racial dynamics of the neighborhood or school. The student population consisted of approximately 63% African American and Hispanic students, 27% white students, and 6% Asian students. However, the gifted program included 47% white students, 15% Asian students, and 32% African American or Hispanic (Baker, 2013). Because overall lack of diversity in gifted programs is not uncommon, critics of gifted programs contend:

> [G]ifted admissions standards favor middle-class children, many of them white or Asian, over black and Hispanic children who might have equal promise, and that the programs create castes within schools, one offered an education that is enriched and accelerated, the other getting a bare-bones version of the material. Because they are often embedded within larger schools, the programs bolster a false vision of diversity . . . while reinforcing the negative stereotypes of class and race. (Baker, 2013, para. 18)

Since students may not have equitable access to rigorous coursework due to their location, background, and socioeconomic status, homogeneous grouping commonly is viewed as discriminatory toward minority students who are overrepresented in slow tracks and underrepresented in advanced courses (Davis & Rimm, 2004; Kulik, 2003).

Improved academic outcomes for regular students. Supporters of heterogeneous grouping believe gifted and regular students should work alongside each other, as doing so positively impacts regular students' academic outcomes. Most research examining the effects of heterogeneous grouping on average students was conducted in the 1980s and concentrated on elementary classrooms. Overall, results showed mixed-ability grouping improved less able students' academic performance, motivation, self-esteem, and leadership abilities (Oakes, 1985; Salvin, 1987).

A more recent experiment at Cloonan Elementary School in Stamford, Connecticut, illustrated how academic outcomes for non-gifted students improved when they were placed alongside their gifted peers (Hu, 2009). Traditionally, Cloonan Elementary School students were placed in academic courses based on their previous year’s test scores. In 2009, though, sixth and seventh graders with mixed abilities, both gifted and non-gifted, were heterogeneously grouped in science and social studies classes. At the end of an eight-week period, struggling students' grades improved and they exhibited fewer behavior problems in the classroom. Why? Deborah Kasak, Executive Director of the National Forum to Accelerate Middle Grades Reform, explained that good students model good behavior for other students, and less motivated children learn from the more motivated ones (Hu, 2009).

Regarding the effects of mixed-ability grouping on regular students enrolled in AP or IB courses, the limited research has revealed mixed results. Sheila Byrd (2007), in her introduction to a study of rigor in AP and IB courses sponsored by the Thomas B. Fordham Institute, noted:

> Taken at face value, policies that induce more students to sign up for rigorous high school courses are swell. Only a churl would argue against offering the best educational opportunities to more youngsters. As Robert Maynard Hutchins remarked decades ago, "The best education for the best is the best education for all." (p. 7)

A limited number of studies and initiatives have shown positive academic outcomes such as college enrollment and persistence resulted from regular students' taking AP and IB courses. However, most research to date has focused on the increase of access rather than influence on academic outcomes ("Advanced Students," 2011; Coca et al., 2012; College Board, 2013-a, 2014; Theokas & Saaris, 2013; W. Tilson, personal communication, April 25, 2014).

Homogeneous grouping needs of gifted students. While mixed-ability arrangements may benefit student outcomes in the aggregate, they may not be the best option for the gifted. Sally Reis, respected psychologist and researcher, believes "[i]t's a bad time to be a gifted child in America" because support for gifted programs is at an all-time low despite research suggesting gifted students perform best with similar-ability peers (as cited in White, 2012). Brian Sullivan (personal communication, November 1, 2013), a current IB Spanish Language instructor in Florida with over 20 years of teaching experience, agrees with Reis' concern:

> [H]aving dedicated classes for the bright and gifted students is very valuable. These are students who, when lumped into regular, leveled classes, spend their

> education bored and unchallenged. . . . All too often in the regular classes, our bright and gifted students are used exclusively to help along the lower achievers; this is not necessarily wrong, but spending their educations pulling along the lower achievers is not meeting the needs or challenging bright and gifted students perform better with their like-ability peers.

Reis' and Sullivan's thoughts echo increasing concerns that as mixed-ability AP and IB classes become the norm, gifted students will lose valuable opportunities to work with same-ability peers and the classes' appropriateness for gifted students will decrease (Callahan, 2003; Gallagher, 2009; Lichten, 2000; Winebrenner, 2006).

A plethora of research suggests gifted students maximize their learning when homogeneously grouped with other gifted peers (Holloway, 2003). Most research on homogeneous grouping for gifted students is over a decade old, but it consistently shows that grouping gifted students by ability has positive and significant academic, social, and emotional effects (Holloway, 2003; Lloyd, 1999; Rogers, 2002, "Grouping the Gifted," 2007; Shields, 2002). Based on an exhaustive synthesis of research in gifted education covering published studies and representative literature from 1861-2007, Karen Rogers (2007) developed five lessons the research suggests. The key lesson that emerged from extensive literature on ability and performance grouping–127 research studies and 377 articles–was that educators must provide opportunities for gifted students to learn and socialize with their like-ability peers. Rogers (2007) asserted:

> [T]he evidence is clear that powerful academic effects and small to moderate affective effects are produced when gifted children are grouped with like-ability

> or like-performing peers and exposed to differentiated learning tasks and expectations. It is also clear that the grouping has positive effects whether full-time or part-time, although logically the more time this occurs for gifted children, the more positive the effects on them, social and emotionally. (p. 389)

Kulik (1992-a, 1992-b, 2003) found similar results in his analyses of decades of studies on grouping and tracking. Although grouping studies form a "cluttered landscape" (2003, p. 278) and vary in methodology, quality, and interpretation, one conclusion was clear. Programs in which groups of gifted students engage with curricula adjusted to their skill levels make important and significant contributions to student achievement, can boost achievement levels by an average of four months on a grade-equivalent scale, and have no adverse academic, social, or emotional effects on low- or average-ability students (Kulik 1992-a, 1992-b, 2003). In fact, Kulik (2003) noted low- and average-ability students' self-concepts typically are higher when grouped by ability rather than heterogeneously.

Studies also show that homogeneously grouping gifted students provides them with social and emotional benefits, whereas non-gifted students remaining in heterogeneous classes did not experience any ill effects. Shields' (2002) research revealed that students placed appropriately in regular classes did not suffer any negative social or emotional effects when gifted students were placed in homogeneous classes. Gifted students, however, experienced more affective gains when grouped homogeneously. Additionally, Vogl and Preckel (2014) conducted a longitudinal study of the impact of ability grouping on gifted students by comparing two groups: students enrolled full-time in special classes for the gifted and students in regular classes. The two groups were statistically matched to control for cognitive ability, gender, socioeconomic status, and school. They found that homogeneous grouping for gifted students had an initial positive effect on their social self-concept of acceptance and that gifted students exhibited more interest in school and had better student-teacher relationships over time than their regular-education counterparts.

Consequently, NAGC (n.d.-a) supports and encourages homogeneous grouping for gifted students. Their position statement indicates that strong evidence supports ability grouping for gifted students in classes such as AP and that grouping "allows for more appropriate, rapid, and advanced instruction, which matches the rapidly developing skills and capabilities of gifted students" (NAGC, n.d.-a, para. 1). To abandon ability grouping now "will further damage our already poor competitive position with the rest of the world, and will renege on our promise to provide an appropriate education for all children" (NAGC, n.d.-a, para. 5). Carol Tieso, professor of gifted education courses at The College of William and Mary, agrees and described the trend to heterogeneously-group gifted students as "killing [gifted] kids" because they "lose their love of learning and their desire to achieve" (as cited in White, 2012, para. 16).

Negative effect on university policies. Concern exists that creating more heterogeneous AP and IB classrooms weakens the curriculum and college-level academic experience within those courses. This concern is beginning to affect college and university policies regarding acceptance of AP and IB credits. One study sponsored by the Thomas B. Fordham Institute suggested that although the AP and IB exams are rigorous and demanding, the courses themselves lack an emphasis on analysis and are shallow (Byrd, 2007). Evaluators scored AP and IB courses by examining their content, rigor, and clarity. Overall program strengths revolved around the AP and IB exams, which were described as "rigorous, "comprehensive," "demanding," and "well-constructed" (Byrd, 2007, p. 13-14). However, multiple program weaknesses were identified that revolved around the courses themselves. Several courses did not include topics of importance, de-emphasized analytical skills, and/or included shallow content and a narrow focus compared with their college-equivalent courses (Byrd, 2007). With the influx of mixed-ability students and pressures for them to succeed on AP and IB exams, the concern is that these programs may be evolving into even more rigid delivery models for information, stifling gifted students like Chris Harris who learn differently than regular students, question the system, and/or who do not fit in with the prescribed AP and IB curriculum (Hertberg-Davis & Callahan, 2008).

Consequently, university admissions officers are increasingly raising the minimum scores students must earn to receive college credit and even denying credit for AP or IB exams, which they say are no longer equivalent to college courses (Adams, 2013; Byrd, 2007). Some contend that the shift in policy reflects "real apprehension that AP [and IB] course content and exam-scoring rubrics have been watered down in order to attract more (and more diverse) participants" (Byrd, 2007, p. 8). For instance, effective as of the fall 2014 semester, Dartmouth College will continue to offer exemptions and placement in some subject areas based on AP and IB exam scores, but Dartmouth no longer provides the college credit (Adams, 2013). Dartmouth faculty had been considering a change in the policy for over 10 years. School officials cited a campus experiment as an illustration of how AP and IB programs do not match college-level courses (Adams, 2013). Hakan Tell, head of Dartmouth's Committee on Instruction and a classics professor, stated, “The psychology department got more and more suspicious about how good an indicator a 5 on the A.P. psych exam was for academic success” (para. 3). As a result, the department gave a condensed version of the Psychology I final to incoming students instead of providing credits. Of over 100 students who received a 5 on the AP exam, 90% failed, and only the remaining 10% were given course credit. A follow-up experiment yielded disheartening results as well. Tell said they looked at the students who failed their campus exam but decided to enroll in Psychology I to see if they performed better than students who had never taken the AP class. They could not find any difference whatsoever (Lewin, 2013).

Random selection for AP and IB courses. Expanding AP and IB courses to include students with a wider range of ability levels, in some instances, can eliminate options for gifted students altogether and potentially harm their chances for college admission. For instance, beginning with the 2013-2014 academic year, students at Mark Keppel High School in Alhambra, California, may enroll in an AP course only if they are randomly selected by a computer-based lottery system (Watanabe, 2013). Until 2013, students could qualify to enroll in AP classes through grades and test scores. However, the principal, Jacinth Cisneros, believes this process violated the district’s equal access policy and opened access to the courses. Since there are not enough trained teachers to accommodate all interested students, students now are awarded placement by chance. This system has caused an uproar among families whose children failed to get in to an AP course and subsequent complaints, a petition, and even a Facebook Flea Market group where students swap classes with each other or offer to trade tangible items–even food–for an AP course (Watanabe, 2013). Randomly selecting students for AP or IB programs not only fails to provide true equitable access, but also it gives the selected students an unfair advantage in the college admissions process.

Instructors' Attitudes Toward Gifted Education

Significant people and environments contribute to the development of gifted students' potential by enhancing or impeding it, and Clark (2002) argued that classroom teachers have the most powerful influence on gifted students' learning and achievement. While the relationship between teachers' behaviors and their attitudes toward giftedness is complex, it is generally agreed that attitudes do influence one's behaviors, perceptions, and judgments. VanTassel-Baska, MacFarlane, and Feng (2006), in reviewing the literature about how teacher perceptions and beliefs affect teaching practices, found that teacher attitude, combined with subsequent action, are “critical change factors” (p. 38). In fact, teachers must believe strategies will enhance learning and their attitudes must change *first* before they integrate new instructional techniques (VanTassel-Baska, MacFarlane, & Feng, 2006).

According to Bohner and Wänke (2002) and Lassig (2003), teachers with positive attitudes toward giftedness are more likely to support gifted education and serve gifted students in the classroom. However, in the area of gifted education, most surveys measuring instructors’ attitudes toward gifted education over the last 20 years have revealed ambivalence and a lack of consensus about the need for gifted education services (Bégin & Gagné, 1994; McCoach & Siegle, 2007). McCoach & Siegle (2007) explained:

> Fears of elitism cause many educators to view gifted education as involving special privileges for the “already advantaged.” The pendulum of public opinion

> sways between the quest for excellence and the need for equity. In this era of "No Child Left Behind," concerns about equity of instruction and achievement appear to override concerns about "raising the academic bar." The effects of this zeitgeist on regular education teachers' attitudes toward the gifted are unknown. (p. 246)

In examining research surrounding teachers' attitudes toward gifted students, McCoach & Siegle (2007) noted that since researchers began showing interest in this area as early as 1942, teachers' attitudes have remained unclear. While Gagné's (1983) study suggested teachers have positive attitudes toward the gifted, Cramond and Martin's (1987) research indicated they harbor negative attitudes. Several studies have shown overall mixed attitudes as well (Copenhaver & McIntyre, 1992; Megay-Nespoli, 2001). Additionally, because most of these studies did not use either a random or representative sample of teachers, they may not generalize to the general population of teachers (McCoach & Siegle, 2007).

McCoach and Siegle (2007) more recently explored instructors' attitudes toward the gifted. One of their research questions included, "How do regular education teachers currently feel about providing specialized services for gifted students?" They used Gagné and Nadeau's Attitude Scale (Gagné, 1991-a) and mailed the surveys to a national, random sample of 1,500 teachers and received 262 responses. Their data suggested that teachers generally supported gifted education, but their attitudes about acceleration and the notion that gifted education is elitist were primarily neutral or slightly negative. Furthermore, they discovered that teachers both with and without training in gifted education harbored similar attitudes toward the gifted, and special education teachers held slightly lower attitudes toward the gifted overall compared with teachers with no special education background.

One study focused specifically on AP instructors. Bronwyn MacFarlane (2008) investigated teachers' perceptions toward gifted education in her dissertation using Gagné and Nadeau's Attitude Scale (Gagné, 1991-a) and found mixed results. In her correlational study, she targeted a national, random sample of high-school AP world language instructors and received 44 responses. Her results indicated AP world language teachers held slightly positive attitudes toward the social usefulness of gifted people and the necessity to support gifted students through special services. However, the teachers held slightly negative attitudes about school acceleration and ambivalent attitudes about ability grouping, the isolation of gifted people by others, and the need to actively advocate for gifted students.

Some research has examined instructors' attitudes toward gifted students in particular, rather than gifted education as a whole. For example, Copenhaver and McIntyre (1992) assessed K-12 teachers' perceptions of gifted students by asking them to list the characteristics that came to mind when thinking of gifted students. Responses from the 85 participants, with various levels of experience and preparation in gifted education, were divided into categories and ranked. The distribution of elementary teachers' responses significantly differed from the response distribution of secondary teachers. Elementary teachers most often listed negative characteristics of gifted students such as inattentive, bored, rebellious, and lazy, while secondary teachers listed negative characteristics much less frequently. Copenhaver and McIntyre (1992) attribute this difference to the presence or lack of ability grouping:

> [T]he difference in this study can be partially attributed to grade level taught in that the elementary teachers identified more negative characteristics than the secondary teachers did. This may be due to initial heterogeneous placement of pupils by age groups in elementary classrooms. Gifted students enter those classrooms with atypical skills and behavior manifestations while secondary students through several years of schooling often sort themselves or are placed in homogeneous academic and non-academic tracks and may be placed in accelerated or slow tracked classes with their ability peers. (para. 17)

The reasons for these perceptual differences warrant further study, particularly due to increasing trends in mixed-ability grouping arrangements in secondary AP and IB courses.

Differentiation for Gifted Learners in Heterogeneous Courses

Because advanced courses such as AP and IB are the leading method used to serve high-school gifted students (Hertberg-Davis, Callahan, & Kyburg, 2006; *State of the States*, 2013), it is assumed gifted students' unique learning needs will be met through the accelerated course content, which is designed to cover the information, skills, and assignments found in the corresponding college course (College Board, n.d.-e). However, due to the increasing diversity of abilities among enrolled students, differentiated instruction should occur to provide gifted students with appropriate and effective learning experiences (Borland, 2009; Tomlinson, 2001; Tomlinson & Jarvis, 2009). In fact, although most states do not dictate required components of a gifted program, of the 26 states with program requirements, 12 specifically mandate the use of differentiated instruction for gifted students (*State of the States*, 2013).

Differentiation defined. At the broadest level, differentiation is the philosophy that, to maximize student learning, one should provide students with a variety of methods to understand and process content knowledge and demonstrate learning (Olenchak, 2001; Tomlinson, 2001; Tomlinson & Jarvis, 2009). Tomlinson and Jarvis (2009) define differentiation as:

> [A]n approach to curriculum and instruction that systematically takes student differences into account in designing opportunities for each student to engage with information and ideas to develop essential skills. (p. 599)

Using differentiation to meet students' individual needs is not a new concept. Students today are more diverse than ever, varying in learning styles, cultural backgrounds, and academic readiness (Cassady et al., 2004), and educators frequently adjust curriculum and instruction to comply with students' 504 or individual education plans as well as assist various student subpopulations who need extra assistance. Over the last decade, differentiation has become increasingly more popular among educators of all grade and ability levels. In fact, a simple search for educational books with "differentiation" in the title reveals a 285% increase in publications between 2003-2012 compared with the previous decade, 1993-2002.

Current professional expectations for all teachers respond to the notions that students are vastly different, their differences matter, and teachers should attend to those differences during instruction (Tomlinson & Imbeau, 2010). Standards for educators outlined by prominent educational organizations such as the National Board for Professional Teaching Standards, National Association for the Education of Young Children, National Middle School Association, and National Association of Secondary

School Principals reflect that teaching and learning approaches should accommodate for students' individual academic needs. For example, to be recognized as a National Board Certified Teacher, applicants must "recognize the individual differences that distinguish their students from one another and . . . take account of these differences in their practice" as well as "know how to assess the progress of individual students as well as the class as a whole" (as cited in Tomlinson & Imbeau, 2010, p. 5). Additionally, the Interstate New Teacher Assessment and Support Consortium's (INTASC) expectations for new teachers include designing instruction appropriate to students' stages of development and needs, providing opportunities for different performance modes, accessing services and resources to meet exceptional learning needs, and adjusting instruction to accommodate learning differences (as cited in Tomlinson & Imbeau, 2010). These expectations apply to all students, including the gifted and high-performing.

Need to differentiate for gifted students. According to the rationale that students with exceptionalities should receive modifications or differentiation to receive appropriate, effective instruction, Borland (2009) argued the same principle should apply to gifted students, as they are a special population due to their capacity of high performance:

> Unless these needs are addressed by modifying curriculum and instruction in a manner that responds directly to the characteristics that make gifted students exceptional, these students will not receive the effective instruction they, along with all other students in our schools, deserve. (p. 106)

The concept of differentiation for gifted students has existed for over 40 years, beginning with Ward's efforts in 1961 to meet the needs of gifted students as a group. Later approaches focused on gifted students' individual interests and needs, and, in response, curriculum differentiation approaches and strategies emerged (Olenchak, 2001). Beginning in the 1990s, with the onset of high-stakes testing and more inclusive environments, differentiation for gifted students aimed more at ensuring their high performance on standardized tests and helping teachers serve them in the regular classroom (Olenchak, 2001; Tomlinson, 1999).

Prominent gifted education advocate and researcher Joyce VanTassel-Baska (2005) lists differentiation as one of the "nonnegotiables" of gifted programs and services (p. 90). She stated:

> A differentiated curriculum is one that is tailored to the needs of groups of gifted learners or individual students, and provides experiences sufficiently different from the norm to justify specialized intervention, delivered by a trained educator of gifted learners using appropriate instructional and assessment processes to optimize learning. (p. 93)

Exemplary teachers of the gifted agree that differentiation is a "nonnegotiable" (VanTassel-Baska, 2005, p. 90). In VanTassel-Baska, MacFarlane, and Feng's (2006) study examined instructors' beliefs about best teaching practices for gifted students. Teachers nominated as exemplary from both the United States and Singapore cited knowledge and effective use of differentiation as essential when working with the gifted. In fact, the teachers agreed that differentiating to meet individual students' needs was a principle of teaching to live by.

How teachers differentiate varies, though, as no formulaic set of procedures for implementing differentiation exists (Tomlinson & Jarvis, 2009). One form of differentiation for gifted students in heterogeneous classrooms involves cluster grouping, which entails placing 5-10 high-ability students in a class alongside 15-20 regular students (Davis & Rimm, 2004). The teacher, trained in gifted education, alters the curriculum and instruction for these students by having individuals or the cluster group engage in enrichment activities that focus on advanced, complex content and build creativity, problem-solving, or research skills; engage in independent, self-directed learning; skip material they already know; and accelerate through material they do not know (Davis & Rimm, 2004).

Winebrenner (2001) identified five areas in which differentiation can occur for gifted students in mixed-ability settings:

- Content, which involves using more advanced materials, allowing learning contracts, and providing more depth and complexity;
- Process, which involves altering the methods students use to make sense of concepts considering their learning styles and offering opportunities for creative and productive thinking, meaningful research, problem-solving tasks, and opportunities to share new learning;
- Product, which involves encouraging students to demonstrate their understanding of content by producing unique, real-life products for real audiences;
- Environment, which involves allowing students to work in different learning environments under more flexible time limits; and
- Assessment, which involves allowing students to demonstrate mastery before a unit is taught and encouraging them to develop their own rubrics for independent study projects.

By adjusting the content, process, product, environment, and assessment of student learning, instructors can maximize student motivation and engagement. Recognizing the need for strategies to implement differentiation with gifted students, researchers and practitioners in gifted education have designed materials containing specific strategies for differentiation and classroom management (Cassady et al., 2004). With sufficient tools available for teachers to differentiate their curriculum and instruction, attention has begun to focus on the need to evaluate the extent and level of differentiation actually occurring in classrooms (Cassady et al., 2004).

Differentiation for gifted students in mixed-ability classrooms. Although research clearly supports the need to differentiate curriculum and instruction for gifted students in mixed-ability classrooms, the reality is that the occurrence of differentiation depends on instructors' willingness and capacity to address student differences (Tomlinson & Jarvis, 2009). Too often, instructors do not have the knowledge or commitment to differentiate curriculum and instruction for gifted students, which can negatively impact gifted students' learning, motivation, and likelihood to exhibit characteristics of giftedness (Johnsen, 2011). Thus far, limited existing studies indicate that teachers with heterogeneous classes, whether at the elementary or secondary level and whether in the general education, AP, or IB classroom, provide few opportunities for differentiation for their gifted students, if any at all.

Differentiation in general education courses. Early studies examining the extent of differentiation occurring for gifted elementary and middle-school students suggest few curricular and instructional modifications are made, if any. Archambault, Westberg, Brown, Hallmark, Emons, and Zhang (1993) administered the Classroom Practices Teacher Survey to a national, stratified random sample of over 7,000 third- and fourth-grade teachers to determine the extent to which they differentiated curriculum and instruction for their gifted and high-ability students compared with their average/non-gifted students. The results showed teachers made only minor curricular changes to meet their gifted students' needs, regardless of their geographic location or school classification. The most frequent provision made for their gifted students was the use of questioning and thinking skills; however, teachers reported they used these activities as frequently for average students as for the gifted. Only minor differences were noted in other areas including challenges and choices, reading and writing assignments, curricular modifications, enrichment centers, and seatwork.

In a related observational study, Westberg, Archambault, Dobyns, and Salvin (1993) examined the instructional and curricular differentiation used with a subset of the third- and fourth-grade classrooms included in Archambault et al.'s (1993) study. Westerberg et al. (1993) systematically observed how the third- and fourth-grade teachers modified the curriculum, materials, and verbal interactions for gifted students. The data showed similar results:

> [L]ittle differentiation in the instructional and curricular practices, including grouping arrangements and verbal interactions, was provided for gifted and talented students in regular classrooms. Across five subject areas and 92 observation days, gifted students received instruction in homogeneous groups only 21% of the time, and the target gifted and talented or high ability students

> experienced no instructional or curricular differentiation in 84% of the instructional activities in which they participated. (para. 1)

Westberg et al. (1993) concluded that in regular classrooms, little instructional or curricular differentiation occurs whether the school has a gifted program or not. Gifted students in the study primarily performed written assignments and listened to lectures, received no significant differences in the types of questions they were asked (knowledge and comprehension versus higher order), and received significantly less wait time than average-ability students. They recommended that pre-service and inservice teacher training should include specific strategies to meet gifted students' needs in the regular classroom as well as opportunities to practice the strategies and that the gifted education specialist should collaborate with regular classroom teachers who serve gifted students.

A decade later, Westberg and Daoust (2003) replicated Archambault et al.'s (1993) study involving the Classroom Practices Teacher Survey, noting that differentiation had become a more widely-used term and a common focus of professional development experiences compared with 10 years earlier. After administering the survey to a stratified random sample of third- and fourth-grade teachers in two states, they also found similar results among the 1,366 returned surveys: teachers do not differentiate for gifted students often or at all. In fact, their results were "virtually identical" to the 1993 study. They concluded:

> Teachers in the two states selected for this replication have more professional development experiences in gifted education than the teachers across the country reported 10 years ago, but this does not appear to be reflected in their classroom practices. (para. 19)

Although some teachers did report they make accommodations for capable students, Westberg & Daoust (2003) viewed the results as overall “disheartening to advocates and educators who have been working tirelessly to provide appropriate services for bright students in regular classroom settings” (para. 24).

Multiple studies by Olenchak (1999, 2000, 2001) indicated that when instructors differentiate for their gifted students, they view differentiation as a global task rather than one responsive to individual student differences. Through several case studies of gifted middle-school and elementary students, Olenchak (1999) found that the differentiation offered to these students was not meaningful. Teachers altered their curriculum and instruction based on how gifted students are different as a group rather than as individuals. Olenchak (2000) also surveyed 100 school districts that differentiated for gifted students across 20 states and found results that were both uplifting and discouraging. Seventy-eight percent of the districts indicated they intentionally reviewed the curricula to make it more challenging, and 61% indicated they included activity-oriented curricula designed to stimulate unique products. However, group differentiation dominated the sample, as only 3% of the districts described any differentiation occurring on a personal level (Olenchak, 2001).

In a subsequent qualitative study, Olenchak (2001) explored young adolescent students’ experiences with differentiation and changes in students’ attitudes and academic progress after appropriate interventions were implemented. Olenchak (2001) developed detailed case studies of four students identified as gifted, studying them over a period of 1-3 years through observations, interviews, and document analysis. At the onset of the study, the students, both males and females representing three ethnic groups and diverse socioeconomic statuses, ranged from ages 9-12. Olenchak investigated students' educational contexts and differentiation offered to them and implemented "systematic interventions to improve differentiation for each student on a personal level" (p. 185). Although the students received differentiated activities to varying degrees, the differentiation offered little or no flexibility in considering their personal interests, inappropriately challenged them, and focused on their academic or behavioral deficits rather than their strengths. One student described the differentiation initially offered to her by her schools as "more work that has little meaning to [my] life" (p. 190). Another student's differentiation was limited to enrollment in pre-AP courses in which the curricula and instruction was "gauged largely to the needs of a mythical 'fast track' group" (p. 192). This student commented:

> Have you ever felt as though your identity was out of alignment–like wheels on a car? I think my school has decided that identities are like wheels and must all be aligned just alike. I am afraid my pre-AP program is intended for identity wheels that are all different sizes than mine. The alignment is the wrong size for me. (p. 192)

Using the Personalized Talent Development Plan, personally-tailored programs revolving around each student's abilities and interests were developed and implemented, which included working with a mentor. After one year of implementation, students demonstrated positive changes in their school behavior, and improvements were "at least noteworthy and occasionally were remarkable" (p. 194). Olenchak (2001) concluded that effective differentiation for gifted students must become personalized, mentors with similar interests are critical for gifted students' identity development, and talent development must serve as the focal point in gifted programming.

One research study examined factors that relate to teachers' willingness to differentiate for their gifted students. Daniel Caldwell (2012) investigated the degree to which teachers' self-efficacy, attitudes toward gifted students, and willingness to differentiate instruction for their gifted students in heterogeneous classrooms are interrelated. Three hundred and forty-one teachers of grades 3-8 across 18 counties in Georgia completed the survey. Using multiple regression analysis, Caldwell (2012) found that both self-efficacy and attitude significantly predicted teachers' willingness to differentiate instruction for gifted students, although efficacy served as a stronger predictor. These variables help explain a small part of teachers' willingness to differentiate instruction, as the combined predictive ability was 20%. Thus, Caldwell (2012) recommended further study to examine other internal and external factors that may be influential.

Differentiation in AP and IB courses. Few research studies specifically explore differentiation for gifted students in AP or IB courses. The limited literature base may relate to the fact that these courses traditionally served gifted and high-achieving students (Gallagher, 2009). Furthermore, the content acceleration associated with these courses is deemed an effective intervention for gifted students (Colangelo et al., 2004; Steenbergen-Hu & Moon, 2011). The available research, however, indicates that differentiation for gifted students in mixed-ability AP and IB courses is used infrequently.

Hertberg-Davis, Callahan, and Kyburg's (2006) study found that AP and IB instructors treat all their students as motivated and bright, but they make limited or no modifications for special populations or individuals. The researchers interviewed and observed 200 AP and IB instructors and 200 students across 23 high schools and found that, although the students viewed AP and IB courses as the most challenging and satisfying, the instructors viewed their classes as homogenous groups of successful and motivated students. The end-of-course exams drove most teachers' instructional and curricular decisions, and their courses were largely fast-paced and one-size-fits-all. Gifted AP and IB students who chose to drop out of the program indicated the courses did not meet their needs. Hertberg-Davis, Callahan, and Kyburg (2006) reported:

> These students made their decisions to leave the programs precisely because they believed that the curriculum, instruction, and learning environment of the classes were inappropriate for their individual needs. All of these students indicated that they originally took the courses because they desired greater challenge than that offered in non-AP or -IB classes but that the way AP and IB courses were taught did not allow them to succeed, feel welcome, or learn in the ways that they liked to learn. (p. 209-210)

Hertberg-Davis, Callahan, and Kyburg (2006) concluded that equating the amount of work with challenge limits learning for students and can alienate gifted students and influence their decision to leave the program.

MacFarlane (2008) investigated AP teachers' self-assessed use of differentiated instructional practices and correlated their differentiated practices with their attitudes toward gifted education. MacFarlane (2008) modified Joyce VanTassel-Baska's Classroom Observation Scale–Revised (COS-R), initially an observational instrument, and distributed her survey to a national, random sample of 979 high-school AP world language instructors (VanTassel-Baska, Quek, & Feng, 2007, "The Development and Use"). Forty-four teachers responded, and participants' scores revealed "moderately low means in the frequency and level of effectiveness reported regarding differentiated instructional behaviors" (p. 109). In fact, when compared with other teacher groups previously assessed with the original COS-R–"exemplary teachers" of the gifted from both Singapore and the United States (VanTassel-Baska, MacFarlane, & Feng, 2006)–this group of AP world language teachers self-reported much lower overall levels of using differentiated instruction (MacFarlane, 2008).

Although MacFarlane (2008) did not find a significant relationship between instructors' attitudes toward gifted students and their use of differentiated practices, she did discover isolated significant intercorrelations between specific attitudinal subscales and differentiated practices. A significant, positive relationship existed between teachers' accommodations and their perceptions of the rejection and isolation of gifted persons by others ($r = .34$, $p < .05$). A similar relationship existed between teachers' use of research as an instructional strategy and their perceptions of the social usefulness of gifted people in society ($r = .46$, $p < .01$). A significant negative relationship also existed between teachers' accommodations and their perceptions of school acceleration ($r = -.31$, $p < .05$).

Draper and Post (2010) described the lived experiences of nine AP and IB instructors and found that although over half saw value in differentiating for gifted students, they did not see it as applicable to the AP classroom. The participating instructors taught at two Georgia high schools, had training in gifted education, and had obtained the Georgia certification to teach gifted students. The descriptive study, which employed a phenomenological research design, examined teachers' experiences as related to their differentiated instruction of gifted students. Two themes emerged regarding teachers' usage of differentiation: its applicability and value. Of the six participants teaching AP courses, only two suggested differentiation potentially was highly applicable in their classes. The other four AP teachers said differentiation was not applicable to their classrooms due to the amount of material they must cover, rigidity of the AP program, time constraints, and class size. One instructor commented:

> I have a ridiculous amount of things to cover. . . . I have to teach this and it has to be in this amount of time. . . . Sometimes you don't have enough minutes in the class period to get to different ways of doing it. (Draper & Post, 2010, p. 8)

Three participants who taught both AP and IB courses unanimously agreed that IB courses were suited better for differentiated instruction. Of the six participants teaching IB classes, five suggested differentiation was highly applicable in some of their classes. They stated that their IB students investigated material on their own, sometimes chose their own topics or assignments, and chose how to approach the topics (Draper & Post, 2010). Six of the nine participants placed some value on differentiation. Three teachers, however, placed no value on its use whatsoever. One teacher reasoned that AP courses are college-equivalent, and college classes do not use strategies for gifted learners (Draper & Post, 2010).

Hutchinson's (2004) research surrounding the IB program indicated that although little differentiation was occurring during class, students had opportunities for self-directed study outside of class. Hutchinson (2004) conducted a comparative analysis to determine the alignment of the IB's program and curricular goals, teachers' instructional practices, and 21 research-based recommended instructional and assessment practices for both gifted and general education listed on Stronge and Tucker's Teachers' Effectiveness Behavior Scale (as cited in Hutchinson, 2004). The analysis showed IB goals were aligned with the 21 best practices, "indicating the IB Program was a viable advanced academic option" (p. xii). The examination of teacher practices through 60-90-minute observations of IB instructors in two school districts in Virginia, however, revealed that end-of-course assessments prompted IB teachers to provide mostly teacher-centered, direct instruction during class time. However, work conducted by students outside the class period, which the instructors facilitated, were student-directed independent-study activities (Hutchinson, 2004).

Overall, instructors frequently report similar reasons why they do not differentiate. Roberts and Inman (2007), authors of *Strategies for Differentiating Instruction: Best Practices for the Classroom*, noted the most common reason teachers fail to differentiate is lack of time. Planning one set of experiences takes much less time than accounting for individual students' needs, finding appropriate resources, adjusting the curriculum, and implementing diverse activities. Secondly, teachers reported they had little or no instruction on how to differentiate or why differentiation is important. Lastly, teachers felt that gifted students will make it on their own (Roberts & Inman, 2007).

Impact of Contextual Variables on Attitude and Instruction

One's attitudes and teaching practices do not result solely from the knowledge and skills learned during pre-service training, from campus or district prescribed curriculums, or from the explicit curriculum teachers formally and intentionally teach. A teacher's classroom decisions also stem from "the person s/he is, with all his/her beliefs, idiosyncrasies and 'track record,' and the context in which s/he works as a teacher" (as cited in Goncalves, 2009, p. 22). Generally, demographic and contextual variables are, or potentially can become, critical influences on teachers' attitudes, instructional practices, and ultimately student achievement.

However, determining the specific effects of contextual variables on attitudes and instructional decisions has proven difficult. No consensus exists about what variables influence teacher attitude, practice, and quality due to common methodological challenges (Clotfelter, Ladd, & Vigdor, 2007-a, 2007-b, 2007-c; Harris & Sass, 2011). Clotfelter, Ladd, and Vigdor (2007-b) stated:

> Despite extensive research . . . , debate still rages about whether measurable teacher credentials can reliably predict either teacher quality or student achievement. (p. 673)

Harris and Sass (2011) noted that unobserved variables may influence teacher performance. For instance, students typically are not randomly assigned to classrooms, leading to possible correlations between student characteristics and teacher attributes. Other unobserved variables such as motivation, innate ability, or intelligence may affect teachers' classroom performance or choice to seek further professional development or advanced degrees. Additionally, estimated effects of experience may be biased when attrition is not accounted for, as less effective teachers leaving the profession may give the appearance that experience contributes to teacher quality, or effective teachers may leave the profession for better opportunities, which can lead to a negative correlation between experience and quality. Furthermore, obtaining detailed information on the various types of training teachers have received is difficult (Harris & Sass, 2011). Subsequently, although a vast amount of research surrounding the practices of effective teachers exists, limited studies specifically address contextual factors impacting instructors’ decisions in the classroom, and even fewer target their decisions when working with gifted students.

Excluded contextual and demographic variables. Although the impact of a limitless amount of contextual and demographic variables on teachers' attitudes, classroom practices, and student achievement can be discussed, several contextual and demographic variables commonly examined in the literature revealed mixed results or have not proven significant. Research examining relationships between teacher characteristics and student achievement, in particular, have shown weak connections. For example, regarding teachers' educational attainment, Clotfelter, Ladd, and Vigdor (2007-a, 2007-b, 2007-c) found no statistically-significant effect of a graduate degree on student achievement at either elementary or high-school levels. In fact, at times the coefficient was negative. In examining other common variables such as gender and ethnicity, Clotfelter, Ladd, and Vigdor (2007-b) found it was not the gender or ethnicity of the teacher that impacted student achievement, but rather the interaction between the gender and/or race of the teacher with that of the student(s). Harris and Sass (2007) and Jepsen (2005), too, found that easily observed teacher characteristics, including but not limited to overall teaching experience, advanced degrees, undergraduate training, type of certification, and inservice professional development are generally insignificant predictors of student achievement, especially in the lower grades.

Rice's (2010) summary of studies affiliated with the National Center for Analysis of Longitudinal Data in Education Research, however, suggested the impact of some variables, such as teacher experience, is stronger compared with other observable teacher characteristics. Harris and Sass' (2007) research indicates the bulk of the experience effect occurs in the first year, particularly with elementary- and middle-school teachers. Further, they found that content-focused professional development for middle- and high-school teachers positively correlates with teacher productivity in math and thus recommended more content-focused professional development training for secondary teachers.

Even fewer studies exist regarding the relationship between demographic variables and teachers' attitudes toward and instruction in gifted education, but available research has produced results similar to those in regular education. MacFarlane’s (2008) study of secondary AP world language instructors’ attitudes and differentiated practices suggested similar trends to those found by Clotfelter, Ladd, and Vigdor (2007-a, 2007-b, 2007-c). The majority of participating teachers held master’s degrees, but no significant relationship was found between their educational level and students’ AP scores. Caldwell's (2012) study examining the relationship between teachers' willingness to differentiate instruction and their self-efficacy and attitudes toward gifted students also examined limited demographic variables and found only a marginal relationship. Caldwell (2012) included overall years of teaching experience as a confounding variable in his analysis, believing it may correlate with teacher efficacy and/or attitude, but he found years of experience did not significantly contribute to teachers' willingness to differentiate instruction.

The literature base offers weak or no support for examining instructors' educational attainment, gender, ethnicity, overall years of experience, undergraduate training, or certification(s). Therefore, this study focused on the following four contextual variables: the course taught (AP, IB, or both), training in gifted education, years of experience working with gifted students, and whether or not gifted students were formally identified by instructors' campuses. These variables, particularly training in gifted education and experience teaching gifted students, potentially can make a stronger impact on teachers' attitudes, instructional decisions, and ultimately student performance (Archambault et al., 1993; Copenhaver & McIntyre, 1992; Draper & Post, 2010; Hanninen, 1988; Hertberg-Davis & Callahan, 2008; Johnsen, Haensley, Ryser, & Ford, 2002; Lassig, 2003, 2009; VanTassel-Baska, MacFarlane, & Feng, 2006).

Training in gifted education. Research indicates professional development can impact general classroom practices. For instance, Wenglinsky (2000) studied indicators of teacher quality and found a link among professional development, classroom practices, and student achievement. Specific components of professional development were associated with better student performance, including learning strategies for working with diverse learners, providing hands-on activities, and promoting higher-order thinking. Studies examining the relationship between training in gifted education and teachers' attitudes toward and classroom practices with gifted students suggest training can serve as a positive influence as well.

Training requirements in gifted education. Training requirements in gifted education vary among and within states. NAGC (n.d.-c) asserts that teachers of gifted students should participate in high-quality and continued professional development:

> Research indicates that teachers who have received training in gifted education are more likely to foster higher-level thinking, allow for greater student expression, consider individual student strengths and weaknesses, and provide a variety of learning experiences to challenge students. This vital expertise that benefits all students is not developed merely as a result of one-hour training sessions; refining teacher skills requires high-quality professional development, time, materials, and continued support. (para. 15)

However, because of the lack of consistent state policies regarding identifying and serving gifted students, coursework and professional development in gifted education for pre-service and current teachers is inconsistent, including among AP and IB teachers who typically serve secondary gifted students (Hertberg-Davis & Callahan, 2008; *State of the States*, 2013).

According to NAGC's most recent data, 23 states consider professional development initiatives a positive influence on gifted education (*State of the States*, 2013). However, only one state mandates pre-service training in gifted education that is part of a larger special education requirement. Most general education teachers are unlikely to have received any education or professional development in gifted education at all, as only three states require them to have any training during their careers. Within specialized gifted programs, the amount of professional preparation varies as well. Seventeen states require these teaches to have a certificate or endorsement in gifted education, and only five states require them to receive annual professional development in gifted education (*State of the States*, 2013).

Effects on attitudes. Research examining the link between teacher training in and attitudes toward gifted education have been positive overall. Two studies of Australian teachers found that training in gifted education positively affects teachers' attitudes (Lassig, 2003, 2009). Using Gagné and Nadeau's Attitude Scale (Gagné, 1991-a), Lassig (2003) studied the attitudes of teachers in state primary schools towards intellectually-gifted children and their education and noted measurable differences between the attitudes of teachers with and without training in gifted education. Of the 126 teacher participants in the 2003 study, 53% had training in gifted education consisting of pre-service training, in-service training, and/or postgraduate study. Results confirmed these teachers had more favorable attitudes in each of the six subscales. In a similar, later study, Lassig (2009) noted the only demographic variable that positively correlated with teachers' attitude was training in gifted education, particularly inservice training. No other variable, including gender, age, teaching experience, teaching position, and qualifications produced any significant association with attitude toward gifted education.

Additionally, Copenhaver and McIntyre's (1992) study, which assessed K-12 teachers' perceptions of gifted students by asking them to list the characteristics that came to mind when thinking of gifted students, showed initial training in gifted education made the greatest impact. Significant differences existed in response distributions between teachers who had taken at least one course or workshop in gifted education, who characterized gifted students more positively, and teachers who had taken no course or workshop, who characterized gifted students more negatively. However, only insignificant differences were found between response distributions as the number of courses or workshops taken increased incrementally.

Other studies examined undergraduate training in gifted education, however, have shown unclear or inconsistent results. Berman, Schultz, and Weber (2012) found that one pre-service course in gifted education is not enough to make a significant impact on teacher candidates' attitudes toward gifted students. They collected qualitative data from undergraduate teacher education students after the students took a course on the nature and needs of gifted learners and found that taking one course was "woefully lacking" (p. 24). The college students' comments showed they were overwhelmed by the amount of work meeting gifted students' needs would take and felt strongly their future teaching positions required teaching solely the required content and meeting the prescribed standards. At the beginning of the course, teacher candidates lacked awareness that gifted students had unique needs at all. At the end, they only were beginning to realize that gifted students required attention, too, and the teacher candidates became frustrated. Additionally, McCoach and Siegle's (2007) examined potential predictors of 262 teachers' attitudes toward the gifted. The data indicated that teachers with gifted education training held higher perceptions of themselves as gifted, but the training and perceptions of self as gifted had no significant impact on teachers' attitudes toward gifted education.

Effects on instructional practices in the general education classroom. Some research has examined the effect of training in gifted education on instructors' differentiated practices in the general education classroom. Although Archambault et al. (1993) did not specifically explore the impact of training on differentiated instruction, they did find that 61% of the responding teachers had received no training in gifted education and noted this may “help to explain why classroom teachers did so little to provide different options for gifted students" (p. xv). Research directly studying the impact of gifted education on training mirrors Archambault et al.'s (1993) conclusion, though, and suggests that increased consistency in gifted education professional development will positively impact the use of gifted-appropriate strategies in the classroom (Hertberg-Davis & Callahan, 2008; Johnsen et al., 2002; VanTassel-Baska, MacFarlane, & Feng, 2006).

While studying "exemplary" teachers of the gifted in both Singapore and the United States, VanTassel-Baska, MacFarlane, and Feng (2006) found a positive correlation between training in gifted education and the use of differentiated strategies (p. 39). The Singapore findings particularly "showed that the level of effective usage of differentiated strategies was positively related to training experience in gifted education" (p. 45). The preparation of teachers in Singapore to teach gifted students was more "deliberate" and the monitoring of their differentiated instructional practices was more "routine" compared with teachers in the United States (p. 45). Subsequently, VanTassel-Baska, MacFarlane, and Feng (2006) identified a need for greater attention to "targeted professional development experiences by subject appropriate level that would enhance learning for gifted students" as well as opportunities for continued growth for teachers in differentiated practices (p. 45).

Another study, the Mustard Seed Project, examined the impact of training in differentiated curricula for gifted students on teachers' classroom practices in the general education classroom (Johnsen et al., 2002). Seventy-four general education teachers at six sites participated in The Mustard Seed Project and engaged in two years of professional development activities in gifted. Teachers worked with a mentor and participated in 22 units of training, including but limited to topics covering learner differences, differentiated curriculum, assessment, management of the learning environment, strategies for learning, teacher facilitation, acceleration, collaboration, and support. The study showed positive results, as the majority of teachers made changes that favored meeting their highly-able students' needs, particularly allowing choices based on student preferences and changing the classroom environment. Besides having an initial positive attitude, a clear vision, and the freedom to choose goals, participants cited the staff-development activities, mentoring process, support among teachers, and support among instructional leaders as the most beneficial. Johnsen et al. (2002) stated:

> Before the Mustard Seed Project, classrooms were primarily teacher directed, with little adaptation for gifted students. In its brief duration, the project was able to support 99% of the participants in changing their classroom practices for gifted students. (p. 61)

Johnsen et al. (2002) also concluded that change is both complex and highly personal, and the teachers themselves must be involved in the change process for it to be effective and long-lasting.

Effects on instructional practices in AP and IB courses. Few studies have investigated the impact of teacher training in gifted education on differentiated instructional practices specifically in AP and IB classrooms. One qualitative study, however, examined instructors' perceptions of the impact of training in gifted education and revealed mixed results. Draper and Post (2010), examined the lived experiences of nine AP and IB instructors. They also explored the instructors' perceptions of the impact their training had on their differentiated practices with gifted students. Their findings revealed instructors had mixed perceptions about the impact of training on their instruction and gifted student success. Most teachers stated they had already employed the strategies gifted training provided, and four said they changed their instructional practices very little or not at all. Some instructors reported their understanding of gifted students was enhanced and useful to their instruction, and others commented they needed additional training in gifted education for gifted strategies to become practical applications in their classes. Only one teacher believed the gifted training impacted her IB students. The others said either no impact occurred or they were uncertain (Draper & Post, 2010).

MacFarlane's (2008) study examining 44 AP World Language instructors' perceptions of gifted education and differentiated practices revealed a positive relationship between teacher training and student achievement, but not differentiated practices. She found a positive correlation between the students' AP scores and the teachers' preparation in gifted education. Students were more likely to score higher on their AP test if they had a teachers who had taken coursework in gifted education. However, participating instructors still reported an overall low use of differentiated strategies with gifted students, which MacFarlane (2008) asserted could have related to the content of the coursework. Further research with larger samples is needed to assess how training in gifted education impacts teachers' classroom practices with gifted students, particularly in AP and IB courses as they shift to serve a more diverse student population.

Collectively, the research suggests that training in gifted education, overall, can positively influence instructors' attitudes toward gifted education. Furthermore, if administered deliberately over time and with sufficient supports, training can ultimately impact teachers' curricular and instructional differentiated practices with their gifted students. Clearly, the responsibility for ensuring instructors receive appropriate training rests with the administration and staff who hire them and provide or support the professional development opportunities.

Experience teaching gifted students. Over time, teachers redefine and modify their attitudes toward teaching, their students, and education, and they view and manage the curriculum differently as their careers evolve (Goncalves, 2009). Teachers generally move from having a task-centered perspective and relying on textbooks in the beginning, to focusing less on textbooks and more on students' learning conditions and problems, to actively participating in curriculum development and showing greater capacity for reflection and openness to change (Goncalves 2009).

Although overall teaching experience shapes teachers' perspectives over time, significant impacts on teacher effectiveness occur only during the first few years. Rice's (2010) summary of studies affiliated with the National Center for Analysis of Longitudinal Data in Education Research using comprehensive state datasets indicated that "[e]xperience matters, but more is not always better" (Rice, 2010, p. 1). Inexperienced teachers are clearly less effective overall than those with some experience, where the impact is the strongest. After the first few years, the performance levels off and marginal returns diminish (Rice, 2010). Clotfelter, Ladd, and Vigdor (2007-a, 2007-b, 2007-c) caution that experience effects are complex, however, and these patterns may relate to other factors such as teacher attrition or the amount of on-the-job learning occurring after the first few years of teaching.

Studies examining the impact of experience teaching gifted students on teacher attitudes toward and instructional practices with gifted students are more limited. Existing literature suggests that having one or two years of experience in gifted education positively impacts teachers' attitudes. However, research also indicates experience working with gifted students is the best predictor of the desired competencies and characteristics for teaching gifted students.

Effect on attitudes. Copenhaver and McIntyre's (1992) examined the relationship between years of experience teaching gifted students and instructors' perceptions of the gifted. Copenhaver and McIntyre's (1992) assessed K-12 teachers' perceptions of gifted students and found significant differences in response distributions between teachers with some or no experience teaching gifted students. Instructors with at least one or two years of experience more positively characterized gifted students, while teachers with no experience provided more negative characteristics such as bored, inattentive, rebellious, and/or lazy. However, only insignificant differences were found in the response distributions of teachers with 1-2 years of experience and teachers with additional years of experience.

Effect on instructional practices. Hanninen (1988) found that observable differences exist between teachers with and without both experience and specialized training in gifted education in how they provide for their gifted students. The study included five certified teachers with training in gifted education and experience teaching gifted students, five certified teachers without experience or training in gifted education, and five pre-service teachers with no training in gifted education. Each subject read five scenarios involving identified gifted students and responded to the question, “If you were serving as a consultant to the regular classroom teacher what would you identify as areas to be developed and the strategies you would recommend for each of these students?" (p. 140). Hanninen (1988) examined how responses differed between experts and novices, how their knowledge base differed, and how the organization of their knowledge base contributed to their performances.

A categorical analysis of responses showed a task performance difference exists between teachers trained in gifted education and the two levels of novices. Trained teachers' responses suggested they were more likely to encourage student-directed learning, consider more in-depth activities, organize their recommendations using a theoretical base, recognize the need to alter instruction for gifted students, support opportunities for learners to work with the community, suggest specific activities, and encourage students' interests and talents in and outside of the classroom. Novice teacher' responses suggested they were more likely to assume responsibility for student learning, consider only surface elements of the scenarios, provide unorganized and spontaneous recommendations, focus on students having enough work rather than challenging work, suggest general activities, and limit the learning environment to include only classroom or campus resources, and encourage students' interests and talents in traditional academic areas only.

A later study of Hong Kong inservice teachers suggested that experience working with gifted students was the best predictor of the desired competencies and characteristics for teaching gifted students (Cheung & Phillipson, 2008). One hundred seventy-seven teachers both with and without experience teaching gifted students assessed their competencies and characteristics using a 39-item Likert scale. Eight factors emerged, including characteristics for teaching, communication, achievement, individuality, and democracy and competence in teaching, counseling, and working with gifted groups. Teachers with training and experience in teaching gifted students rated themselves significantly higher on all factors except for competence in counseling compared with their counterparts. After running several regression models to see what factors predicted the characteristics and competencies, Cheung and Phillipson (2008) found that experience in working with gifted students was the best predictor of the desired teaching characteristics, more so than gender, age, overall teaching experience, and highest educational level.

Identification of gifted students. Generally, many teachers enter classrooms with minimal understanding of gifted students' characteristics and needs. Berman, Schultz, and Weber (2012) note that pre-service teachers receive little preparation for cognitive diversity in the classroom. Most teaching programs typically require only one course on exceptional students, focusing primarily on students with behavioral and learning disabilities (Salvia, Ysseldyke, & Bolt, 2010). Research studies have not yet explored the impact of formal identification of gifted students on teachers' attitudes and/or differentiated practices for identified students with the exception of Lassig (2003, 2009). She discovered that teachers working in Australian primary schools that identify and formally serve gifted students generally have more positive attitudes. However, it seems necessary that teachers know who their gifted students are if they are expected to provide appropriate and optimal learning experiences for those students.

Summary

Overall conclusions from the literature review include:

- Gifted students share unique academic, social, and emotional needs and require specialized services not ordinarily provided by the regular school program (Cross, 2004; Davis & Rimm, 2004; Elijah, 2011; Ford, 2002; Freeman, 2006; Greene, 2002; Gross, 2002; Johnsen, 2011; Hébert, 2002; Keiley, 2002; NAGC, n.d.-e, n.d.-f; Neihart & Olenchak, 2002; O'Connor, 2002; Reis, 2002; Reis & McCoach, 2002; Reis & Renzulli, 2004; Rimm, 2002; Roberts & Bogess, 2011; Robinson et al., 2002; Rogers, 2002; Schuler, 2002; Silverman, 2002).
- Identification of and services for gifted students vary among and within states (*State of the States*, 2013).
- High-school gifted students are most commonly served within advanced academic courses such as AP and IB (Hertberg-Davis & Callahan, 2008; Hertberg-Davis, Callahan, & Kyburg, 2006; NAGC, n.d.-d; *State of the States*, 2013).
- AP and IB courses are serving an increasingly more diverse student population with a broader range of abilities and potentialities in response to college admissions formulas, the achievement gap, and links to better college preparation, enrollment, and success (Advisory Committee on Student Financial Assistance, 2010; Badger, 2014; Bunnell, 2009; Byrd, 2007; Coca et al., 2012; College Board, 2013-a, 2014, n.d.-b; Duevel, 1999; Espenshade et al., 2005; Ewing, 2006; Gallagher, 2009; "High School Grades Matter Most," 2014; IB Global Policy and Research Department, 2010; National Center for Education Statistics, n.d.; National Commission on Excellence in Education, 1983; "National Inventory,"

2006; NEA, n.d.; Panich, 2001; Porter & Banchero, 2013; Rice Center for College Readiness, n.d.; Theokas & Saaris, 2013).

- Gifted students require differentiated curriculum and instruction in mixed-ability settings (Borland, 2009; Tomlinson & Jarvis, 2009; VanTassel-Baska, 2005; VanTassel-Baska, MacFarlane, & Feng, 2006; Winebrenner, 2001).
- Teachers' attitudes toward gifted education are unclear (Bégin & Gagné, 1994; Bohner & Wänke , 2002; Copenhaver & McIntyre, 1992; Cramond & Martin, 1987; Gagné, 1983; Lassig, 2003; MacFarlane, 2008; McCoach & Siegle, 2007; Megay-Nespoli, 2001; VanTassel-Baska, MacFarlane, & Feng, 2006; .
- Little differentiation is occurring for gifted students in the general education classroom as well as in AP and IB courses (Archambault et al., 1993; Draper & Post, 2010; Hertberg-Davis, Callahan, & Kyburg, 2006; Hutchinson, 2004; MacFarlane, 2008; Olenchak, 1999, 2000, 2001; VanTassel-Baska, MacFarlane, & Feng, 2006; Westberg & Daoust, 2003; Westberg et al., 1993).
- Training in gifted education can impact teachers' attitudes and classroom practices (Archambault et al., 1993; Berman et al., 2012; Copenhaver & McIntyre, 1992; Draper & Post, 2010; Hertberg-Davis & Callahan, 2008; Johnsen et al., 2002; Lassig, 2003, 2009; MacFarlane, 2008; McCoach & Siegle, 2007; NAGC, n.d.-c; Wenglinsky, 2000; VanTassel-Baska, MacFarlane, & Feng, 2006).
- Experience working with gifted students has shown a significant, positive effect on instructors' attitudes and classroom practices (Cheung & Phillipson, 2008; Clotfelter, Ladd, and Vigdor, 2007-a, 2007-b, 2007-c; Copenhaver and McIntyre, 1992; Hanninen, 1988; Rice, 2010).

- Although not sufficiently or directly examined in the literature, formal identification of gifted students is thought to be a significant influence on teachers' providing appropriate and optimal learning experiences for gifted students (Berman et al., 2012; Lassig, 2003, 2009).

The literature review uncovered a need to examine AP and IB instructors' attitudes toward gifted education, the extent to which they offer differentiated activities for their gifted students, and how their attitudes and other contextual factors such as training and years of experience working with gifted students impact their differentiated practices.

Chapter III

Methodology

The biggest mistake of past centuries in teaching has been to treat all students as if they were variants of the same individual and thus to feel justified in teaching them all the same subjects the same ways.

– Howard Gardner

(as cited in Siegel, & Shaughnessy, 1994, p. 564)

Introduction

Howard Gardner, a well-respected developmental psychologist known for his theory of Multiple Intelligences, asserted that there is no best way to teach all children. Educators must teach to individual students' strengths and learning styles. When a student stops learning, the educator has failed (Gardner et al., 1994). Even when students are grouped homogeneously by capability, they differ in background, ability, and motivation, and tailoring instruction to meet their individual needs can be challenging. Classes consisting of students with vastly different ability levels can lead to the potentially more difficult task of tailoring instruction to a variety of cognitive levels.

While ample research exists regarding the nature and needs of gifted students, literature remains skeletal concerning how expanding access to AP and IB classes has influenced if and how gifted students are served (Gallagher, 2009). Furthermore, AP and IB instructor training provided by the College Board and International Baccalaureate focuses on consistency of content delivery and does not include specific differentiated practices for gifted learners. Furthermore, depending on state and district policies, AP and IB instructors are not necessarily required to participate in any training in gifted instruction (*State of the States*, 2013). It is not clear how the variation in instructor preparation combined with the push to create more heterogeneous advanced courses affect instructor perceptions of and instruction in gifted education. What *is* clear is the concern that, as a result of these factors, AP and IB instructors may be teaching their students the "same subjects" in the "same way," which Howard Gardner cautions against (Gardner et al., 1994, p. 564). Developing a clearer understanding of how AP and IB instructors now typically perceive gifted education and serve their high-ability students is needed to reassess if AP and IB programs continue to represent the "curricular gold standard" not only for secondary education in general, but also for secondary gifted and high-ability students (Byrd, 2007, p. 7).

This research responds to that need. The purpose of this non-experimental, quantitative study was to explore AP and IB instructors' perceptions of gifted education, the extent to which they differentiate for their gifted learners, and what factors may influence these attitudes and classroom practices. The results provide valuable information for the College Board, International Baccalaureate, instructors, department chairs, administrators, gifted coordinators, teacher educators, and policymakers as they develop appropriate curriculum, interventions, training, and policies that ultimately will help better serve the nation’s gifted students. Chapter three delineates the study’s overall research design, including the participants, sample size, instrumentation, data collection and analysis procedures, and limitations and delimitations.

Research Design

Research questions. This study responded to four guiding questions:

Research question one. What are AP and IB instructors' attitudes toward gifted education as measured by self-reported ratings on Gagné and Nadeau's Attitude Scale, Opinions About the Gifted and Their Education (Gagné, 1991-a)?

Research question two. To what extent do AP and IB instructors differentiate curriculum and instruction for their gifted students as measured by self-reported ratings on Archambault et al.'s (1993) Classroom Practices Teacher Survey?

Research question three. How do AP and IB instructors' attitudes toward gifted education influence the extent to which they differentiate for their gifted students?

Research question four. How do contextual variables influence AP and IB instructors' attitudes toward gifted education and the extent to which they differentiate for their gifted students? Contextual variables include the course taught (AP, IB, or both), years of experience teaching gifted students, training in gifted education, and whether or not gifted students are identified on the instructors' campuses.

Research method. A cross-sectional survey research design was used to and provide greater understanding about AP and IB instructors' attitudes toward and differentiation for gifted students and determine the relationship among these variables. Data were gathered via an electronic administration of a three-part survey. Collecting data through self-administered surveys presents a variety of advantages (Fraenkel & Wallen, 2008). This mode is more economical than others, as potential fees pertaining to facilities, transportation of the researcher, and training of interviewers are unnecessary. Standardized information and questions are presented to all participants, thereby soliciting standardized responses. Survey research allows for random sampling as well as a potentially larger representative sample. Furthermore, when participants' responses are anonymous and they may complete the survey at their convenience, they are more likely to offer thoughtful answers (Fraenkel & Wallen, 2008).

Fraenkel and Wallen (2008) noted that direct administration to a sample group, telephone interviews, or face-to-face interviews may produce a higher response rate, as there is more opportunity to encourage potential respondents' cooperation though building rapport and providing answers or clarification. However, due to this study's large, national sample size, direct administration to participants was not practical. Telephone and/or face-to-face interviews were not chosen due to time constraints, transportation costs, increased interviewer bias, and decreased anonymity. However, Dillman's (2000) research has shown that for homogeneous groups, such as teachers, self-administered surveys are almost equally effective as interviews, especially when the survey topic is relevant to the group.

Participants

The survey instruments were sent to a national, random sample of 9,858 public and private high-school instructors who teach at least one AP or IB course. In some instances, instructors may have taught only homogeneously-grouped gifted students in their AP and/or IB classes and therefore were not eligible to participate. To ensure respondents taught at least one mixed-ability AP or IB course and were eligible for the study, the cover letter discussed the study's purpose, described a qualified participant, and provided a definition of gifted individuals. At the beginning of the survey, subjects were asked to check a box indicating they teach at least one AP or IB course that includes mixed-ability students, including both identified/assumed gifted students and non-gifted/average students. Subjects were unable to complete the survey without this indication. Due to high costs associated with obtaining mailing lists and providing postage, Market Data Retrieval (MDR, n.d.) distributed the survey invitation via e-mail to qualified recipients. MDR (n.d.) is a nationally-recognized leader in educational marketing and survey research that maintains a comprehensive database of education-related contacts and mailing lists for researchers and advertisers (Rigol & Ziemnicki, 2011).

Sample Size. An appropriate sample size was determined using Kline's (2011) and Tabachnick and Fidell's (2007) recommendation's for factor analysis and structural equation modeling (SEM). Kline (2011) notes that a "typical" sample size in studies where SEM is used is approximately 200 cases, and that smaller sample sizes may be problematic and yield lower statistical power (p. 12). Furthermore, studies involving SEM with fewer than 200 cases are routinely rejected for professional publication (Kline, 2011). Although a sample size of 200 is deemed fair, Tabachnick and Fidell's (2007) general rule of thumb is that 300 cases are a more solid sample size when conducting factor analysis. Therefore, a minimum of 200 respondents was needed for this study, with 300 or more ideal. The number of actual respondents, 377, surpassed the minimum requirement.

Market Data Retrieval (MDR). Market Data Retrieval (MDR, n.d.) distributed the survey invitation to qualified recipients. MDR (n.d.) has operated for more than 40 years and is well-known for its high-quality service and data. MDR employees compile and annually verify contact information for educators to ensure the highest degree of

accuracy. They use a variety of methods to collect e-mail addresses, including obtaining information from campus and district websites, harvesting and modeling methods, and contacting school secretaries to verify and revise their campus roster. Their e-mail list is not an opt-in list, but all contacts in the database receive an e-mail at the beginning of the year and are able to opt-out (M. Kaufman, personal communication, July 23, 2013). Although MDR cannot provide an estimated number of returns for individual surveys, average open rates as published by the Direct Marketing Association fall between 5-9%, and average click through rates are 1-3%. The rate of return varies based on the group surveyed and variables such as the delivery day and time, audience characteristics, and incentives offered (B. Varga, personal communication, November 30, 2011). MDR employees have seen more surveys completed when tied to a reward or contest, as most subjects will not complete a survey otherwise unless it consists of only a few brief questions
(M. Kaufman, personal communication, July 23, 2013). MDR distributed the survey invitation via e-mail to 9,858 AP and IB instructors, and monetary incentives were offered to help ensure an adequate return rate.

Instrumentation

Data were collected by way of cross-sectional survey research, which involves collecting data at one point in time from subjects who differ in age and experience. Quantitative data were obtained through the administration of a three-part survey: a teacher information questionnaire, which collected contextual information; Gagné and Nadeau’s Attitude Scale, Opinions About the Gifted and Their Education (Gagné, 1991-a), which measured instructors’ attitudes toward gifted education; and Archambault et al.’s (1993) Classroom Practices Teacher Survey, which measured instructors' differentiated practices for their gifted and non-gifted students.

Teacher information questionnaire. Because the study explored the relationship among contextual variables, instructors' attitudes, and their extent of differentiated practices, participants answered several demographic and contextual questions (see Appendix A for the teacher information questionnaire). This researcher-created questionnaire collected data concerning whether instructors taught IB and/or AP courses, whether or not gifted students are identified, instructors' years of experience teaching gifted students, and the type and amount of training in gifted education instructors had.

Gagné and Nadeau’s Attitude Scale (Gagné, 1991-a). Gagné and Nadeau’s Attitude Scale, Opinions About the Gifted and Their Education (Gagné, 1991-a), measures attitudes toward gifted education and highly-able students (see Appendix B for the original attitude scale). This instrument allows respondents to indicate the extent of their agreement with 34 statements using a 5-point Likert scale where 1 = totally disagree, 2 = partially disagree, 3 = undecided, 4 = partially agree, and 5 = totally agree. Gagné and Nadeau (Gagné, 1991-a, 1991-b) categorized the 34 items into six subscales that included:

- Needs and Support: assessed respondents’ beliefs in the unique needs of gifted children and their support of special services for the gifted,
- Resistance to Objections: assessed participants’ objections based on their ideologies and competing priorities,

- Social Value: measured perceptions of the usefulness of gifted individuals in society,
- Rejection: assessed attitudes toward the isolation of gifted persons by others,
- Ability Grouping: assessed attitudes toward homogeneous groups of gifted persons in classes and/or schools, and
- School Acceleration: measured attitudes toward grade and/or content acceleration as enrichment for the gifted.

High scores on the Needs and Support, Social Value, Ability Grouping, and School Acceleration subscales indicate positive attitudes toward the gifted (see Appendix C for the scoring procedures). High scores on the Resistance to Objections and Rejection subscales indicate negative attitudes toward the gifted (Gagné, 1991-b; Gagné & Nadeau, 1985). Table 1 illustrates the specific subscales, sample items, and the number of items included in each subscale.

Table 1

Gagné and Nadeau's Attitude Scale (Gagné, 1991-a): Subscales, Sample Questions, and Number of Items

Subscale	Sample Item	Number of Items
Needs and Support (needs of gifted children and support for special services)	The regular school program stifles the intellectual curiosity of gifted children.	8
Resistance to Objections (objections based on ideology and priorities)	Special educational services for the gifted are a mark of privilege.	10
Social Value (social usefulness of gifted persons in society)	The leaders of tomorrow's society will come mostly from the gifted of today.	4
Rejection (isolation of gifted persons by others in the immediate environment)	Often, gifted children are rejected because people are envious of them.	3
Ability Grouping (attitudes toward special homogeneous groups, classes, schools)	Gifted children should be left in regular classes, since they serve as an intellectual stimulant for the other children.	4
School Acceleration (attitudes toward accelerative enrichment)	It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade.	5

Instrument development. Gagné and Nadeau (1985) began developing this instrument in the mid-1980s to deeply probe the opinions of Quebec's population concerning the addition of enrichment programs for gifted students during a time when Francophone nations had shown little interest in gifted education. They searched the literature from the past 25 years for a suitable attitude scale that measured the direction and intensity of a general attitude toward giftedness, included statements popularly used in arguments about and stereotypes of gifted education, permitted identification of distinct dimensions or factors within a general attitude, and had undergone analysis of its reliability and validity. Of the 15 scales they found, five met their criteria, and three of those were submitted to factor analysis. Gagné and Nadeau (1985) concluded that none of the instruments covered all the aspects they wished to measure, and they therefore created, assessed, piloted, and analyzed their own scale that responded to their needs.

Gagné and Nadeau (1985) ascertained their instrument's content validity by first developing a bank of 145 statements drawn from a review of existing attitude scales, newspaper and magazine articles, and interviews with parents and teachers. They divided these statements into 12 categories: social value, objections in principle, rights of the gifted, status of services, need for support, problems and special needs, characteristics, acceleration, enrichment, special classes, impact of interventions, and envy. Ten specialists in gifted education then evaluated the statements' pertinence, appropriateness, clarity, and simplicity of wording.

Gagné and Nadeau (1985) tested the instrument's reliability by using the equivalent-forms method (Fraenkel & Wallen, 2008). They reduced the item bank to a 90-item pool (see Appendix D for the item pool) and created two experimental, parallel forms, A & B. Each form contained 60 items with 30 items judged to be the most representative of each category appearing on both forms, allowing for comparisons between the factor analysis foreseen for each form. The remaining 60 statements, as well as the item order on both forms, were randomly distributed. Participants were asked to rate each statement using a 5-point Likert scale (1 = completely disagree, 2 = moderately disagree, 3 = undecided, 4 = moderately agree, 5 = completely agree) and were told to use the middle choice, undecided, as few times as possible. Surveys were administered to parents of primary and secondary students as well as teachers, and 339 participants responded.

Gagné and Nadeau (1985) analyzed their instruments by compiling descriptive statistics and performing factor analyses. The respondents in the two groups did not differ significantly in any of 12 demographic variables measured. The overall mean of all items was 3.42 (*SD* = .51) for Form A and 3.41 (*SD* = .50) for Form B. For items common to both forms, the overall mean was 3.42 (*SD* = .58) for Form A and 3.38 (*SD* = .57) for Form B. The correlation between the two series of 30-item means was .946, revealing a close similarity between the two groups of participants. Additionally, a total score, expressed as the mean of responses to all 60 items, was computed for each form. This allowed for the interpretation of the results on a scale of 1–5, with a mean of 3.00 considered as the border between a positive and negative attitude. The correlation of each item with the overall score created an index of its ability to measure an attitude. Correlation coefficients varied between .00 and .82 with means of .46 for Form A and .41 for Form B. Therefore, no indications of differences between the two forms existed.

Additionally, Gagné and Nadeau (1985) examined the results of various factor analyses to find similar factor structures in the two forms so that they could extract more homogeneous item groups and compose a single form, broken down into partially independent sections. They then conducted two series of eight factor analyses using the Maximum Likelihood Factor Analysis method, which breaks down the total variance of each variable into both specific and common components and attempts to explain the common components. Each series of factor analyses varied from 3–10 factors. After conducting a double factor analysis of the two parallel forms, Gagné and Nadeau (1985) found six emergent themes: support of special services, objections to special services, opposition to acceleration, perceptions of rejection and isolation, social value, and opposition to homogeneous grouping, thus completing the first step in constructing a reliable and valid attitude scale towards giftedness. These six themes served as the basis of their final, shorter, 34-item scale.

To confirm the factor structure Gagné and Nadeau's (1985) presented, McCoach and Siegle (2007) later conducted a confirmatory factor analysis. They found that Gagné and Nadeau's model failed to converge and resulted in an inadmissible solution after 500 iterations and subsequently conducted another exploratory factor analysis with their sample of teachers. Based on the results of this factor analysis and reliability analyses, McCoach and Siegle (2007) created three subscales for further analysis and reported Cronbach's alpha reliability for each factor ranging from .71 to .80 as seen in Table 2.

Table 2

McCoach and Siegle's Factor Scales and Cronbach's Alpha

Factor	Sample Item	Item Numbers	Number of Items	Cronbach's Alpha (α)
Support	The gifted need special attention in order to fully develop their talents.	1, 15, 26, 30, 35	5	.76
Elitism	When the gifted are put in special classes, the other children feel devalued.	4, 5, 6, 21, 23, 28	6	.80
Acceleration	A greater number of gifted children should be allowed to skip a grade.	7, 10, 29, 34	4	.71

Classroom Practices Teacher Survey. Developed in 1993, the Classroom Practices Teacher Survey (see Appendix E for the original Classroom Practices Teacher Survey) was designed to determine teachers' perceptions of the extent to which they provide differentiated instruction for gifted students in regular classrooms (Archambault et al., 1993). In addition to teachers' perceptions of their differentiated practices, the original survey includes three additional sections soliciting information on teacher background characteristics, schools' and districts' policies for educating gifted students, and the general nature of teachers' classrooms. This study uses only the classroom practices section of the questionnaire, as many of the items included in the other sections are not relevant to this study and/or the AP or IB classroom.

The original classroom practices portion includes 39 items. Each item presents an instructional activity, such as "make time available for students to pursue self-selected interests" or "use pretests to determine if students have mastered the material covered in a particular unit or content area" and asks teachers to rate how frequently they perform the activity for both their gifted and non-gifted/average students. Teachers respond using a 6-point Likert scale with 0 = never, 1 = once a month or less, 2 = a few times a month, 3 = a few times a week, 4 = daily, and 5 = more than once a day. Teachers are also invited to provide any comments they believe might help the researchers understand classroom practices within their school (Archambault et al., 1993).

Instrument development. Based on their experiences with gifted students and a review of the literature, Archambault et al. (1993) determined differentiation could occur through grouping students for instruction, providing advanced or accelerated work, offering instruction in higher-level thinking, providing in-class enrichment activities, modifying the regular curriculum, and offering more challenges and choices. Based on this view, a group of gifted educators and psychometricians developed a questionnaire, which acquired data on teachers' instruction for both gifted and average/non-gifted students.

This questionnaire was first administered to two small samples of teachers and then underwent field testing. Revisions were made after each of the first two administrations based on the teachers' responses and reactions. The field test then was performed among 400 teachers who received one of four different forms. The instructions asked teachers to respond to the classroom practices items for either average students only (Form 1), gifted students only (Form 2), average students followed by gifted students (Form 3), or average and gifted students side-by-side (Form 4). Although Forms 1-2 yielded the greatest response rate, respondents preferred Forms 3-4 because comparisons could be made within the same classroom. To investigate the possibility of response bias, where respondents inflate their estimates of differentiation for the gifted or instruction for average students, the researchers performed two repeated measures ANOVAs comparing teachers' responses to the gifted items on Forms 2, 3, and 4. Although there was no significant main effect for form, they found a statistically significant interaction between item and form. To investigate the nature of this interaction, Archambault et al. (1993) performed one-way ANOVAs for each item and found significant differences ($p < .05$) for eight of the 40 items, with six differences occurring between Forms 2 and 3 and two differences occurring between Forms 2 and 4. They also compared the ratings of average/non-gifted students across Forms 1, 3, and 4 using the repeated measures ANOVA and found no significant main effect; however, they did find a significant interaction between item and form and differences for three of the 40 items. Overall, Archambault et al. (1993) were surprised to find so few statistically-significant results and concluded there were no biases in responses across the forms for both gifted and average students.

The researchers revised items and wording based on the ANOVA results and selected Form 4 for the survey. Teachers did not appear to be artificially inflating their responses for average students across Forms 1, 3, and 4 or their responses for gifted students across Forms 2, 3, and 4, so Form 4 was selected because it allowed for direct comparisons between average and gifted students within the same classroom. It was also a shorter instrument than Form 3, which also allowed for average/gifted comparisons.

Archambault et al. (1993) reduced the 39 items within the classroom practices section to six scales using principal factor analysis. Initially, the analysis showed items 14 and 39 had particularly low loadings; consequently, those items were eliminated and the principal factor analysis repeated. The analysis yielded a nine-factor solution using the eigenvalue criterion and a six-factor solution using the scree plot criterion. A six-factor solution was forced because six factors were expected on theoretical grounds. Factors included 1) Questioning and Thinking, 2) Providing Challenges and Choices, 3) Reading and Written Assignments, 4) Curriculum Modifications, 5) Enrichment Centers, and 6) Seatwork as presented in Table 3. The variance for all but two of the 39 items was 38%, and alpha reliabilities for the each of the factors were .83, .79, .77, .72, and .54, respectively. The survey was sent to a stratified random sample of over 7,000 third- and fourth-grade teachers across the United States.

Table 3

Classroom Practices Teacher Survey: Subscales, Sample Questions, and Number of Items

Subscale	Sample Item	Number of Items
Questioning and Thinking	Provide questions that encourage reasoning and logical thinking	5
Providing Challenges and Choices	Allow students to leave the classroom to work in another location, such as the school library or media center	9
Reading and Written Assignments	Give creative or expository writing assignments on topics selected by the students	6
Curriculum Modifications	Eliminate curricular material that students have mastered	5
Enrichment Centers	Make time available for students to pursue self-selected interests	4
Seatwork	Use basic skills worksheets	4

After the publication of the Classroom Practices Survey, multiple researchers used the original or an adapted questionnaire at both elementary and middle-school levels (Westberg and Daoust, 2003). Westberg and Daoust (2003) replicated Archambault et al.'s (1993) study 10 years later, sending the survey to a stratified random sample of 1,366 third- and fourth-grade teachers in two states. For their replication sample, the alpha reliability of the 39 items was r = .94 for average items and r = .90 for gifted items.

Other instruments measuring differentiation for the gifted. A limited number of other instruments measuring differentiation for gifted students exist. However, these instruments are primarily classroom observation scales and not practical for this study. In reviewing the literature on observational instruments, VanTassel-Baska, Quek, and Feng (2007) found multiple direct observation scales serving a variety of purposes. Feldhusen and Huffman (1988) developed the Teaching Observation Form, and Kulieke (1986) adapted the Martinson-Weiner Rating Scale of Behaviors in Teachers of the Gifted. These instruments were not designed to compare gifted with non-gifted students and do not provide detailed data about differentiation strategies used in the classroom (VanTassel-Baska, Quek, & Feng, 2007; Cassady, Speirs Neumeister, Adams, Cross, et al., 2004). Another instrument, the Purdue Observation Form, covers competencies teachers of the gifted should have, including but not limited to subject matter coverage, motivational techniques, and opportunities for self-determination of activities by students (as cited in VanTassel-Baska, Quek, & Feng, 2007). Westburg, Archambault, Dobyns, and Salvin (1993) documented types of differentiated activities present using their Classroom Practices Record; however, this scale was designed for the observation of two students at a time–one identified gifted student and one non-identified gifted student. Cassady et al. (2004) developed a more thorough instrument, the Differentiation Classroom Observation Scale, on which one documents the level of differentiation occurring in classrooms by observing who is directing the learning over 5-minute segments as well as student engagement, cognitive activity levels, and opportunities for homogeneous grouping. VanTassel-Baska, Quek, and Feng's (2007) instrument, the Classroom Observation Scale–Revised (COS–R) assesses the efficacy of teacher behaviors regarding differentiation strategies shown to be effective with gifted students and examines the relationship between teachers' instructional effectiveness and students' attentiveness and responsiveness.

Appropriateness of the Classroom Practices Teacher Survey for this study. Because these alternative instruments are primarily classroom observation scales, they were not practical to use with this study's large, national, random sample of teachers due to time and cost constraints. Archambault et al.'s (1993) Classroom Practices Teacher Survey was an ideal instrument to use because it allows participants to self-assess the extent to which they use specific classroom practices with their gifted students and does not require observations. Additionally, the instrument items include practices linked to key elements of differentiation shown to be effective with gifted learners including content, process, product, environment, and assessment (Tomlinson & Jarvis, 2009; Winebrenner, 2001). Multiple items on the instrument surround content differentiation, such as allowing students to work from higher-level resources, and process differentiation, like encouraging students to ask higher-level questions. The items also support product differentiation, including providing opportunities for students to pursue independent study projects; environment differentiation, such as allowing students to work in various locations within and outside of the classroom; and assessment differentiation, as with giving students the opportunity to show mastery via pre-tests. Although this study focused on instructors' attitudes toward and instructional practices with their gifted learners, the Classroom Practices Teacher Survey also collects data on instructional practices with non-gifted students within the same classroom. Comparing the frequency of classroom practices used with both gifted and non-gifted students provided a more complete picture on the nature of the classroom instruction received by gifted students.

Pilot of survey instruments. During May and June 2013, the survey instruments were piloted with two groups of educators to assess the time for completion as well as item clarity and appropriateness (see Appendix F for the pilot study notes and results).

The first group of educators included five experts in the field of gifted education. Participants' overall experience included serving as a head of a school for gifted students, serving as an executive board member and/or president-elect of the Michigan Association of Gifted Children, having multiple years of teaching gifted students across multiple states, having graduate degrees in education, and/or having experience teaching education courses at the university level. This expert panel followed the group method described by Bowden, Fox-Rushby, Nyandieka, and Wanjau (2002) as a way to pre-test and revise survey questions. Each participant examined the instruments and suggested revisions to the group. The researcher encouraged discussion about the instruments, allowing panel participants to hear and debate opposing suggestions and come to a group consensus. Appropriate and minor modifications agreed upon by the group were made to the survey instruments before they underwent further pre-testing.

Fraenkel and Wallen (2008) advised that all questions be tested with a small sample similar to study participants to check for ambiguities, poorly-worded, or misunderstood questions. Therefore, the questionnaire was piloted a second time and administered to five secondary AP and IB instructors who teach gifted students in mixed-ability settings and who would not be involved in the study. Instructors' experience teaching gifted students ranged from 2-39 years, and they represented both public and private schools. Participants assessed the time it took to complete the questionnaire, and the researcher conducted short interviews adapted from Bowden et al. (2002), asking for their opinions about the survey instrument. Based on feedback during pre-testing, the researcher made appropriate revisions.

Modifications to Gagné and Nadeau's Attitude Scale (Gagné, 1991-a). Based on the pilot study results, Gagné and Nadeau's Attitude Scale (Gagné, 1991-a) was deemed appropriate to measure instructors' attitudes toward gifted education, and only minor modifications were made to the original instrument (see Appendix G for the revised attitude scale). In the instructions, "Using a five-point Likert scale" was eliminated, as some participants might not have understood what a Likert scale was. Additionally, all references to "children" were changed to "students," a more appropriate term considering all study participants would be secondary instructors.

Modifications to the Classroom Practices Teacher Survey. Based on the pilot study results, Archambault et al.'s (1993) Classroom Practices Teacher Survey also was deemed appropriate to measure the extent to which instructors differentiate for their gifted and non-gifted students, and only minor modifications were made to the original instrument as well (see Appendix H for the revised Classroom Practices Teacher Survey). Although the majority of differentiated practices listed in Archambault et al.'s (1993) original instrument apply across grade levels, some items were deemed inappropriate for secondary AP and IB instructors and therefore eliminated. Original survey items 4, 29, and 30 were deleted, as they do not apply to secondary AP and IB courses. AP and IB students follow a national and international curriculum, respectively, and do not "[u]se self-directed instructional kits such as S.R.A." (item 4). Furthermore, SRA kits typically promote direct instruction in basic skills such as reading comprehension, typically useful at the elementary level. Items 29, "Group students by ability across classrooms at the same grade level," and item 30, "Send students to a higher grade level for specific subject-area instruction," also are not relevant to the AP or IB classroom, as students typically remain in the courses in which they were assigned and no grade levels exist at secondary school campuses beyond the twelfth grade.

Additionally, the wording of two items was slightly modified to improve clarity. Pilot study participants commented that item 24, "Participate in a competitive program focusing on thinking skills/problem solving, such as Future Problem Solving, Odyssey of the Mind, etc.," could be confusing because it is the students who participate in these programs, not the teacher. Item 29 was therefore changed to "Have students participate in a competitive program focusing on thinking skills/problem solving, such as Future Problem Solving, Odyssey of the Mind, etc." Additionally, item 27 states, “Allow students within your classroom to work from a higher grade-level textbook.” Since no grade exists beyond twelfth on high-school campuses, the words “a higher grade-level textbook” were changed to “a higher-level books and resources” to avoid confusion.

Both groups of educators agreed that participants could comfortably complete the questionnaire within 10-15 minutes. Because the changes made to the survey instruments were relatively minor, the changes would not significantly impact the instruments' overall validity or reliability.

Data Collection Procedures

Upon receiving approval from the University of Houston Committee for the Protection of Human Subjects (see Appendix I for approval letter), the researcher submitted the required documents to MDR (n.d.) for distribution. After MDR delivered an initial and follow-up survey invitation, the data were collected, analyzed and reported.

Administration of the questionnaire. In September 2013, the researcher submitted the subject line and e-mail invitation (see Appendix J for e-mail invitation) to

MDR (n.d.), who sent an electronic, one-time delivery of the survey invitation to a national, random sample from their database. The e-mail invitation included a link to the survey instruments as well as the cover letter which included the terms of consent and assurance of confidentiality (see Appendix K for cover letter). To obtain an adequate sample, the instrument was sent to 9,858 potential participants' e-mail accounts. Participants were asked to self-administer the questionnaire by clicking on a link directing them to the survey instruments via the SurveyMonkey™ website. One week later, MDR sent a follow-up e-mail inviting non-responders to participate within the next five days (see Appendix L for follow-up invitation).

Incentives. In a systematic review of over 10 years of literature surrounding the effect of incentives on response rates, Singer and Ye (2013) found that offering incentives significantly affects the rate of return, both in mail and electronic surveys, and that monetary incentives are more effective at increasing response rates than non-monetary incentives. Therefore, to encourage a higher response rate and discourage survey drop-off, the first 20 participants to complete and submit the questionnaire received either $10.00 paid directly to their PayPal account or a $10.00 Amazon.com gift card, whichever they chose. So participants’ responses remained anonymous, they were directed to a separate website to enter their e-mail address for the delivery of their payment or gift card. Additionally, all participating instructors’ e-mail addresses were entered into a drawing for one of two $50 Amazon.com gift cards. Panelists, pilot study volunteers, and participants also had the opportunity to request a copy of the study’s results, which may help them in their own course planning, evaluation, and improvement.

Anonymity and confidentiality. Every effort was made to maintain participants' anonymity. Participants were informed that their responses will remain anonymous. They were not asked to disclose their name or location on any part of the survey, and their IP addresses were not available to the researcher. Participants opting to submit their e-mail address for the incentives were directed to an online form separate from the survey to submit their personal information. All research materials will remain in digital form in a password-protected, electronic file accessible only by the principal researcher on her computer at her residence and her dissertation committee chair, Dr. Rick Olenchak, in Farish Hall room 491. All data will be maintained for a minimum of three years after data analysis was completed.

Variables

Because the causes of the contextual variables were external to the model and their role was to explain the influence on other variables and outcomes, the contextual variables served as the exogenous, or independent, variables. The extent to which instructors differentiated curriculum and instruction served as endogenous, or dependent, variables since factors affecting them exist within the model itself. Instructors' attitudes toward gifted education served as an endogenous variable when looking at how they are affected by contextual variables. Instructors' attitudes also served as mediating or intervening endogenous variables, as the study investigated how contextual variables influence attitudes (endogenous variable) as well as curricular differentiation in part through their influence on the attitudes (intervening endogenous variable).

Data Analysis Procedures

This study's goal was to determine the attitudes AP and IB teachers have toward gifted education, the extent to which they differentiate for their gifted learners, how their attitudes influence their differentiated practices, and how contextual factors frame their attitudes and classroom practices. Data were analyzed using descriptive analysis, exploratory factor analysis (EFA), and structural equation modeling (SEM).

Descriptive analysis. The basic characteristics of the data first were presented with descriptive statistics. Frequency and percentage distributions of the contextual variables as well as means and standard deviations of instructors' self-reported attitudes toward gifted education and instructional behaviors regarding differentiation for gifted students were reported. Additionally, surprises and possible explanations about the results were discussed.

Fraenkel and Wallen (2008) noted one of the most common ways to initially organize data is to prepare frequency distribution tables. Therefore, grouped frequency distributions of selected variables were presented as appropriate. Simple summaries about the data were provided by presenting measures of central tendency as well as the range and standard deviation to discuss the data's variability (Fraenkel & Wallen, 2008). Bar diagrams, histograms, and frequency polygons presented important data properties.

Exploratory factor analysis (EFA). Factor analysis allows one to determine if multiple variables may be correlated, grouped, and represented by fewer, stronger, latent variables as well as to test specific models (Albright & Park, 2009; Fraenkel & Wallen, 2008; Plucker, 2003; Schumacker & Lomax, 2010). Gagné and Nadeau's Attitude Scale (Gagné, 1991-a) and the Classroom Practices Teacher Survey (Archambault et al., 1993) underwent factor analysis during their development. However, the factor structures of these two instruments were reexamined using EFA to see if different factors emerged. Characteristics of this study's sample differed from the samples used by Gagné and Nadeau (Gagné, 1991-a) and Archambault et al. (1993), and, in different contexts, latent factors may vary. Determining a factor structure with this sample strengthened the data analysis and interpretation as well as helped specify a model to test during SEM.

During EFA, uncategorized variables from the two survey instruments were examined using SPSS software. After the covariance and data patterns emerged, statistically-justified factors were extracted and orthogonally rotated to produce the best fit between the data and factors to increase the ease of interpretation. Specifically, varimax rotation, the most commonly used rotation method, minimized the complexity of the components by making the large loadings larger and small loadings smaller within each component (Plucker, 2003).

Structural equation modeling (SEM). After the factor structures were developed during EFA, SEM was performed using the software program AMOS. SEM is a statistical technique used to test and estimate relationships and causal assumptions between variables. First, the measurement model representing the hypothesized factor structures resulting from EFA was evaluated using confirmatory factor analysis (CFA), a technique used to confirm that the latent factors adequately measure the observed variables (Kline, 2011; Schumacker & Lomax, 2010). CFA produces multiple goodness-of-fit measures to evaluate the model, and based on the these measures, the predetermined subscales were adjusted accordingly until an adequate fit was obtained (Albright & Park, 2009; Kline, 2011; Plucker, 2003; Schumacker & Lomax, 2010). A structural equation model then was developed to test the relationships between the contextual variables and latent attitudinal factors and differentiated practices and show potential causal dependencies.

There are many benefits to using SEM rather than traditional multivariate modeling. Whereas traditional multivariate modeling examines direct relationships between independent and dependent variables as seen in Figure 1, an assumption of SEM is that relationships between variables may not be so clear and direct, and it allows the testing for more complex relationships such as those seen in Figure 2 (Allen, 1997; Kline, 2011; Schumacker & Lomax, 2010). Additionally, SEM allows for the prediction of values of one variable using the values of one or more other variables as well as the assessment of the accuracy of the prediction and whether the relationship is statistically significant (Allen, 1997; Kline, 2011; Schumacker & Lomax, 2010).

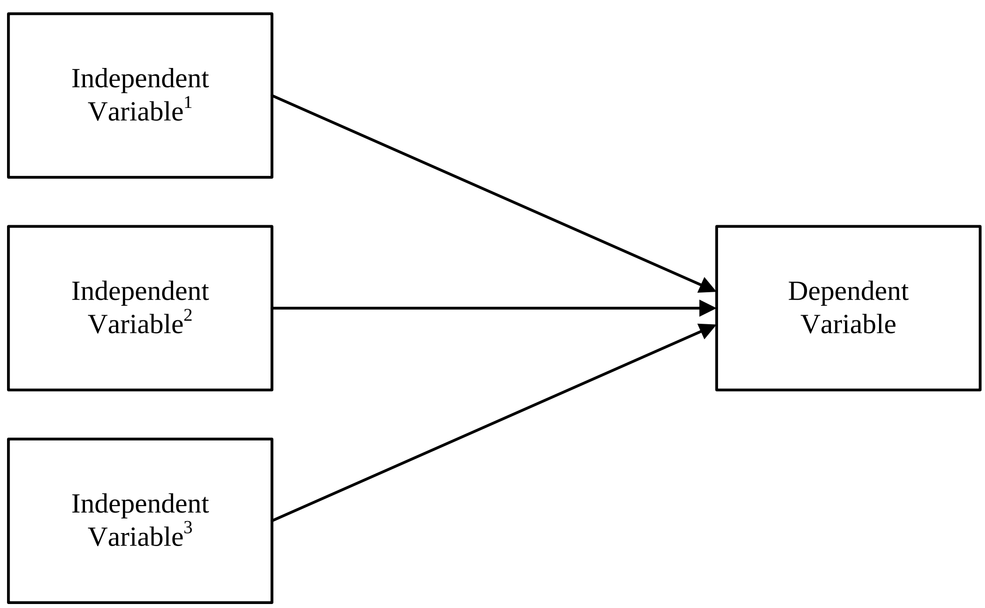

Figure 1. Sample Traditional Multivariate Modeling

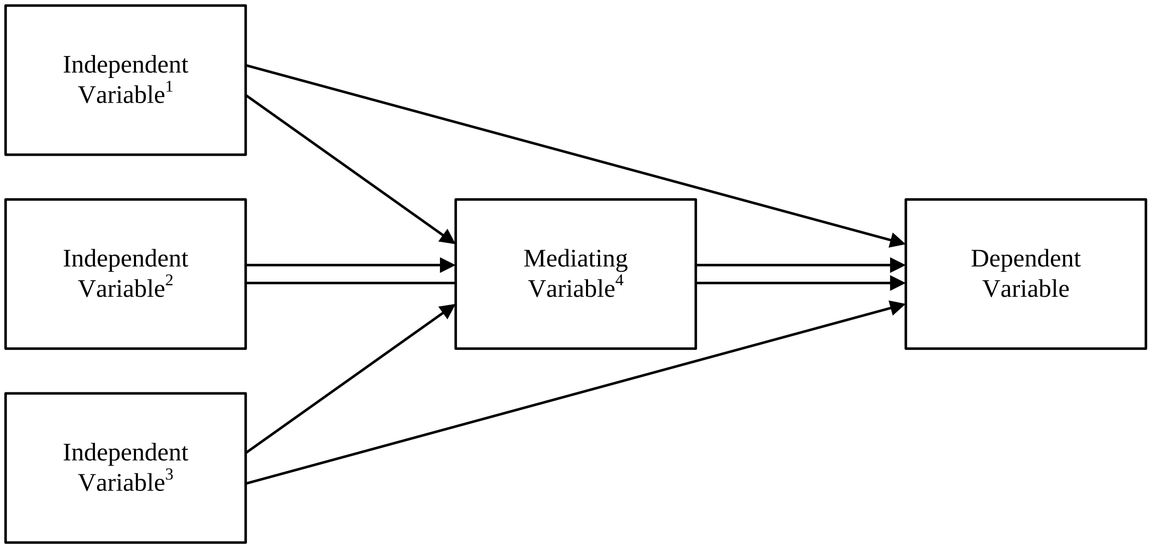

Figure 2. Sample SEM Model

Another strength of SEM is that it allows for diverse ways of reporting results. The types of effects that exogenous and intervening exogenous variables have on endogenous variables may be decomposed into direct effects, indirect effects, total effects, and interaction effects (Allen, 1997; Kline, 2011; Lleras, 2005; Schumacker & Lomax, 2010). A direct effect is the coefficient between variables that are directly and linearly connected, where one variable directly influences another (Jaccard & Turrisi, 2003; Kline, 2011; Lleras, 2005; Schumacker & Lomax, 2010). As illustrated in Figure 3, an indirect effect is the coefficient between two variables that is mediated by an intervening endogenous variable, showing that one variable exerts a causal impact on another variable only through its impact on a third variable (Jaccard & Turrisi, 2003; Kline, 2011; Lleras, 2005; Schumacker & Lomax, 2010). The total effect for an endogenous variable is the extent to which it changes when the exogenous variable increases by one unit and is measured by the sum of the direct effect and all indirect effects (Allen, 1997; Kline, 2011; Schumacker & Lomax, 2010).

Figure 3. Indirect Effect

SEM is powerful partly because it allows the estimation and assessment of not only the separate effects of each exogenous variable, but also their combined effects and interaction effects. Although an assumption is that endogenous variables are most accurately predicted by a linear function of the exogenous variables, their effects are not always additive. The presence of a non-additive effect is referred to as an interaction. Sometimes termed moderated relationships, interaction effects occur when the relationship between an exogenous and endogenous variable depends on the value of a third variable (Allen, 1997; Jaccard & Turrisi, 2003; Kline, 2011; Schumacker & Lomax, 2010). As illustrated in Figure 4, the endogenous variable (Y) is affected by the exogenous variable (X), but the effect differs based on the value of the moderating variable (Z).

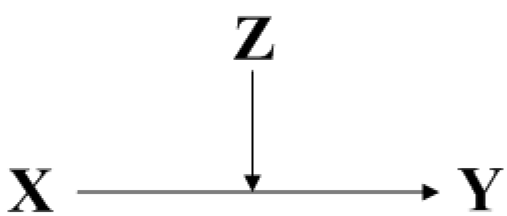

Figure 4. Interaction Effect

In this study, SEM included a set of regressions across two stages and an examination of direct, indirect, total, and interaction effects. At the first stage, the endogenous variables included the latent variables representing instructors' attitudes toward gifted education. The exogenous variables included the contextual factors: course taught (AP, IB, or both), years of experience teaching gifted students, training in gifted education, and whether or not gifted students are identified on instructors' campuses. A regression was run for each attitudinal factor using the same independent variables as illustrated in Figure 5. At the second-stage regression, the endogenous variables were the factors representing the extent to which instructors differentiate for their gifted students. The exogenous variables included both the contextual factors and the attitudinal factors. A regression was run for each differentiation factor using the same contextual variables plus each of the attitudinal factors as illustrated in Figure 6.

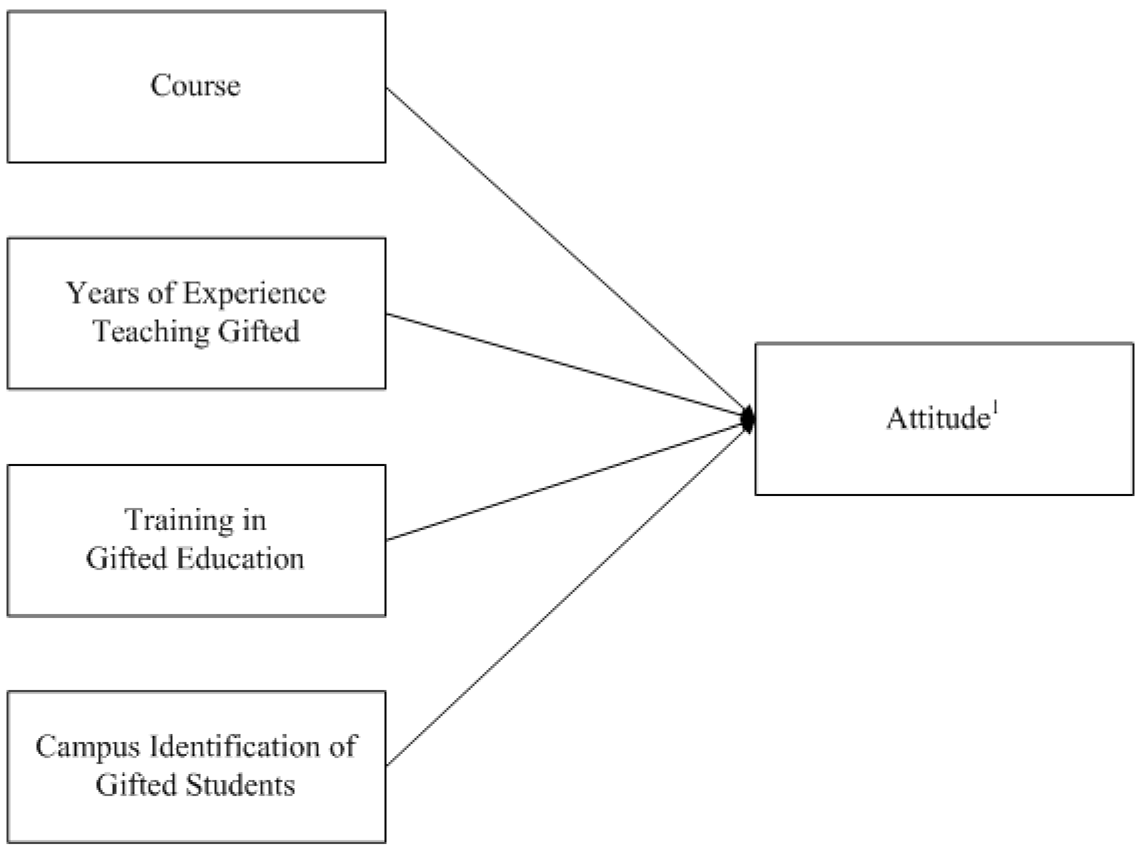

Figure 5. Sample First-Stage Regression on Attitude 1

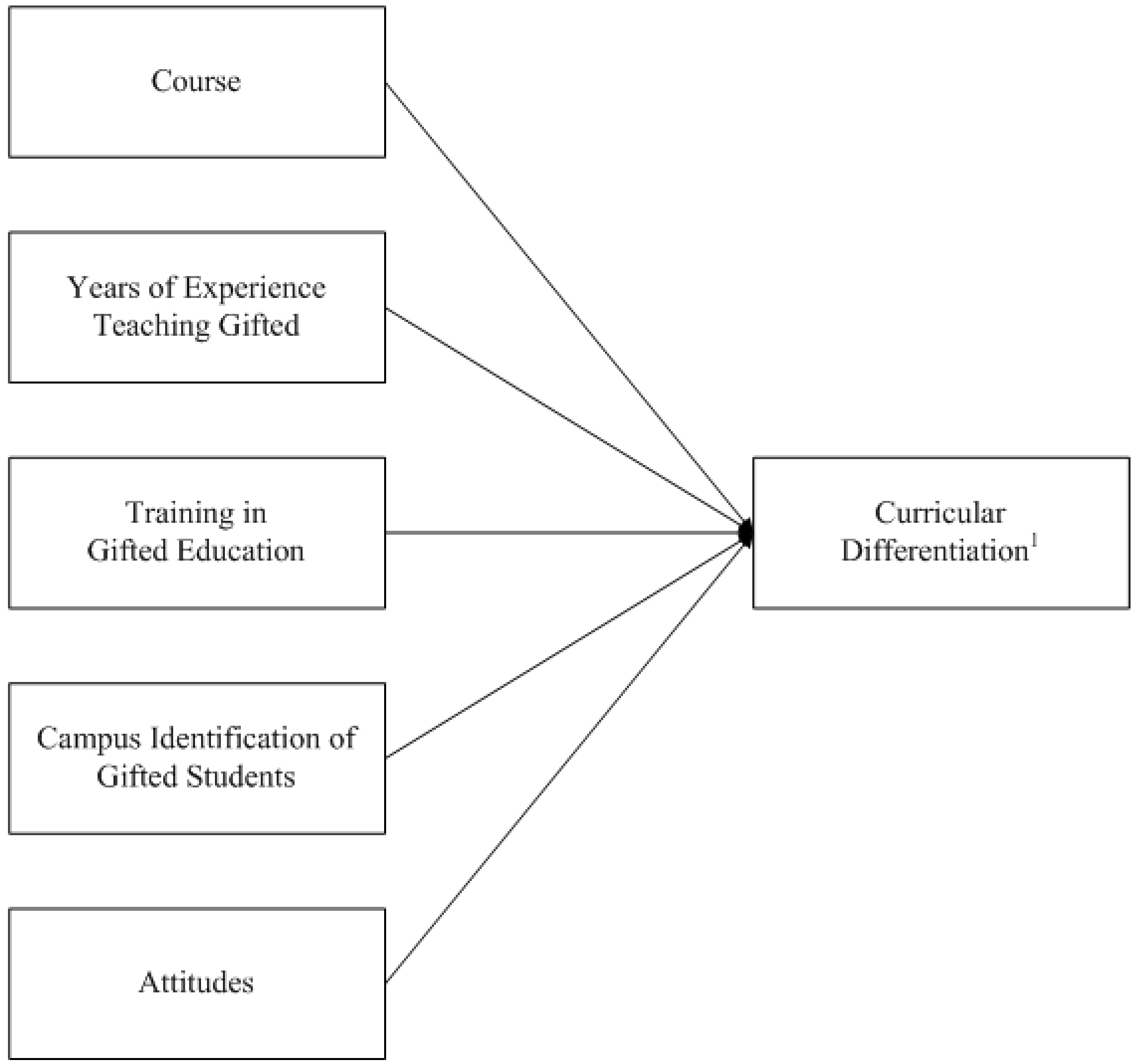

Figure 6. Sample Second-Stage Regression on Differentiation

Data coding. Some variables in this study were categorical rather than continuous or had more than two categories. This data were transformed for analysis by dummy coding. Variables having two or more mutually exclusive categories such as course taught (AP, IB, or both) or years of experience teaching gifted students (0-3, 4-6, 7-10, 11-15, 16-20, 21-30, 31 or more) were coded as dummy variables with values of zero or one; therefore, one group was excluded to serve as the comparison or reference group (Schroeder, Sjoquist, & Stephan, 1997). It made no difference which category served as the comparison group. Regressions yielded coefficients on each dummy variable–an estimate of the difference in value of the endogenous variable between the dummy variable and the comparison group (Schroeder et al., 1997). Using dummy variables made it possible to capture the changes in the endogenous variable across the groups within the categorical exogenous variables.

Data analysis. Data received from the Likert-items on the survey instruments were entered into IBM SPSS Statistics software and descriptive analysis, and EFAs were performed. Data were then analyzed by SEM using IBM SPSS AMOS software, a structural equation modeling program that can read SPSS system files. Lleras (2005) noted that AMOS, a more recent program, allows researchers to manipulate a user-friendly interface to draw high-quality path diagrams and estimate path models. After the model and data were entered into the program, simultaneous estimations were performed based on the specific causal hypothesis assumed using ordinary least squares (OLS) regression to solve the equations for each endogenous variable.

To allow participants to provide further insight into their instructional practices, they were given the opportunity to provide comments. At the end of the Classroom Practices Teacher Survey, participants were instructed, "Please provide any comments you believe will assist with understanding your instructional practices with gifted students." Comments were analyzed for content and converted into categories that emerged from the data. A set of themes was generated based on the categories (Fraenkel & Wallen, 2008).

Underlying Assumptions

Because SEM requires the analysis of several multiple regression equations, many underlying assumptions for multiple regression analysis also apply to SEM. According to Boslaugh and Watters (2008), violating the assumptions of multiple regression reduces the validity of results; therefore, the results of multiple regression analysis are conditional upon the following critical assumptions being satisfied:

Model specification. An underlying assumption inherent in SEM is that it is a mathematical model used to describe and analyze patterns in empirical data, and care must be taken in determining the model, particularly concerning which exogenous variables should be included or excluded (Allen, 1997). Statistical models do not simply emerge from the data. Instead, the model and related assumptions are imposed on the data and represent a complex set of phenomena. Many different models hypothesizing the relationships among variables can be presented, and it is important that the model specification be based on theoretical considerations. Because SEM is sensitive to the model's specification, ignoring relevant, causal variables and including irrelevant variables can significantly change the value of path coefficients and lead to problems with estimation and interpretation of true causal processes (Allen, 1997). Therefore, researchers must justify the model specification with appropriate theoretical and empirical considerations; otherwise, the results will be suspect.

Correlation of independent variables. Care must be taken to avoid significant correlations among exogenous variables. The best way to eliminate this potential problem is to perform a form of orthogonal decomposition on the exogenous variables prior to building the path model. However, Schumacker and Lomax (2010) noted the path model may show covariance between exogenous variables. They state:

> The rationale for such relationships is that there are influences on both these independent variables outside of the path model. Because these influences are not

> studied in this path model, it is reasonable to expect that the same unmeasured variables may influence both independent variables. (p. 144)

Linearity. SEM assumes that relationships between variables are linear, that the values of dependent variables can be expressed as approximate linear functions of the values of the independent variables (Allen, 1997). Nonlinear phenomena should not be tested using any types of multiple regression analysis (Boslaugh & Watters, 2008). The relationship between variables in the model must be linear–impacts between variables should flow in a unidirectional manner with no feedback loops or bidirectional influences. The failure of this assumption, called multicollinearity, makes it impossible to untangle the effects of the exogenous variables, and the model cannot be solved using OLS regression.

Error terms. Endogenous variables may have residuals, called error terms in SEM. Error terms indicate other possible influences on the endogenous variable(s) that are not contained in the model (Schumacker & Lomax, 2010). Assumptions when using OLS include: the mean of all error terms is zero and will balance out even with variation in the pool of error term values, error terms are uncorrelated, and the error terms are independent of and uncorrelated with the exogenous variables (Boslaugh & Watters, 2008).

Delimitations and Unavoidable Problems

This study has several delimitations and unavoidable problems inherent with SEM and survey research. Results of this research are not generalizable outside of the AP and IB instructor participants. Unavoidable problems may have included differential selection, a limited response rate, social desirability, the response effect, clarity with the survey instrument, and the inability to demonstrate causality.

Limited generalizability. A delimitation, an intentional boundary set and controlled by the researcher, is the limited generalizability of the data. This study intentionally focused only on instructors' attitudes toward and differentiated practices in gifted education within heterogeneously-grouped AP and IP courses. Findings do not generalize outside of these areas.

Limited response rate. Fraenkel and Wallen (2008) note that attempting to obtain an appropriate representative sample is often difficult, particularly with survey studies. The percentage of returns for individual surveys sent via MDR (n.d.) vary based on the group surveyed and other variables, but initial responses can be quite low (B. Varga, personal communication, November 30, 2011). Without a representative and sizable sample stemming from the initial group, population generalizability may be impaired.

To increase chances of population generalizability, Fraenkel and Wallen (2008) suggest showing the sample represents the intended population on at least some relevant variables, using random selection rather than a convenience sample, and making every effort to obtain responses from each person in the sample. However, because nonresponse has become an increasing problem in recent years, particularly in survey research, Fraenkel and Wallen (2008) also suggest random replacement–simply adding randomly-selected cases until the desired sample size is reached. Although random replacement can limit generalizability since it pulls from beyond the initial sample surveyed, sometimes it is necessary to achieve a satisfactory sample size.

In this study, MDR (n.d.) randomly selected a national sample of secondary AP and IB instructors by computer so that the sample represents the intended population. Every effort was made to solicit responses from the initial sample including offering financial incentives and sending a follow-up survey invitation. Even with these efforts, a lower return rate still was anticipated. Rather than randomly replacing respondents after the initial return, the survey invitation initially was sent to a large group of 9,858 potential respondents to obtain a sufficient number of responses.

Differential selection. Random sampling and following up will not eliminate differential selection, however, as instructors must voluntarily choose to participate in the study as well as visit a website to complete the survey. Due to an expected high level of non-response, actual participants may differ in their attitudes and self-perceptions from those who did not volunteer to participate, and any conclusions drawn from the responses may not necessarily be a true reflection of the entire population from which the sample is drawn (Fraenkel & Wallen, 2008).

Although the general notion is that a low response rate yields biased results and threatens a survey’s usefulness, some studies suggest this notion is not necessarily accurate. Two studies of telephone response rates (Curtin, Presser, & Singer, 2000; Keeter, Miller, Kohut, Groves, & Prosser, 2000) explored what the consequences of lower response rates would have been if additional efforts had not been undertaken to obtain a larger sample. In both studies, survey responses in the initial return of 20-40% were compared with the responses after considerable efforts yielded a 60-70% return rate. Both studies produced similar results: no significant differences were found between the two groups. The implication is that comparing surveys yielding higher response rates to ones with lower rates does not mean the surveys with higher rates do not equally suffer from non-response bias. Furthermore, multiple studies exploring response bias in the medical field have produced similar results, suggesting that less-than-optimal response rates do not necessarily indicate significant levels of bias are present, particularly within homogeneous groups of respondents (Asch, Jedrziewski, & Christakis, 1997; Cull, O'Connor, Sharp, & Tang, 2005; O'Neill, Marsden, Matthis, Raspe, & Silman, 1995).

Social desirability. Because the survey relied on instructors' self-reports, it was vulnerable to social desirability. Participants may have responded in a way viewed favorably by the researcher, perhaps by over-reporting desirable behaviors or under-reporting behaviors that may be viewed negatively.

This vulnerability may have been intensified based on the affiliation of the researcher, sometimes referred to as "the letterhead effect" (Norenzayan & Schwartz, 1999). Little research has examined the effect of researchers' affiliations on participants' responses. An earlier study by Norenzayan & Schwartz (1999) found that undergraduate students' responses were influenced by the researcher's affiliation. However, McCoach & Siegle (2007) specifically explored if teachers tailored their responses about their attitudes toward the gifted to fit the perceived interests of the researcher by directly manipulating the letterhead effect. They sent an attitudinal survey printed on one of three letterheads to 1,500 teaches with each one-third of the sample receiving University of Connecticut, Center for Equity and Equality, or National Research Center on the Gifted and Talented letterhead. A multivariate analysis of variance allowed them to determine if the letterhead influenced participants' mean scores. McCoach and Siegle (2007) found no statistically significant differences among the letterhead types on the mean scores, suggesting the letterhead has no effect on teachers' responses.

To limit potential threats of social desirability, respondents were reassured of the survey's anonymity, providing neutrality and detachment to help decrease the amount of over or under-reported behaviors. Furthermore, the potential of letterhead effect was unlikely in this study because participants did not know any affiliations of the researcher beyond that she was a doctoral student at University of Houston, as evidenced by the University's logo appearing on the online survey and a reference to the University of Houston in the cover letter.

Response effect. The context in which participants complete the survey can affect their responses. Studies suggest that responses to attitudinal questions vary over time and are sensitive to context (Tourangeau, Rips, & Rasinski, 2000). Researchers therefore speculate that attitudes may reflect temporary states, and the contextual effects influence participants' attitudes (McCoach & Siegle, 2007). However, Lavine, Huff, Wagner, and Sweeny (1998) found that strong attitudes are consistent over time, are resistant to contextual influences, and affect both thoughts and behaviors. To help limit the response effect, the survey directions included a statement instructing participants to allot approximately 10-15 minutes to complete the survey in a comfortable space free from distractions.

Clarity with survey instrument. Participants also may or may not have understood the survey questions or prompts. Since an interviewer or the principal investigator was not present, any unclear questions or prompts could not be explained. However, piloting the survey instruments beforehand helped limit problems with clarity, as unclear and/or inappropriate items were modified or eliminated from the survey instruments altogether. Also, the researcher's absence eliminated the possibility of researcher-induced bias.

Inability to demonstrate causality. Because SEM is based on correlations, SEM does not show causality or the direction of causal effects (Lleras, 2005). Furthermore, SEM cannot determine whether a specific model is correct; it can only reflect theories of causation and predict the likelihood of a causal connection between variables as well as the strength of these relationships.

Summary

The goal of this study was to understand the relationship among contextual factors, instructors' attitudes toward gifted education, and the extent to which instructors differentiate for their gifted students in AP and IB classrooms. Data were collected using an electronic, three-part survey administered to a national, random sample of AP and IB instructors. The survey instruments included a researcher-created teacher information questionnaire, Gagné and Nadeau's Attitude Scale–Opinions About the Gifted and Their Education (Gagné, 1991-a), and Archambault et al.'s (1993) Classroom Practices Teacher Survey. Descriptive statistics were analyzed using frequency and percentage distribution tables, and simple summaries were provided by presenting measures of central tendency, range, and standard deviation and illustrated with bar diagrams, histograms, and frequency polygons. EFA was used to explore the latent factors from the data for Gagné and Nadeau's Attitude Scale (Gagné, 1991-a) and Archambault et al.'s (1993) Classroom Practices Teacher Survey. To test and estimate relationships and causal assumptions between variables, SEM was then conducted. SEM involved performing CFA to confirm the hypothesized latent factors developed during EFA adequately measured the observed variables. After the factor structures were adjusted to obtain a suitable fit, the relationships between the contextual variables, latent attitudinal factors, and latent differentiation factors were tested with a structural equation model to show potential causal dependencies. Participants' comments were categorized and a set of themes emerging from the data were identified.

Chapter IV

Results

As classes become more heterogeneous, concerns grow that the pace will slow and the rigor diminish in order to accommodate more typically developing students. This, in turn, raises the question of what meaningful results occur for gifted students when they participate in AP or IB.

– Shelagh Gallagher (2009, p. 119)

Introduction

This research responds to concerns cited by Gallagher (2009) that the more heterogeneous AP and IB classes become, the less likely they will be to serve gifted learners. The purpose of this study was to examine AP and IB instructors' attitudes toward gifted education and the extent to which they differentiate curriculum and/or instruction for their gifted students. Additionally, this study confirmed a model of how contextual and attitudinal factors framed instructors' differentiated classroom practices.

The research questions guiding the study included:

Research question one. What are AP and IB instructors' attitudes toward gifted education as measured by self-reported ratings on Gagné and Nadeau's Attitude Scale, Opinions About the Gifted and Their Education (Gagné, 1991-a)?

Research question two. To what extent do AP and IB instructors differentiate curriculum and instruction for their gifted students as measured by self-reported ratings on Archambault et al.'s (1993) Classroom Practices Teacher Survey?

Research question three. How do AP and IB instructors’ attitudes toward gifted education influence the extent to which they differentiate for their gifted students?

Research question four. How do contextual variables influence AP and IB instructors’ attitudes toward gifted education and extent to which they differentiate for their gifted students? Contextual variables include the course taught (AP, IB, or both), years of experience teaching gifted students, training in gifted education, and whether or not gifted students are identified on the instructors' campuses.

Participants included AP and IB teachers in the United States who were contacted electronically and invited to complete an online survey designed to elicit information about their attitudes and classroom practices for gifted and non-gifted students. The survey consisted of four contextual items, 34 items measuring attitudes about the gifted and their education, 36 items measuring the frequency of classroom practices for both gifted and non-gifted students, and one optional open-ended item. Data were analyzed using descriptive statistics, exploratory factor analysis, and structural equation modeling.

Descriptive Statistics

Means and standard deviations were computed to describe the 1) contextual variables surrounding the participants, 2) instructors’ attitudes toward gifted students using Gagné and Nadeau’s Attitude Scale (Gagné, 1991-a), and 3) the frequency in which instructors practiced activities listed on the Classroom Practices Teacher Survey (Archambault et al., 1993) for their gifted students. Although this study focused on instructors' attitudes toward and instructional practices with their gifted learners, data were collected on instructional practices with non-gifted students within the same classroom as well. Comparing the frequency of classroom practices among both gifted and non-gifted students provided a more complete picture on the nature of the classroom instruction received by gifted students in heterogeneous environments. Missing data were automatically dropped during the descriptive data analysis; therefore, results are based on the number of subjects (N) who responded to each item.

Sample. Of 9,787 survey invitations successfully delivered by MDR (n.d.) to potential respondents, 377 surveys were submitted via a SurveyMonkey™ website, yielding a return rate of 3.85%. MDR e-mailed 9,858 survey invitations on Monday, October 12, 2013, at 10:00 a.m. ET. Invitations were sent randomly to 4,948 AP teachers and 4,910 teachers at schools offering the IB Diploma Programme. The majority of invited participants, 93.63%, taught in public schools, whereas 2.08% taught in Catholic schools and 3.70% taught in private schools. Ninety-nine e-mails were returned as undeliverable. Approximately 10% of the 9787 deliverable e-mails were opened by recipients. One week later, MDR e-mailed a follow-up survey invitation to 778 subjects who opened the initial survey invitation but did not yet click on the survey link, and approximately 64% of these follow-up e-mails were opened. A total of 377 subjects, 3.85% of those receiving the e-mail, began the survey. Forty-four subjects began but did not complete the survey entirely, and subjects occasionally did not answer one or more item. The overall return rate was 3.85%, and the return rate of completed surveys was 3.40%.

Contextual data. The researcher-created questionnaire collected contextual data from instructors regarding the course(s) they teach, whether or not gifted students are identified, the amount of experience they have teaching gifted students, and the amount and type of training they have in gifted education. Questions regarding contextual data appeared at the end of the questionnaire; therefore, contextual data were not collected on all 377 participants because some respondents did not complete the entire survey or chose not to answer some items.

As shown in Table 4, respondents represented 54.4% AP instructors (N = 180), 26.6% IB instructors (N = 88), and 19% instructors teaching both AP and IB courses (N = 63). The majority of participants reported gifted students were identified on their campuses (62.5%). Thirty percent indicated gifted students were not identified on their campuses, and 7.5% did not know whether or not gifted students were identified on their campus. Participants had a wide range of experience teaching gifted students: 12.3% (N = 41) with 0-3 years, 13.2% (N = 44) with 4-6 years, 17.4% (N = 58) with 7-10 years, 19.5% (N = 65) with 11-15 years, 17.7% (N = 59) with 16-20 years, 14.4% (N = 48) with 21-30 years, and 5.4% (N = 18) with over 30 years' experience.

Table 4

Contextual Descriptors of Participants: Course, Campus Identification, and Years of Experience Teaching Gifted Students

	Frequency (N)	Percent (%)
Course(s) Taught		
AP	180	54.4
IB	88	26.6
Both AP & IB	63	19.0
Campus Identification of Gifted Students		
Yes	208	62.5
No	100	26.5
Not Sure	25	07.5
Years of Experience Teaching Gifted Students		
0-3 years	41	10.9
4-6 years	44	11.7
7-10 years	58	15.4
11-15 years	65	17.2
16-20 years	59	15.6
21-30 years	48	12.7
31 or more years	18	04.8

Instructors could select multiple types and amounts of training they have received in gifted education, and the response frequencies are presented in Table 5. Approximately 30% (*N* = 105) indicated they had no training in gifted education at all. Of the respondents who indicated they have received training, nine held a master’s degree in gifted education, and 28 held an endorsement or certificate in gifted education. No teacher indicated holding a bachelor's degree or doctorate in gifted education. One hundred eighty-two instructors reported having participated in various amounts of district professional development or workshops: 1-10 hours (*N* = 57), 11-20 hours (*N* = 23), 21-30 hours (*N* = 24), and 31 or more hours (*N* = 78). Eighty-seven instructors reported having taken college courses: 1-2 courses (*N* = 50), 3-4 courses (*N* = 24), and five or more courses (*N* = 13). Sixty-nine instructors indicated they have more than one type of training.

Table 5

Contextual Descriptors of Participants: Training in Gifted Education

Training in Gifted Education	**Frequency (N)**
None	105
1-10 hours of district professional development or workshops	57
11-20 hours of professional development or workshops	23
21-30 hours of professional development or workshops	24
31 or more hours of professional development or workshops	78
1-2 course(s) at college/university	50
3-4 course(s) at college/university	24
5 or more course(s) at college/university	13
Endorsement or supplemental certificate in gifted education	28
Bachelor’s degree in gifted education	0
Master’s degree in gifted education	9
Doctorate in gifted education	0

Representativeness of sample. The overall representativeness of the sample is not clear, as little or no national data exist concerning each of the contextual variables. Regarding the number of AP and IB instructors nationwide, data only is available for the AP program. In 2013, 132,555 high-school teachers in the United States taught at least one AP class (College Board, 2014). Of the participants who answered items on the teacher information questionnaire, 180 participants indicated they teach at least one AP course, representing .14% of the total population, and an additional 63 participants indicated they teach both an AP and IB course simultaneously, representing .18% of the total population teaching AP. Information on how many IB Diploma Programme instructors exist in the United States is not available. No data has been published in this area, and employees of IBO are “not able to get a number of Diploma Programme teachers in the U.S.” despite their efforts, noting that any estimates they could provide would be “unreliable” (IBA Conference Department representative, personal communication, October 30, 2013). Although states have cited the AP and IB programs as being frequent delivery modes for gifted services, AP courses are significantly offered more frequently compared with IB courses (Bunnell, 2009; Byrd, 2007; International Baccalaureate, n.d.-c, n.d.-h; Porter & Banchero, 2013; *State of the States*, 2013), and the significantly larger response from AP versus IB teachers certainly reflects that difference.

Pre-service and in-service preparation or training in gifted education–both for general education teachers and teachers in specialized gifted programs–varies across and within states as well. According to NAGC's *2012-2013 State of the States in Gifted Education* report, only one state requires all teachers to receive pre-service training in gifted education as part of a larger special education requirement, and 16 states reported teachers receive a few hours of pre-service training within a course on special populations. General education teachers in only three states are required to have such training during their careers. There is also a wide disparity in the percentage of general education teachers who receive annual professional development in gifted education. Eight states reported that 5% or less of their general education teachers receive annual professional development, and more than 50% of teachers receive annual training in four states.

Although the *State of the States in Gifted Education* report (2013) does not indicate whether AP and IB teachers are “professionals in specialized gifted and talented programs” (p. 31), the report states that of the 30 states offering a credential in gifted and talented education, 17 require these professionals to have a certificate or endorsement in gifted education, and the number of hours required for a credential ranges from 6 to 36 credit hours. Five states reported teachers in gifted programs must receive annual professional development. State estimates of the percentage of teachers in specialized gifted programs having credentials or annual professional development ranged from 0-2% to 100% and 0-1% to 90-100%, respectively. Regarding postsecondary degrees in gifted education, nine states do not offer any degrees in gifted education, and 33 offer graduate degrees such as a master's degree (29), Ph.D. (12), and/or specialist degree (9). Although data exists regarding average years of overall teaching experience, no national data exists regarding how many years of experience teachers have teaching gifted students specifically.

Concerning the number of campuses that identify gifted students, comprehensive national data is not available. According to NAGC's 2012-2013 *State of the States in Gifted Education* (2013) report, of the 42 states, District of Columbia, and one territory who responded to the survey, only 28 states have a mandate to identify gifted students. No data is available concerning how many districts and/or campuses within the remaining states identify gifted students. With some states lacking the basic data about their gifted students and the teachers who serve them, combined with inconsistencies among and within states, it was not possible to gauge this sample's overall representativeness.

Attitudes toward giftedness. Instructors expressed their attitudes toward gifted education and gifted students by completing Gagné and Nadeau's Attitude Scale, Opinions About the Gifted and Their Education (Gagné, 1991-a). A 5-point Likert scale assessed instructors' extent of agreement or disagreement with statements regarding gifted students and education ranging from "strongly agree" to "strongly disagree." Mean scores were used for interpreting the Attitude Scale (see Appendix M for descriptive statistics for Gagné and Nadeau's Attitude Scale). According to the instrument's scoring procedures, several items needed to be reverse coded (Gagné, 1991-b; Gagné & Nadeau, 1985). Seven items (6, 7, 10, 20, 21, 25, and 29) were worded negatively compared with other items within their respective factors and therefore needed to be reverse coded so all positive attitudes corresponded with higher scores and all negative attitudes corresponded with lower scores. High scores on four subscales indicated positive attitudes toward the gifted. However, high scores on the Resistance to Objections and Rejection subscales indicated negative attitudes toward the gifted; therefore, all items within these factors (3, 4, 5, 12, 16, 18, 19, 22, 23, 26, 27, 28, and 31) were reverse coded as well so that high scores on all subscales indicated positive attitudes, easing data analysis and interpretation. Both the original and reverse coded mean scores are included in Appendix M.

When items were grouped into the same six factors developed by Gagné and Nadeau (Gagné, 1991-a, 1991-b), overall mean scores ranged from an ambivalent attitude to a somewhat positive attitude (see Appendix N for original factor mean scores). According to Gagné and Nadeau's scoring procedures, attitudes were classified as very negative = 0.00 to 1.99, somewhat negative = 2.00 to 2.74, ambivalent = 2.75 to 3.25, somewhat positive = 3.26 to 3.99, and very positive = 4.00 to 5.00 (Gagné, 1991-a, 1991-b; Gagné & Nadeau, 1985). The original six subscales include 1) Needs and Support, measuring respondents' beliefs in the unique needs of gifted children and their support of special services for the gifted, 2) Resistance to Objections, measuring respondents' objections based on their ideologies and competing priorities, 3) Social Value, measuring respondents' perceptions of the usefulness of gifted individuals in society, 4) Rejection, measuring respondents' attitudes toward the isolation of gifted persons by others, 5) Ability Grouping, measuring respondents' attitudes toward homogeneous groups of gifted persons in classes and/or schools, and 6) School Acceleration, measuring respondents' attitudes grade and/or content acceleration as enrichment for the gifted.

AP and IB instructors reported an average somewhat positive attitude toward giftedness in five of the six subscales: Needs and Support (*M* = 3.88), Resistance to Objections (*M* = 3.31), Rejection (*M* = 3.35), Ability Grouping (*M* = 3.29), and Social Value (*M* = 3.64). Although the overall mean scores revealed a somewhat positive attitude in the Ability Grouping and Rejection subscales, those teaching IB had overall ambivalent attitudes (*M* = 3.17) in the Ability Grouping subscale, as did those teaching both AP and IB (*M* = 3.24) in the Rejection subscale. All groups of instructors reported an average ambivalent attitude in the School Acceleration subscale (*M* = 2.94).

An analysis of variance (ANOVA) was conducted to see if instructors teaching AP, IB, or both AP and IB courses responded significantly differently within any of the subscales (see Appendix O for the ANOVA for instructors' responses on the original factors). The ANOVA indicated a significant difference existed between groups of instructors in two subscales, School Acceleration (p = .022) and Social Value (p = .041). Subsequent t-tests presented in Table 6 revealed that the significant difference in responses existed between AP instructors and those teaching both AP and IB in the School Acceleration factor as well as between instructors teaching AP and instructors teaching IB in the Social Value factor. AP instructors had higher overall mean averages on both subscales, indicating they had more positive attitudes toward School Acceleration and Social Value.

Table 6

Independent Samples T-Test for School Acceleration and Social Value Factors

	Course	N	Mean	Std. Deviation	T-Test
School Acceleration	AP	179	3.04	.68	$t(240) = 2.59$, $p = .01$
	Both AP & IB	63	2.77	.75	
Social Value	AP	177	3.70	.51	$t(261) = 2.56$, $p = .01$
	IB	86	3.53	.56	

Because services for high-school gifted students typically are provided through AP and IB courses (Bunnell, 2009; Gallagher, 2009; Hertberg-Davis & Callahan, 2008; Hertberg-Davis, Callahan, & Kyburg, 2006, *State of the States*, 2013) some responses to individual items were surprising given that this sample of teachers typically serves gifted students (see Appendix P for surprising items on Gagné and Nadeau's Attitude Scale). Although the overall mean for the factor, Resistance to Objections, reflected a somewhat positive attitude ($M = 3.31$), the disparity in instructors' responses on eight of the 10 items (3, 4, 5, 16, 18, 23, 27, and 28) within this factor revealed they possessed strong and opposing opinions. For example, in response to item 3, "Students with difficulties have the most need of special education services," 44.3% either partially or totally disagreed ($N = 166$), 10.1% were undecided ($N = 38$), and 45.60% either partially or totally agreed ($N = 171$) (see Figure 7). In item 4, "Special programs for gifted students have the drawback of creating elitism," 59.3% of instructors ($N = 223$) partially or totally agreed that special programs for gifted students create elitism, whereas 33.5% ($N = 126$) totally or partially disagreed and 7.2% ($N = 27$) were undecided (see Figure 8). A similar trend was found in response to five additional items:

- "Special educational services for the gifted are a mark of privilege" (item 5),
- "Our schools are already adequate in meeting the needs of the gifted" (item 16),
- "It is parents who have the major responsibility for helping gifted students develop their talents" (item 18),
- "The gifted are already favored in our schools" (item 23),
- "Average students are the major resource of society; so, they should be the focus of our attention" (item 27), and
- "Gifted students might become vain or egotistical if they are given special attention" (item 28).

An ANOVA was conducted to see if groups of instructors responded significantly differently from one another for each of these surprising items (see Appendix Q for an ANOVA for surprising responses). No significant differences were found.

Since AP and IB instructors typically serve the campus' gifted students, one might expect them to understand their gifted learners' characteristics and unique needs. Presumably, an understanding of these characteristics and needs would have led to more homogeneously positive beliefs that serving students with difficulties and gifted students were equally important. Furthermore, one might presume educators of the gifted would generally recognize that providing special programs and/or services for gifted learners is about creating equal challenge and opportunity, not elitism.

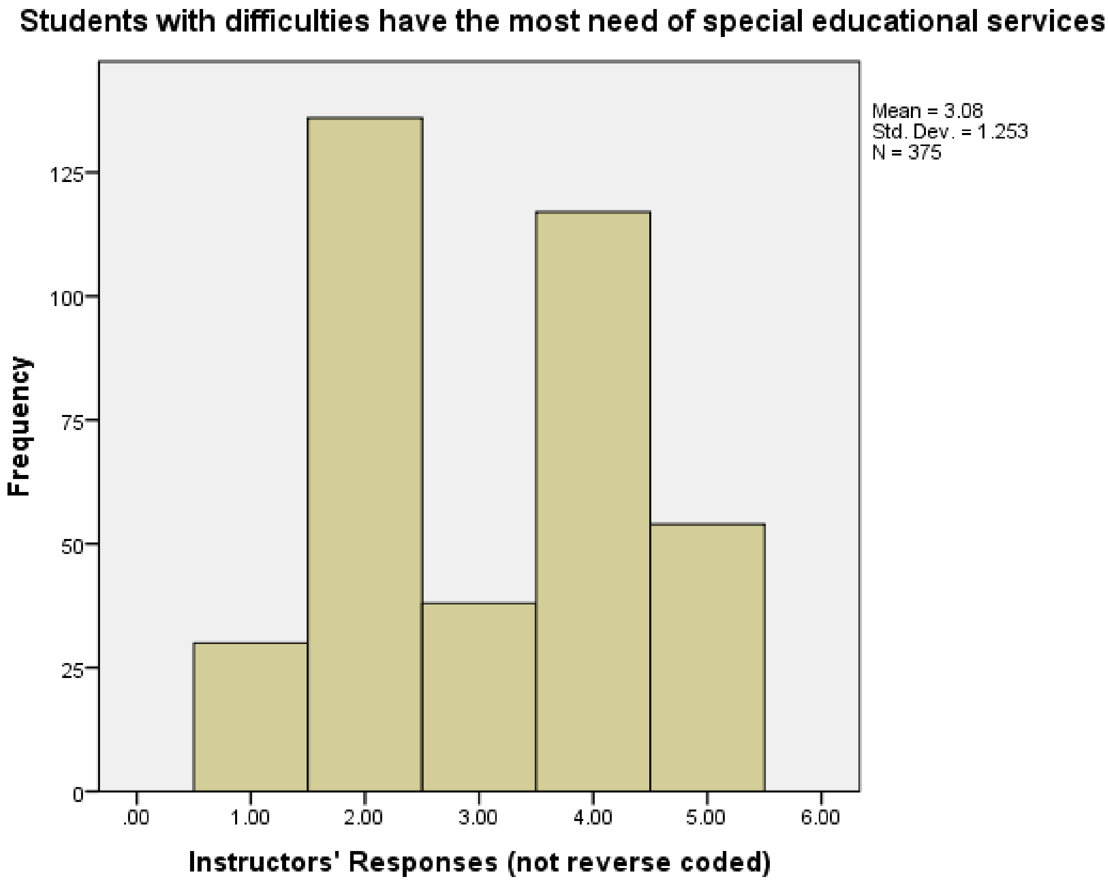

Figure 7. Resistance to Objections item 3 showing strong and opposing responses.

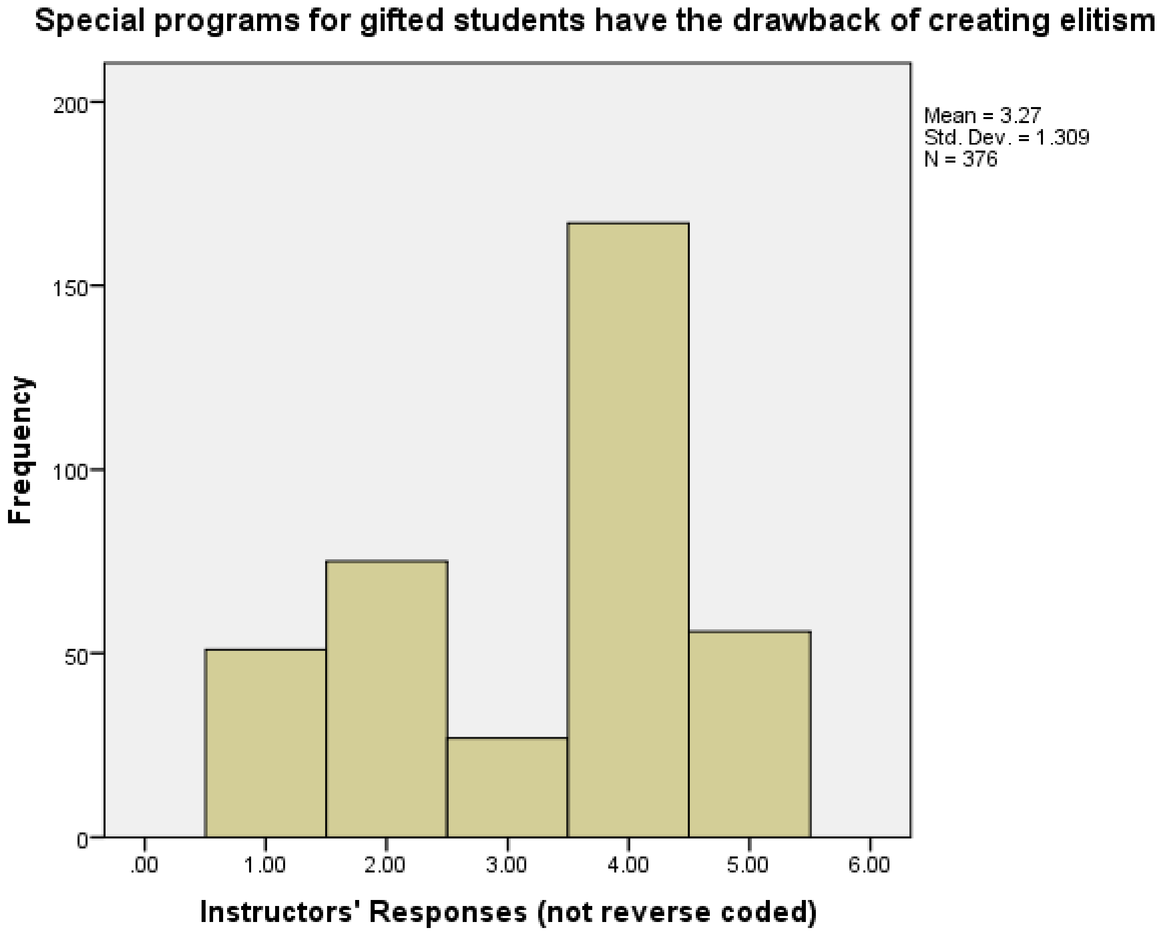

Figure 8. Resistance to Objections item 4 showing strong and opposing responses.

Several items within other subscales also revealed similar surprising results given this population. Responses to item 11, "The gifted waste their time in regular classes," revealed that almost half of the teachers, 47.1% (*N* = 177), totally or partially disagreed with this statement, whereas 41.82% (*N* = 156) partially or totally agreed and 11.4% (*N* = 43) were undecided. Teachers' responses to item seven, "Most gifted students who skip a grade have difficulties in their social adjustment to a group of older students," revealed a almost half of teachers agree. Over 48% (*N* = 208) of respondents partially or totally agreed with this statement, whereas 30% (*N* = 113) partially or totally disagreed and 21.8% (*N* = 82) were undecided. Responses to item six, "When the gifted are put in special, homogeneous classes, the other students feel devalued," showed 35% (*N* = 131) partially or totally agreed, 52.10% (*N* = 195) partially or totally disagreed, and 12.8% (*N* = 48) were undecided. Additionally, responses to item 21, "By separating students into gifted and other groups, we increase the labeling of students as strong–weak, good–less good, etc.," indicated 59.4% (*N* = 223) of respondents partially or totally agreed, whereas 32.3% (*N* = 121) partially or totally disagreed and 8.3% (*N* = 31) were undecided.

Again, since this population of teachers typically work with the campus' gifted learners, one might expect more homogeneously positive attitudes rather than strong and opposing opinions. An assumption might be that having experience working with gifted students and, as in the majority of cases in this study, having had at least some preparation or training in gifted education would have led to more positive attitudes toward interventions proven successful with gifted students. Homogeneous grouping (Gallagher, 2009; NAGC, n.d.-a) and acceleration (Colangelo et al., 2004; Davis & Rimm, 2004; Steenbergen-Hu & Moon, 2011) are interventions designed to provide gifted learners with appropriate and equal challenge and are not intended to devalue or label other students. One might also presume the educators working with gifted students would understand that the research strongly supports acceleration as the most effective curriculum intervention for gifted students (Colangelo et al., 2004; Davis & Rimm, 2004; Steenbergen-Hu & Moon, 2011), that gifted students allowed to accelerate according to their intellectual potential actually have been shown to succeed more than gifted students not allowed to accelerate (Burks, Jensen, & Terman, 1930; Davis & Rimm, 2004), and that gifted students–whether they accelerate or not–typically have little or no social adjustment problems (Burks, Jensen, & Terman, 1930; Davis & Rimm, 2004).

No significant differences existed among groups of instructors for any of these surprising items (see Appendix Q for an ANOVA for surprising responses) with the exception of item seven, "Most gifted students who skip a grade have difficulties in their social adjustment to a group of older students" (*p* = .020). As presented in Table 7, AP instructors' mean average for item 7 was 3.00, whereas instructors teaching both AP and IB had a mean average of 3.41. Because items needing to be reverse coded were done so only when grouped as part of a latent factor, higher scores on this individual item equated to more negative attitudes, and lower scores equated to more positive attitudes. Results for this item indicated that AP instructors held more positive attitudes (*M* = 3.00) than instructors teaching both AP and IB (*M* = 3.41).

Table 7

Independent Samples T-Test for Item 7

	Course	N	Mean	Std. Deviation	T-Test
Most gifted students who skip a grade have difficulties in their social adjustment to a group of older students	AP	180	3.00	1.11	*t*(241) = -2.6, *p* = .01
	Both AP & IB	63	3.41	1.07	

Classroom practices with gifted students. Instructors reported how frequently they used specified instructional practices with their gifted students. Additionally, instructors reported the frequency to which they engaged in these practices with their non-gifted/average students within the same classroom. Comparing the frequency of classroom practices used with both gifted and non-gifted students provided a more complete picture on the nature of the classroom instruction received by gifted students. A 6-point Likert scale assessed the frequency of each classroom practice ranging from "never" (0) to "more than once a day" (5). Appendix R summarizes the instructors' responses to the Classroom Practices Teacher Survey, including the means and standard deviations for gifted (GT) and non-gifted/average (AV) students. Additionally, the mean differences for individual items, calculated by subtracting the mean average score from the mean gifted score, are included. Positive mean differences indicate instructors engaged in the corresponding activity more frequently with gifted students than non-gifted students. Likewise, negative mean differences indicate instructors engaged in the corresponding activity less frequently with their gifted students.

Means for individual items ranged from less than once a month (M = < 1) to more than once per day (M > 4). Item 6, "Assign book reports," was performed the least frequently with both gifted students (M = .5137) and non-gifted students (M = .4012). Item 35, "Encourage student participation in discussions," was performed more frequently with both gifted (M = 4.2900) and non-gifted (M = 4.0758) students. These scores suggest that assigning both gifted and non-gifted students book reports occurred on average less than once a month, and encouraging both gifted and non-gifted students to participate in discussions occurred on average more than once a day.

Regarding the differences between frequencies of using specific practices with gifted and non-gifted students, some individual items showed a mean difference close to zero (see Appendix R for mean differences). For instance, the mean difference for item 15, "Modify the instructional format for students who learn better using an alternative approach," was -.0030, and for item 11, "Use pretests to determine if students have mastered the material covered in a particular unit or content area," the mean difference was -.0123, indicating there was very little difference in the frequency of these practices with gifted and non-gifted groups. The largest mean difference existed on item 3, "Assign reading of more advanced level work" (*M* = .7143), and the second-largest difference occurred with item 27, "Provide a different curricular experience by using a more advanced curriculum unit on a teacher-selected topic" (*M* = .5583), indicating these activities were performed more with gifted students than with non-gifted students. Overall, though, the differences were quite small.

Items also were grouped into the six factors developed by Archambault et al. (1993) which included 1) Questioning and Thinking, 2) Providing Challenges and Choices, 3) Reading and Written Assignments, 4) Curriculum Modifications, 5) Enrichment Centers, and 6) Seatwork. Table 8 presents the overall factor mean scores and standard deviations. Instructors reported that both their gifted (GT) and non-gifted (AV) students engaged in Questioning and Thinking activities more than a few times per week (*M* = 3.93 for gifted students; *M* = 3.67 for non-gifted students). Instructors reported students engaged in activities represented by the remaining five factors fewer than a few times per month. An ANOVA indicated no significant differences existed between group responses in any of the subscales for gifted or non-gifted students, as the *p*-values for all comparisons were higher than .05 (see Appendix S for an ANOVA for original factors for the Classroom Practices Teacher Survey). As with the individual item mean differences, factor mean differences were also small as illustrated in Table 9. Factor mean differences ranged from .08 for Enrichment Centers to .32 for Reading and

Written Assignments. No significant differences existed in responses between the groups of instructors (see Appendix T for an ANOVA of factor mean differences).

Table 8

Factor Mean Scores for Original Factors on Archambault et al.'s (1993) Classroom Practices Teacher Survey

	N	Mean	Std. Deviation
Questioning and Thinking (Gifted)	287	3.93	.70
Questioning and Thinking (Non-Gifted)	290	3.67	.88
Providing Challenges and Choices (Gifted)	308	1.73	.93
Providing Challenges and Choices (Non-Gifted)	310	1.43	.80
Reading and Written Assignments (Gifted)	318	1.68	.74
Reading and Written Assignments (Non-Gifted)	319	1.36	.69
Curriculum Modifications (Gifted)	316	1.55	.91
Curriculum Modifications (Non-Gifted)	317	1.39	.79
Enrichment Centers (Gifted)	320	1.44	.86
Enrichment Centers (Non-Gifted)	312	1.36	.80
Seatwork (Gifted)	323	1.25	.89
Seatwork (Non-Gifted)	326	1.53	.91

Table 9

Factor Mean Differences for Original Factors on Archambault et al.'s (1993) Classroom Practices Teacher Survey

	N	Mean	Std. Deviation
Questioning and Thinking	279	.24	.49
Providing Challenges and Choices	297	.31	.52
Reading and Written Assignments	310	.32	.56
Curriculum Modifications	311	.14	.48
Enrichment Centers	308	.08	.47
Seatwork	319	-.27	.60

Exploratory Factor Analysis

Because the sample for this study included AP and IB instructors–a different population than previously used with Gagné and Nadeau's (Gagné, 1991-a) and Archambault et al.'s (1993) instruments–EFA was conducted using SPSS software to investigate the factor structure of both instruments with this sample of teachers. Factor analysis is used to reduce the observed variables within each dataset to a lower number of latent variables (Field, 2009; Kinnear & Gray, 2009; Schumacker & Lomax, 2010). As recommended by Kinnear and Gray (2009), the factor analyses involved generating a matrix of correlation coefficients for all possible pairings of the variables; extracting the factors using principal component analysis, the most common method that shows how each variable contributes to each component; and rotating the factors to facilitate data interpretation. Factors were orthogonally rotated using varimax rotation so factors remained independent of each other during rotation (Field, 2009). To determine whether a factor loading in a pattern matrix was practically significant, items with loadings of .50, generally, were dropped. Although some extracted factors matched the factor scales original to Gagné and Nadeau's (Gagné, 1991-a) and Archambault et al.'s (1993) instruments, analyses revealed new patterns as well.

Imputation. Before EFA was performed, the missing values were replaced through imputation to improve the statistical analysis. Of the 377 cases, approximately 1% of overall missing values existed overall. However, there were more than 10% of missing values on the Archambault et al.'s (1993) Classroom Practices Teacher Survey instrument. Although the presence of missing values is common, missing data values within variables can significantly affect the statistical analysis (Farhangfar, Kurgan, & Dy, 2008; Schumaker & Lomax, 2010). Researchers respond to missing data differently. The simplest way to deal with this problem is to discard the items with missing values altogether, but this method is recommended only when the data contain relatively small number of missing values (Farhangfar, Kurgan, & Dy, 2008). Although AMOS can work with Pairwise deletion, whereby subjects with missing data on each pair of variables are deleted, Pairwise deletion of cases can be problematic and is not always recommended, as it can dramatically reduce the sample size and cause a significant amount of observations to be lost (Schumacker & Lomax, 2010). Researchers therefore may choose to engage in "robust statistical procedures that accommodate for the presence of missing data" such as imputing–or filling in–the missing data with logical, meaningful values (p. 20).

Farhangfar, Kurgan, and Dy (2008) examined the impact of performing missing data imputation and found that imputation methods were "beneficial for most amounts of missing data above 5% and that the amount of improvement does not depend on the amount of missing data" (p. 3704). Although there is no universally best imputation method, both Farhangfar, Kurgan, and Dy (2008) and Schumacker and Lomax (2010) note that the mean-based imputation method, where missing values are replaced with the mean of the variable, is the least beneficial unless the amount of missing values is over 50% or very small. Therefore, the median-based imputation method was used in this study prior to conducting factor analysis and fitting the models during SEM. Missing values were replaced with the median of nearby points to obtain 377 valid cases for each variable. Imputing the missing values did not cause a significant difference in the mean or standard deviation.

Gagné and Nadeau's Attitude Scale (Gagné, 1991-a). Based on the results of EFA, seven factors emerged using 32 of the 34 items: Rejection, School Acceleration, Elitism, Needs and Support, Social Value, Mixed-Ability Settings, and Equal Opportunities (see Appendix U for factor scale with loadings). Three factors were the same as one or more subscales identified by Gagné and Nadeau (Gagné, 1991-a) and McCoach and Siegle (2007). Two factors consisted of identical items to Gagné's factor analysis: Rejection and School Acceleration. Rejection measures attitudes about gifted persons being isolated or rejected by others as illustrated by item 19, "A student who has been identified as gifted has more difficulty in making friends." School Acceleration measures attitudes toward grade skipping as illustrated by item 34, "A greater number of gifted students should be allowed to skip a grade." One factor consisted of identical items to McCoach and Siegle's (2007) subscale, Elitism. Items in this factor measure attitudes about giftedness being a "mark of privilege" (item 5), creating elitism, and devaluing other students.

Four other factors emerged including Needs and Support, Social Value, Mixed-Ability Settings, and Equal Opportunities. Items loading into the Needs and Support factor show similarities to Gagné's (1991-a, 1991-b) Needs and Support and McCoach and Siegle's (2007) Support subscales. This factor measures attitudes about the unique needs of gifted students and support for special services as illustrated by item 1, "Our schools should offer special education services for the gifted." Also similar to one of Gagné's subscales, the Social Value factor measures attitudes about gifted people being valuable in society as illustrated by item 33, "The leaders of tomorrow's society will come mostly from the gifted of today." Two new factors emerged as well. Items loading on to the Mixed-Ability Settings factor measure attitudes toward gifted students remaining in regular school programs as illustrated by item 11, "The gifted waste their time in regular classes." An Equal Opportunities factor also emerged that measures attitudes toward gifted students' needing equal opportunities for educational challenge compared with other groups such as average students and students with difficulties. A sample item includes item 12, "We have a greater moral responsibility to give special help to students with difficulties than to gifted students."

Due to low loadings on some items during factor analysis, two items were eliminated. Items 18, "It is parents who have the major responsibility for helping gifted students develop their talents," and 25, "By offering special educational services to the gifted, we prepare the future members of a dominant class," did not load onto any factor. Items not loading onto a factor could result from the item being unclear or irrelevant. For instance, in item 25, respondents possibly could view the word "dominant" differently. Whereas "dominant" might have been interpreted as having a negative connotation and meaning oppressive or authoritative, it also could have been interpreted as having a more positive connotation, meaning important and influential.

Descriptive statistics were run for the seven factors using the imputed data. As with the descriptive statistics, some factors and individual items required reverse coding. Seven items (7, 10, 20, 26, and 29) were worded negatively compared with other items within their respective factors and therefore needed to be reverse coded so all positive attitudes corresponded with higher scores and all negative attitudes corresponded with lower scores. High scores on four subscales indicated positive attitudes toward the gifted. However, high scores on the Rejection, Elitism, and Equal Opportunities subscales indicated negative attitudes toward the gifted; therefore, all items within these factors were reverse coded as well so that high scores on all subscales indicated positive attitudes, easing data analysis and interpretation.

As presented in Table 10, mean scores on the factors indicated teachers had overall somewhat positive attitudes for five factors: Needs and Support, Social Value, Mixed-Ability Settings, and Equal Opportunities, and Rejection. Teachers had overall ambivalent attitudes toward two factors, Elitism and School Acceleration. An ANOVA of the new factor scale revealed significant differences continued to exist between instructors' responses in the Social Value (p = .036) and School Acceleration (p = .024) factors (see Appendix V for an ANOVA for the new factor scale for Gagné and Nadeau's Attitude Scale). An independent samples t-test revealed that as with Gagné and Nadeau's original factor structure (Gagné, 1991-a), AP instructors continued to indicate significantly higher positive attitudes (M = 3.90) than IB instructors (M = 3.67) within the Social Value factor ($t(266) = 2.62$, $p < .05$) as well as significantly higher positive attitudes (*M* = 3.03) than those teaching both AP and IB (*M* = 2.77) in the School Acceleration factor ($t(241) = 2.55$, $p < .05$) as presented in Table 11.

Table 10

Mean Scores for New Factors on Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

	N	Mean	Std. Deviation
Rejection	377	3.35	.78
School Acceleration	377	2.92	.72
Elitism	377	3.12	.85
Needs and Support	377	3.97	.69
Social Value	377	3.79	.70
Mixed-Ability Settings	377	3.40	.88
Equal Opportunities	377	3.33	.80

Table 11

Independent Samples T-Test for School Acceleration and Social Value Factors

	Course	N	Mean	Std. Deviation	T-Test
School Acceleration	AP	180	3.03	.68	$t(241) = 2.55$, $p = .01$
	Both AP & IB	63	2.77	.75	
Social Value	AP	180	3.90	.65	$t(266) = 2.62$, $p = .01$
	IB	88	3.67	.70	

Archambault et al.'s (1993) Classroom Practices Teacher Survey. Similar to Archambault et al.'s (1993) initial factor analysis yielding a nine-factor solution, EFA for the Classroom Practices Teacher Survey also yielded an initial nine factor solution using the eigenvalue criterion that worked for responses concerning both the gifted and non-gifted student groups. Factors included 1) Assigning Seatwork, 2) Encouraging Higher-Level Questions and Discussion, 3) Allowing Students to Pursue Individual Interests, 4) Assigning Projects and Writing Assignments, 5) Modifying the Curriculum and Instruction, 6) Using Learning and Enrichment Centers, 7) Varying Locations,

8) Encouraging the Development of Thinking Skills, and 9) Providing Higher-Level Reading Opportunities (see Appendix W for factor scale with loadings).

The new scale shared similarities with Archambault et al.'s (1993) factor scale with the factor structures either being the same or broken into smaller, more specific teacher practices. The Assigning Seatwork factor, which measures how frequently instructors use worksheets (items 1 and 2), puzzles, and word searches (item 7), was identical to Archambault et al.'s. The Encouraging Higher-Level Questions and Discussion factor measures how frequently instructors encourage discussion by asking higher-level questions as illustrated by item 32, "Provide questions that encourage reasoning and logical thinking." The Allowing Students to Pursue Individual Interests factor measures how frequently instructors facilitate students' pursuing subjects of individual interest as illustrated by item 10, "Make time available for students to pursue self-selected interests." The Assigning Projects and Writing Assignments factor measures how frequently teachers assign projects, particularly writing-based assignments such as expository writing assignments (items 8 and 9) and reports (items 4 and 6). The Modifying the Curriculum and Instruction factor measures how often teachers adjust the curriculum and their instruction based on student ability and readiness as illustrated by item 14, "Substitute different assignments for students who have mastered regular classroom work." Using Learning and Enrichment Centers measures how frequently teachers allow students to visit classroom centers to work on basic skills (item 19) or enrichment activities (item 20). The Varying Locations factor measures how frequently instructors allow students to work in different places such as the school library or media center (item 17) or on computers (item 36). The Encouraging the Development of

Thinking Skills factor measures the frequency in which instructors teach thinking skills by providing a more advanced curriculum (Item 27) or encouraging students to participate in programs such as Future Problem Solving (Item 23). Providing Higher-Level Reading Opportunities measures how often teachers allow students to read texts above their grade level as illustrated by item 26, "Allow students within your classroom to work from higher-level books and resources."

Descriptive statistics were run for the eight new factors (see Appendix X for overall factor mean scores). The overall factor means ranged from .62 and .68 for Learning and Enrichment Centers for gifted and non-gifted students, respectively, to 4.08 and 3.81 for Encouraging Higher-Level Questions and Discussion for gifted and non-gifted students, respectively. Instructors reported:

- Both their gifted and non-gifted students rarely had opportunities to visit learning or enrichment centers (*M* = .62 for gifted students; *M* = .68 for non-gifted students).
- Both gifted and non-gifted students had opportunities to pursue individual interests (*M* = 1.57 for gifted students; *M* = 1.32 for non-gifted students), engage in projects and writing assignments (*M* = 1.42 for gifted students; *M* = 1.14 for non-gifted students), complete seatwork (*M* = 1.22 for gifted students; *M* = 1.51 for non-gifted students), and benefit from instructional or curricular modifications (*M* = 1.63 for gifted students; *M* = 1.59 for non-gifted students) less than a few times per month.
- Both gifted and non-gifted students had opportunities to work in various locations (*M* = 2.35 for gifted students; *M* = 2.12 for non-gifted students) and engage in

higher-level reading (M = 2.88 for gifted students; M = 2.23 for non-gifted students) more than a few times a month.

- Teachers encouraged the development of thinking skills more than once a month for non-gifted students (M = 1.79) and more than a few times per month for gifted students (M = 2.16).
- Teachers also encouraged higher-level questions and discussion more than a few times per week for non-gifted students (M = 3.81) and daily for gifted students (M = 4.08).

An ANOVA of the new factor scale revealed no significant differences in responses existed among groups of instructors (see Appendix Y for an ANOVA of the Classroom Practices Teacher Survey new factor scale).

As with the original factor scale, teachers reported few differences in instruction took place between their heterogeneously grouped gifted and non-gifted students in multiple factors as presented in Table 12. Mean differences were calculated by subtracting the overall mean score for non-gifted students from the overall mean score for gifted students. Positive differences indicate teachers engaged in the activity more frequently with gifted students than with non-gifted students. Negative differences indicate teachers engaged in the activity less frequently with gifted students than with non-gifted students. Using Learning and Enrichment Centers (M = -.05) and Modifying the Curriculum and Instruction (M = .04) showed mean differences close to zero. The largest difference existed in Providing Higher-Level Reading Opportunities (M = .65). An ANOVA indicated no significant differences in responses existed among groups of instructors (see Appendix Z). Overall, the differences in frequencies instructors performed activities with their gifted and non-gifted students appeared quite small.

Table 12

Factor Mean Differences for New Factors on Archambault et al.'s (1993) Classroom Practices Teacher Survey

	N	Mean	Std. Deviation
Assigning Seatwork	377	-.2829	.57
Encouraging Higher-Level Questions and Discussion	377	.27	.58
Allowing Students to Pursue Individual Interests	377	.25	.49
Assigning Projects and Writing Assignments	377	.28	.50
Modifying the Curriculum and Instruction	377	.04	.58
Using Learning and Enrichment Centers	377	-.05	.58
Varying Locations	377	.24	.54
Encouraging the Development of Thinking Skills (Gifted)	377	.37	.56
Providing Higher-Level Reading Opportunities (Gifted)	377	.65	.87

Structural Equation Modeling

After the factor structures were developed during EFA, SEM was performed to test and estimate relationships between variables. First, the measurement model representing the hypothesized factor structures resulting from EFA was evaluated using CFA to confirm that the latent factors adequately measure the observed variables (Kline, 2011; Schumacker & Lomax, 2010). The predetermined subscales were adjusted accordingly until adequate goodness-of-fit measures were obtained (Albright & Park, 2009; Kline, 2011; Plucker, 2003; Schumacker & Lomax, 2010). A structural equation model then was developed to test the relationships between the contextual variables and latent attitudinal factors and differentiated practices and show potential causal dependencies.

Confirmatory factor analysis. To assess the hypothesized model fit and confirm the factor structure developed during EFA for Gagné and Nadeau's Attitude Scale (Gagné, 1991-a) data and Archambault et al.'s (1993) Classroom Practices Teacher Survey, CFA was performed using IBM SPSS AMOS software. In CFA, the relationships between the manifest variables and latent variables were specified, and all latent variables were allowed to covary. To achieve an adequate fit, some additional items and factors were excluded from the analysis on one or both factor structures. The final goodness-of-fit statistics, when compared with their respective recommended levels, suggested the proposed measurement models were adequate for subsequent structural equation modeling analysis.

Gagné and Nadeau's Attitude Scale (Gagné, 1991-a). To achieve an adequate fit during the CFA of Gagné and Nadeau's Attitude Scale's (Gagné, 1991-a) factor structure, one factor was eliminated and several other items were either dropped or moved, resulting in a six-factor scale consisting of 22 items (see Appendix AA for the CFA factor structure and loadings and Appendix BB for the estimated CFA model). The Rejection factor, consisting of three items (19, 22, and 31), was eliminated. No changes were made to the Mixed Ability Setting factor. Items 7 and 10 were dropped from the School Acceleration factor. Item 6 was eliminated from the Elitism factor. Item 17 was eliminated from the Social Value factor, and items 14 and 15, originally part of the Needs and Support factor, were added. Item 3 was eliminated from the Equal Opportunity factor, and item 26, originally part of the Needs and Support factor, was added. Of the four remaining items within the Needs and Support Factor, two were dropped, items 20 and 2, leaving two indicators for this factor. From a statistical standpoint, Kline (2011) notes that two indicators per factor is the technical minimum, but having only two indicators, rather than three or more, can lead to potential problems such as an empirically underidentified model or difficulty estimating the measurement error correlations resulting in a specification error. However, from a theoretical perspective, the Needs and Support factor measures some basic and important beliefs about gifted education–whether or not schools should offer special educational services for the gifted (item 1) and whether or not gifted education should be funded (item 30). Because of the factor's importance to the study, it was retained in the structural model. Table 13 presents the goodness-of-fit statistics and recommended levels for the CFA of Gagné and Nadeau's Attitude Scale (Gagné, 1991-a).

Overall, the essence of the six remaining factor structures remained the same as those determined during EFA. The only slight difference occurred within the Social Value factor. With the addition of items 14 and 15, this factor now measured the value of gifted people in society as well as within the school setting. Although the Needs and Support factor ultimately included only two items, items 1 and 30 still clearly measure the need to provide (item 1) and support (item 30) gifted services.

Table 13

Goodness-of-Fit Statistics for the CFA of Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

Goodness-of-Fit Index	Recommended Level	Fit Statistic Values
CMIN/DF	< 3.00 (Byrne, 2010)	1.90
Comparative Fit Index (CFI)	≥ .90 (Kline, 2011)	.92
Normed Fit Index (NFI)	≥ .80 (Ullman, 2001)	.85
Incremental Fit Index (IFI)	≥ .80 (Garson, 2012)	.92
The Tucker-Lewis Index (TLI)	≥ .90 (Kline, 2011)	.90
Relative Fit Index (RFI)	≥ .80 (Garson, 2012)	.81
Root Mean Square Error of Approximation (RMSEA)	< .10 (Tabachnick and Fidell, 2007)	.05

Instructors' mean scores on the final factors ranged from ambivalent attitudes toward Acceleration (M = 3.06) to very positive attitudes toward Needs and Support (M = 4.23) as presented in Table 14. Instructors' mean scores on the remaining factors indicated somewhat positive attitudes except for Elitism, where mean scores indicated ambivalent attitudes (M = 3.07). An ANOVA indicated there was no significant difference in responses among groups of instructors (see Appendix CC).

Table 14

Mean Scores for Final Factors on Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

	N	Mean	Std. Deviation
Acceleration	377	3.06	.80
Elitism	377	3.07	.88
Social Value	377	3.95	.66
Mixed Ability Settings	377	3.40	.88
Needs and Support	377	4.23	.80
Equal Opportunities	377	3.67	.76

Archambault et al.'s (1993) Classroom Practices Teacher Survey. Similar to Gagné and Nadeau's Attitude Scale (Gagné, 1991-a) CFA results, the factor structure was adjusted for Archambault et al.'s (1993) Classroom Practices Teacher Survey to achieve an adequate fit as presented in Table 15. Although a six-factor scale was found adequate during CFA for responses concerning both gifted and non-gifted student groups, a four-factor scale consisting of 22 items was ultimately retained (see Appendix DD for the CFA factor structure and loadings and Appendices EE and FF for the estimated CFA models for gifted and non-gifted students).

Initially, one factor was eliminated, one factor was absorbed into another, and several items were eliminated or moved. The Assigning Seatwork factor, consisting of three items (1, 2, and 7), was dropped. One item (35) was eliminated from Encouraging Higher-Level Questions. Within the Allowing Students to Pursue Individual Interests factor, one item (31) was dropped, and all three items within the Varying Locations factor (16, 17, and 36) were absorbed within the Allowing Students to Pursue Individual Interests factor. Three items (11, 14, and 18) were eliminated from the Modifying Curriculum and Instruction factor, and two items (3 and 27) were added. The Assigning Projects and Writing Assignments factor remained the same.

Of the six remaining factors, two factors included only two indicators each, Using Learning and Enrichment Centers and Encouraging the Development of Thinking Skills, and were eliminated prior to estimating the structural model due to both statistical and theoretical grounds. From a statistical standpoint, having fewer than three indicators per factor is not generally recommended (Kline, 2011). Furthermore, although the study's sample size exceeds the "typical" size of at least 200 cases, the SEM model to estimate was quite complex (Kline, 2011, p. 12). Reducing the number of parameters to estimate increased the statistical power (Kline, 2011). At times, there may be theoretical justifications to retain a factor with only two indicators, as there was with Needs and

Support factor that emerged from Gagné and Nadeau's Attitude Scale (Gagné, 1991-a). However, no strong theoretical reason existed to retain either factor. Instructors reported that they rarely used learning or enrichment centers in their classrooms for either gifted or non-gifted students, and centers typically are associated with elementary school grades rather than secondary classrooms. Additionally, indicators for the factor, Encouraging the Development of Thinking Skills, included teaching a specific unit on thinking skills and having one's students participate in competitive thinking skills program. These activities generally are not associated across all secondary, advanced, subject-based courses.

Table 15

Goodness-of-Fit Statistics for the CFA of Archambault et al.'s (1993) Classroom Practices Teacher Survey

Goodness-of-Fit Index	Recommended Level	Fit Statistic Values
(Gifted)		
CMIN/DF	< 3.00 (Byrne, 2001)	2.10
Comparative Fit Index (CFI)	≥ .90 (Kline, 2011)	.92
Normed Fit Index (NFI)	≥ .80 (Ullman, 2001)	.85
Incremental Fit Index (IFI)	≥ .80 (Garson, 2012)	.92
The Tucker-Lewis Index (TLI)	≥ .90 (Kline, 2011)	.90
Relative Fit Index (RFI)	≥ .80 (Garson, 2012)	.83
Root Mean Square Error of Approximation (RMSEA)	< .10 (Tabachnick and Fidell, 2007)	.05
(Non-Gifted)		
CMIN/DF	< 3.00 (Byrne, 2001)	2.13
Comparative Fit Index (CFI)	≥ .90 (Kline, 2011)	.91
Normed Fit Index (NFI)	≥ .80 (Ullman, 2001)	.85
Incremental Fit Index (IFI)	≥ .80 (Garson, 2012)	.92
The Tucker-Lewis Index (TLI)	≥ .90 (Kline, 2011)	.90
Relative Fit Index (RFI)	≥ .80 (Garson, 2012)	.82
Root Mean Square Error of Approximation (RMSEA)	< .10 (Tabachnick and Fidell, 2007)	.06

Instructors' mean scores were calculated for the final four factors as illustrated in Table 16. Instructors reported they engaged in the following behaviors:

- Assigned projects and reports the least frequently, slightly more than once a month for both gifted (M = 1.35) and non-gifted (M = 1.06) students,
- Encouraged higher-level questions the most frequently, daily for gifted students (M = 4.02) and more than a few times a week for non-gifted students (M = 3.72),
- Allowed gifted (M = 1.77) and non-gifted (M = 1.56) students to pursue individual interests fewer than a few times a month, and
- Modified the curriculum for gifted (M = 2.28) and non-gifted (M = 2.03) students slightly more than a few times a month.

An ANOVA indicated there were no significant differences in responses among groups of instructors (see Appendix GG).

Table 16

Mean Scores for Final Factors on Archambault et al.'s (1993) Classroom Practices Teacher Survey

	N	Mean	Std. Deviation
Encouraging Higher-Level Questions (Gifted)	377	4.02	.72
Encouraging Higher-Level Questions (Non-Gifted)	377	3.72	.95
Allowing Students to Pursue Individual Interests (Gifted)	377	1.77	.82
Allowing Students to Pursue Individual Interests (Non-Gifted)	377	1.56	.73
Modifying the Curriculum and Instruction (Gifted)	377	2.28	.80
Modifying the Curriculum and Instruction (Non-Gifted)	377	2.03	.72
Assigning Projects and Reports (Gifted)	377	1.35	.69
Assigning Projects and Reports (Non-Gifted)	377	1.06	.62

Concerning the frequencies of using specific instructional practices with gifted students compared with non-gifted students, the mean differences were small. Positive differences indicated teachers engaged in the activity more frequently with gifted students than with non-gifted students. Negative differences indicate teachers engaged in the activity less frequently with gifted students than with non-gifted students. As illustrated in Table 17, instructors engaged in all activities slightly more with their gifted students, with differences ranging from .22 in Allowing Students to Pursue Individual Interests to .29 in both Encouraging Higher-Level Questions and Assigning Projects and Reports. An ANOVA indicated no significant difference in responses existed among groups of instructors (see Appendix HH). Results from a paired samples t-test presented in Table 18 indicated although the differences seemed small, they were highly significant (p = .000). Exploring factors that influence these differences may be worthwhile in future research.

Table 17

Mean Differences for Final Factors on Archambault et al.'s (1993) Classroom Practices Teacher Survey

	N	Mean Difference	Std. Deviation
Encouraging Higher-Level Questions	377	.29	.63
Allowing Students to Pursue Individual Interests	377	.22	.46
Modifying the Curriculum and Instruction	377	.25	.45
Assigning Projects and Reports	377	.29	.54

Table 18

Paired Samples T-Test for Mean Differences for Final Factors on Archambault et al.'s (1993) Classroom Practices Teacher Survey

	Mean	Std. Deviation	t-Test
Encouraging Higher-Level Questions	.29	.63	t(376) = 8.95, p = .000
Allowing Students to Pursue Individual Interests	.22	.46	t(376) = 9.06, p = .000
Modifying the Curriculum and Instruction	.25	.45	t(376) = 10.65, p = .000
Assigning Projects and Reports	.29	.54	t(376) = 10.45, p = .000

Structural equation model. After confidence in the measurement model was obtained through EFA and CFA, a structural equation model was developed and tested. This model examined the direction of the assumed relationships between the six latent attitudinal factors, four latent factors representing classroom practices with gifted students, and contextual variables. The contextual variables initially included the course taught (AP, IB, or both), years of experience teaching gifted students (0-3 years, 4-6 years, 7-10 students, 11-15 years, 16-20 years, 21-30 years, 31 or more years), whether or not gifted students are identified, and the type and amount of training instructors had in gifted education.

At the onset of this phase of analysis, however, it was clear that the model would suffer from having too many parameters to estimate compared with the available data points. To help ensure a model fit, the number of parameters was reduced by simplifying instructor training to having either some or none and eliminating the variable concerning whether or not gifted students are identified at instructors' campuses. The teacher training data were complex, as instructors many times had engaged in multiple types and amounts of training in gifted education. Investigating the effect of specific types and amounts of training on instructors' attitudes and classroom practices would require further factor analysis and would have created more parameters to estimate, which would have been problematic. For this study, the training variable was simplified to having either some or none. Further research might explore the impact of specific types and amounts of training on instructors' attitudes and classroom practices. Additionally, to help ensure an adequate model fit, the contextual variable measuring whether or not gifted students are identified was dropped. Knowing which students are gifted in one's class seems important for one to offer appropriate differentiated curriculum and instruction for those students. However, available research does not address this concept specifically. This variable therefore was eliminated due to the lack of a theoretical basis. Of the remaining contextual variables, one category from each was kept as reference category and all other categories were taken in consideration in the structural model.

The initial structural model explored the following relationships:

- The paths from all the contextual variables (except references) to all the attitudinal factors to estimate the direct effects,
- The paths from all the contextual variables (except references) to all the classroom practices factors to estimate the direct effects,
- The paths from all the attitudinal factors to all the classroom practices factors to estimate the direct effects, and
- The paths from all the contextual variables on the classroom practices factors using the attitudinal factors as mediating variables to estimate the indirect effects.

As expected, the initial model faced problems estimating a large number of parameters compared to the data points available, and initial goodness-of-fit statistics were not ideal. Consequently, the measurement model was revised to improve the fit. This process involved excluding statistically insignificant relationship paths and dropping some factor items responsible for poor fit based on the modification indices, factor loadings, and standardized covariances among the items. After these modifications, the final structural model was obtained (see Appendix II for the structural model) which included three attitudinal factors: Equal Opportunity (AF3), School Acceleration (AF5), and Needs and Support (AF6); four factors representing classroom practices with gifted students: Encouraging Higher-Level Questions (GF1), Allowing Students to Pursue Individual Interests (GF2), Modifying the Curriculum and Instruction (GF3), and

Assigning Projects and Reports (GF4); and two contextual variables: years of experience teaching gifted students (0-3 years) and training in gifted education (some/none).

All other direct effects were discarded in the final structural model, as they were found statistically insignificant in the initial model. Furthermore, all indirect effects of the contextual variables on classroom practices with gifted students, as mediated by the attitudinal factors, were eliminated as well due to statistical insignificance. Interaction effects were also tested between experience (0-3 years) teaching gifted students and training (some or none) on all the attitudinal and classroom practices factors and were found statistically insignificant and consequently discarded. These exclusions helped improve the model fit considerably, and Table 19 illustrates the goodness-of-fit measures.

Table 19

Goodness-of-Fit Measures for the Structural Model (see Appendix II)

Goodness-of-Fit Index	Recommended Level	Fit Statistic Values
CMIN/DF	< 3.00 (Byrne, 2001)	1.44
Comparative Fit Index (CFI)	≥ .90 (Kline, 2011)	.93
Normed Fit Index (NFI)	≥ .80 (Ullman, 2001)	.80
Incremental Fit Index (IFI)	≥ .80 (Garson, 2006)	.93
The Tucker-Lewis Index (TLI)	≥ .90 (Kline, 2011)	.92
Relative Fit Index (RFI)	≥ .80 (Garson, 2006)	.78
Root Mean Square Error of Approximation (RMSEA)	< .10 (Tabachnick and Fidell, 2007)	.04

Table 20 presents the estimated effect measures from the structural equation model. Having 0-3 years of experience of teaching gifted students showed to have positive, highly statistically significant effects on instructors' attitudes about School Acceleration (AF5) (β = .242, 95% CI: .072, .589, $p < .01$), implying they had more positive attitudes. Having some training in gifted education, as opposed to no training, had a significant positive influence on the Equal Opportunities (AF3) attitudinal factor (β = .237, 95% CI: .563, .023, $p < .05$), implying that educators with training have more positive attitudes toward gifted students needing equal opportunities for educational challenge compared with other groups such as average students and students with difficulties.

Concerning the effects attitudinal factors had on classroom practices with gifted students, only one attitudinal factor, Needs and Supports (AF6), was found to have statistically significant effects on the classroom practices factors. The Needs and Support factor showed positive, highly significant influences on all four classroom practices factors: Encouraging Higher-Level Questions (GF1) (β = 2.061, 95% CI: 1.045, 7.047, $p < .01$), Allowing Students to Pursue Individual Interests (GF2) (β = 5.997, 95% CI: 3.185, 21.020, $p < .01$), Modifying the Curriculum and Instruction (GF3) (β = 5.146, 95% CI: 2.696, 18.452, $p < .01$), and Assigning Projects and Reports (GF4), (β = 5.657, 95% CI: 3.068, 19.794, $p < .01$). These estimated positive effects suggest that educators who have more positive attitude towards the need to offer and fund services for gifted students tend to more frequently encourage higher-level questions, allow students to pursue individual interests, modify the curriculum and instruction, and assign projects and reports among their gifted students. No other attitudinal factor showed a statistically significant effect on any classroom practices factor.

Table 20

Effect Measures from the Structural Model (see Appendix II)

Direction of Effects	**Coefficients (β)**	**95% CI**	**P-Value**
Experience 0-3 Years → AF5	.242	.072, .589	.002
No Training → AF3	.237	.023, .563	.031
AF6 → GF1	2.061	1.045, 7.047	.002
AF6 → GF2	5.997	3.185, 21.020	.002
AF6 → GF3	5.146	2.696, 18.452	.002
AF6 → GF4	5.657	3.068, 19.794	.002

Comments

At the end of Archambault et al.s' (1993) Classroom Practices Teacher Survey, participants were instructed, "Please provide any comments you believe will assist with understanding your instructional practices with gifted students." One hundred forty one participants provided comments, which were analyzed via content analysis (see Appendix JJ for list of categorized comments). Comments were converted into categories that emerged from the data analysis to generate a set of themes (Fraenkel & Wallen, 2008). Five categories emerged including 1) beliefs about gifted students and gifted education, 2) instructional activities, 3) lack of differentiation, 4) comments regarding survey items, and 5) miscellaneous comments.

Beliefs about gifted education. Some respondents (*N* = 12) shared their general beliefs about gifted education. Eight responses reflected support for gifted education, stating that gifted students do not thrive in regular and/or restrictive class settings and need specialized education. For instance, one respondent stated, "The gifted student should be nurtured to develop their [*sic*] talents and not restricted by so called practices that are mandated for everyone." However, four responses indicated a lack of support for gifted education, stating that "we are focusing too much on the gifted who are only making up 1% of the school population;" that labeling students as gifted, regular, or special needs and differentiating for specific groups or individuals "limits the classroom experience," and that labeling students as gifted can have negative effects such as creating "a sense of entitlement" or an "elitist attitude."

Instructional activities. Thirty-eight instructors chose to comment on classroom instructional activities. The majority, (*N* = 38), provided one or more specific examples of how they differentiate for gifted students. The types of activities varied and included practices such as in-class ability grouping, providing opportunities for higher-level discussion and Socratic inquiry, allowing gifted students to learn the content with more depth, creating a student-centered classroom environment, allowing students to collaborate, and giving students choices. One respondent commented:

> [C]hoice and guided selection is common; option to work collaboratively and independently; grading structure to reward improvement and growth in writing/critical reading; community building and frequently discussed value of collaboration/consensus AND divergent thinking.

Additionally, three respondents commented on either how technology, such as a 1:1 laptop program or iPads, contribute to differentiated instruction, and two respondents cited the lack of technology or other resources as a hindrance to their being able to differentiate.

Lack of differentiation. A large majority of comments (*N* = 62) revolved around instructors' *not* differentiating for their gifted students. Fourteen instructors stated that their approaches with gifted and non-gifted students are the same overall. Sample comments include "If the classes are mixed, I teach everyone the same way. gifted [*sic*] students generally do better," Any student who chooses to take one of my advanced classes will have the same assignments and expectations as all students," and "My instructional practices are the same with all. I just expect the more advance [*sic*] students to challenge themselves more." Forty-eight instructors, however, gave specific reasons why they do not differentiate. Common themes emerging from these responses include the AP and/or IB course content offers enough challenge for all students, the AP and/or IB curriculum does not allow for differentiation, and most or all of the students enrolled in AP and/or IB courses are gifted or equally capable.

Challenging content. A predominant theme emerging from instructors' responses (*N* = 14) was that the advanced topics taught in AP and IB classes were sufficient to meet gifted students' needs. Respondents cited the "higher-level course," "advanced topics," "college level" material, and "fast-paced and demanding" class as reasons why differentiation is not used or needed. One IB Theory of Knowledge instructor commented:

> I teach highly conceptual, abstract subject matter on a daily basis. What we do on a daily basis is something that students without a penchant for abstract thought would find intolerable and unsuitable, in my experience.

A foreign language instructor stated that the survey items were "moot" for foreign language classrooms:

> Foreign language learning, in my opinion, often levels the playing field. I have seen so-called average students surpass gifted students in their abilities in a

> foreign language, because they are more motivated. Here lies the key to teaching: student motivation.

This group of instructors seemed to feel that if the subject is "alien" to a gifted student or simply at a "college-level," the content itself is enough to meet the students' academic needs. Supporting this notion, one instructor noted, ". . . [I]n twenty-three years I have never had any student state that the course was NOT challenging."

Rigid curriculum. Another common reason teachers stated they do not differentiate for their students (*N* = 11) is the constraints associated with AP and/or IB curriculum. They described the IB curriculum as "well established," one that "demands a fast pace, and as a program that "does not differentiate between the two labels" of gifted and non-gifted. Likewise, they described the AP program as allowing "no time or incentives for long term projects" and having "not much flexibility in the curriculum for student choice." Both programs are aimed at "test performance;" therefore, "the assignments are tailored to meet the demands of the AP or the IB exam, accordingly." One instructor commented the IB curricular constraints are problematic and feels students in regular classes have more opportunities to thrive:

> The truth is I feel that teaching I.B. courses truly narrows the amount of "thinking skills" such as problem-solving, that one can do in a classroom due to the prescribed nature of the program . . . . My "general" classes do an abundance of problem-solving, reasoning and applications to today's top issues-both good and bad. My I.B. students are forced to learn prescribed material that is ultimately attached to a high-stakes exam after the end of two years. So, my gifted students are being held back by this "special" program (I.B.) [*sic*] meanwhile my "general"

> classes are thriving with thinking skills that truly engaged their minds and stimulate their enthusiasm/attitude towards school.

Two instructors commented that with the influx of a broader range of mixed-ability students, their students are generally less prepared for the rigors of the class and the course has become "less and less aimed at the gifted, based on need (revealed by AP test scores)."

Equally-capable students. Nine instructors' comments reflected their belief that most or all students who enroll in an AP or IB course have equal capabilities as gifted students and are therefore treated the same. They noted that "there really is no difference between the Gifted and the Non-Gifted [*sic*] student," that all students are treated as if they are gifted "to stretch their minds and knowledge," and that average students in advanced classes "can rise to the level of the gifted student." One instructor commented that the students' work ethic is what is important, not their capability as measured by an IQ test:

> I believe that "smart is as smart does;" emphasis on IQ often encourages smugness and laziness, but emphasis on a strong work ethic encourages critical thinking and provides a natural form of differentiated learning. . . . Instead of focusing resources on special populations, we should be focusing resources on ALL students.

These responses reflect concerns stated by Gallagher (2009) that with the influx of a greater range of mixed-ability students, gifted students' needs are not being met.

Other comments. Although no other predominant themes emerged from the comments, instructors did provide several other reasons why they do not differentiate for gifted students. Five respondents noted they do not differentiate because they do not know which students are gifted. Four respondents cited the trend to enroll as many students as possible in AP and IB courses as detrimental to meeting the gifted learners' needs. In fact, one person referred to the "focus on minimum requirements for all," coupled with "heterogeneous grouping," as a "disaster." One instructor does not differentiate because "all kids have the propensity to be gifted in their own way." Lastly, four instructors' comments reflected they may have been confused, thinking all students enrolled in AP and/or IB are formally gifted. Their comments compared their AP or IB students with those enrolled in general education classes rather than comparing their gifted and non-gifted students within their AP or IB courses. No other relevant themes emerged from the 29 remaining comments, which related to survey item content, what courses instructors taught, and other miscellaneous comments.

Summary

This dissertation study explored AP and IB instructors' attitudes toward gifted education, how frequently they differentiate curriculum and instruction for their gifted students, and how their attitudes as well as contextual variables ultimately impact their differentiated classroom practices. Of the 9,787 survey invitations successfully delivered by MDR (n.d.) to a national, random sample of AP and IB teachers, 377 surveys were returned, yielding a return rate of 3.85%. Of the participants who completed the teacher information questionnaire, 54.4% indicated they are AP instructors, 26.6% are IB instructors, and 19% teach both AP and IB. Participants reported that 62% of their campuses identify gifted students, 26.5% do not identify gifted students, and 7.5% are not sure. Participants' years of experience teaching gifted students ranged from 0-3 years to

31 or more years. Although the majority of instructors indicated they had some training and/or education in gifted education, 105 instructors indicated they had no training or preparation at all. Types of training instructors reported as having include district professional development or workshops, college courses, endorsements or supplemental certificates in gifted education, and master's degrees in gifted education.

Instructors expressed their attitudes toward gifted education and gifted students by completing Gagné and Nadeau’s Attitude Scale (Gagné, 1991-a), and they indicated how frequently they used specified instructional practices with their gifted and non-gifted students by completing Archambault et al.'s (1993) Classroom Practices Teacher Survey. Because this study's sample included AP and IB instructors–a different population than originally used when these instruments were developed–a new factor structure was developed using EFA. The new factor scale then was tested using CFA, and a SEM model was developed to test direct, indirect, total, and interaction affects among the contextual variables, latent attitudinal factors, and latent factors representing classroom practices with gifted students.

After SEM was performed and an adequate fit obtained, the data suggested AP and IB instructors' attitudes about gifted education ranged from ambivalent to very positive overall. Instructors reported ambivalent attitudes concerning school acceleration and the perception that gifted education is elitist. They reported somewhat positive attitudes about the social value of gifted persons, the idea that gifted students need more than what the regular school program can provide, and the idea that gifted students need equal opportunities for learning compared with other student groups. They showed very positive attitudes about the need to offer and support gifted education. Responses on several individual items indicated instructors had strong and opposing opinions at times. Responses reflecting opposing opinions generally related to items concerning acceleration, the perception that gifted programming is elitist, and the responsibility to provide gifted students with equal opportunities for challenge compared with other student groups. Despite these opposing opinions, instructors overall felt very strongly that gifted students need special educational services and that those services should be supported.

AP and IB instructors indicated they offered multiple types of differentiated practices several times per month, sometimes daily, with their gifted students. The data showed instructors encouraged higher-level questions daily, modified the curriculum and instruction and allowed students to pursue individual interests several times a month, and assigned projects and reports slightly more than once a month. Instructors rarely, if ever, assigned seatwork or provided learning or enrichment centers. With the exceptions of seatwork and learning or enrichment centers, when the frequencies of these practices with gifted students were compared with the frequencies of these practices with non-gifted students within the same class, the differences seemed quite small, as instructors reported engaging in all activities only slightly more with their gifted students as compared with their non-gifted students. Although the differences seemed small, they were statistically significant, however. Optional comments instructors provided predominately indicated that they treat all students the same because the AP and IB course content is sufficient to meet gifted students' needs, the curriculum does not allow time to differentiate, and non-gifted students are as equally capable as gifted students.

Only one attitudinal factor significantly influenced instructors' classroom practices with their gifted students: Needs and Support. Educators with more positive attitudes about the need to offer and fund special educational services for the gifted more frequently offered differentiated activities for their gifted students in all measured areas. Differentiated activities included encouraging higher-level questions, allowing students to pursue individual interests, modifying the curriculum and instruction, and assigning projects and reports. No other attitudinal factor had a statistically significant effect on any of the measured classroom practices.

Some contextual variables were eliminated to decrease the number of parameters and help the structural model achieve a better fit. Contextual variables examined included the course taught (AP, IB, or both), the of experience teaching gifted students, and whether instructors had some or no training in gifted education. No contextual variable had a significant impact on any of the classroom practices factors. Two contextual variables, however, significantly impacted instructors' attitudes. Having 0-3 years of experience teaching gifted students had a statistically positive effect on instructors' attitudes about school acceleration, suggesting this group of instructors generally had more positive attitudes about acceleration, particularly grade skipping. Additionally, having some degree of training in gifted education, as opposed to no training, had a statistically significant positive effect on the Equal Opportunities factor. This factor encompassed attitudes about gifted students' being equally important to help compared with other student groups such as average students and students with difficulties. No indirect effects were statistically significant. One interaction effect was tested to see if training and years of experience teaching gifted students, when grouped together, impacted any of the latent variables ; no statistically significant interaction effect was found.

Chapter V

Conclusion

We are altogether too easily deceived by the time-worn argument that the gifted student, the genius perhaps, will get along somehow without much teaching. The fact is, the gifted . . . and the brilliant . . . are the ones who need the closest attention of the skillful mechanic.

– W. Franklin Jones

in *An Experimental-Critical Study of the Problem of Grading and Promotion* (1912)

Introduction

With the increasing trend to create more heterogeneous environments in AP and IB classes where gifted and high-ability students were typically served, are the rigor and challenge diminishing to "accommodate more typically developing students" (Gallagher, 2009, p. 119)? Are gifted students still engaging in meaningful activities? Do teachers believe what W. Franklin Jones (1912) cautioned against over 100 years ago, that gifted students will and should survive on their own?

In the midst of the changing landscape surrounding advanced academic courses, this research was conducted to examine AP and IB instructors' attitudes toward gifted education and the extent to which they provide differentiated experiences for their gifted students. Additionally, factors that may influence their classroom practices were examined. The results suggest gifted students generally do have multiple opportunities for differentiated learning in mixed-ability AP and IB courses. However, further effort is needed to ensure all AP and IB teachers understand their gifted students' unique learning needs and provide them with appropriate modifications and optimal educational experiences as these courses increasingly become more diverse.

Research Summary and Discussion

The data provided a snapshot of AP and IB instructors' attitudes toward gifted education and their classroom practices with gifted students. The story that emerged showed instructors provide both their gifted and non-gifted students with appropriate, differentiated activities. The differences in frequencies in which they differentiate for their gifted students compared with their non-gifted students seemed quite small, though. Although instructors reported having ambivalent, slightly positive, or very positive overall mean attitudes, at times, they indicated having opposing opinions about several issues in gifted education. Instructors' strong agreement that gifted students should be served and supported was the only significant influence on the measured classroom practices. Four research questions guided this study:

Research question one: What are AP and IB instructors' attitudes toward gifted education? Overall, instructors' attitudes about gifted students and their education ranged from ambivalent to very positive. Instructors reported ambivalent attitudes concerning school acceleration and the perception that gifted education is elitist. They reported somewhat positive attitudes about the social value of gifted persons, the idea that gifted students are not served appropriately by the regular school program, and the need to provide gifted students with equal opportunities for learning compared with other student groups. Instructors indicated they have very positive attitudes toward the need to offer and support specialized gifted education services.

Although the factor mean averages ranged from ambivalent to very positive attitudes, responses on several individual items indicated instructors had strong and opposing opinions at times. Whereas some instructors harbored very positive perceptions, others harbored very negative ones. Responses reflecting opposing opinions generally related to items concerning acceleration, the perception that gifted programming is elitist, and the responsibility to provide gifted students with equal opportunities for challenge compared with other student groups. Instructors typically either partially/totally agreed or partially/totally disagreed with statements such as but not limited to "Special programs for gifted students have the drawback of creating elitism" (item 4), "Average students are the major resource of society; so, they should be the focus of our attention" (item 27), and "Most gifted students who skip a grade have difficulties in their social adjustment to a group of older students" (item 7).

Initially, the finding that instructors have opposing opinions was surprising. Ideally, the educators who typically serve gifted students would have very positive attitudes in all the measured areas. Ideally, they would have received adequate preparation in gifted education, leading to an understanding that acceleration is the most effective curricular intervention for gifted students (Colangelo et al., 2004; Steenbergen-Hu & Moon, 2011). Ideally, they would understand that providing modifications for gifted students is more about giving all students opportunities to learn new and challenging content each day rather than forcing the same content on all students despite their mastery or readiness levels (Winebrenner, 2001). However, when considering prior attitudinal research that used Gagné and Nadeau's Attitude Scale (Gagné, 1991-a), these results were not entirely unexpected. Some previous research suggests that, compared with other areas, teachers generally do have less positive attitudes about acceleration and gifted programs' being elitist compared with other attitudinal factors (MacFarlane, 2008; McCoach & Siegle, 2007).

Despite these strong and opposing opinions on some topics, and despite the fact that instructors did not indicate very positive overall attitudes in all measured areas, one finding is hopeful. AP and IB instructors felt very strongly that gifted students do need special educational services and that those services should be supported. Ultimately, it was this attitude that significantly and positively impacted instructors' differentiated classroom practices with their gifted students.

Research question two: To what extent do AP and IB instructors differentiate curriculum and instruction for their gifted students? AP and IB instructors reported that they engaged in multiple types of differentiated practices multiple times per a month, sometimes daily, with their gifted students. The data revealed:

- Instructors encourage higher-level questions daily. This practice includes asking open-ended questions, providing questions that encourage reasoning and logical thinking, and encouraging students to ask higher-level questions.
- Instructors modify the curriculum and instruction slightly more than a few times a month. This practice includes eliminating material students have mastered, providing more advanced curriculum and/or reading as

necessary, modifying the instructional format based on students' learning needs, and repeating instruction when necessary.

- Instructors allow students to pursue individual interests slightly fewer than a few times a month. This practice includes allowing students to pursue individual or small-group interests, work on independent study projects at their own pace, and work in different classroom and campus locations.
- Instructors assign projects and reports slightly more than once a month.
- Instructors rarely assign seatwork.
- Instructors rarely provide learning or enrichment centers.

These results seem hopeful considering that AP and IB courses occur within a different context than younger grades typically represented in research surrounding differentiation for gifted students (Archambault et al., 1993; Westberg & Daoust, 2003; Westberg et al., 1993). For instance, AP and IB classes are subject-centered and typically take place for a small fraction of each day. Furthermore, AP and IB curriculums, by nature, move beyond the regular school curriculum, as they are forms of acceleration (Colangelo et al., 2004; Davis & Rimm, 2004; Gallagher, 2009; Schiever & Maker, 2003) and have been described as rigorous, the "gold standard for secondary education" (Byrd, 2007, p. 7). Clearly, AP and IB teachers are providing appropriate opportunities for gifted students to work with more advanced materials, ask and respond to higher-level questions, skip content they have mastered, pursue individual interests, and work in different environments several times per month.

When the frequencies of these practices with gifted students were compared with the frequencies of these practices with non-gifted students within the same class, the overall mean scores for gifted students were larger across all areas except assigning seatwork and providing learning or enrichment centers. The differences seemed quite small, however. As with Archambault et al.'s (1993) original study that used the Classroom Practices Teacher Survey, as well as a subsequent replication (Westberg & Daoust, 2003), the teachers seemed to make only minor modifications for their gifted students as compared with their non-gifted students. Although the results suggested only minor modifications were being made between the two student groups, it is important to note that providing these types of differentiation for all students can, ipso facto, yield appropriate and meaningful differentiation for gifted students. For instance, modifying the curriculum and instruction, assigning projects and reports, encouraging higher-level questions, and allowing students to pursue individual interests are differentiated strategies that can benefit all students while at the same time respond to gifted students' needs. Interestingly, though, a paired samples t-test indicated these differences, although small, were in fact highly significant (p = .000).

Optional comments instructors provided were helpful in determining possible reasons why the differences seemed so slight. The majority of comments received indicated the instructors treat all students, gifted or not, the same. Reasons included 1) AP and IB course content is sufficient to meet gifted students' needs, 2) AP and IB curriculums do not allow extra time to differentiate, and 3) non-gifted students are as equally capable as gifted students and are therefore treated as if they are gifted. This data is concerning, as it reflects a lack of understanding of gifted students' unique learning needs by the instructors who most frequently work with gifted students. Understanding their needs and providing appropriate contexts for challenge and learning is particularly important as AP and IB classrooms increasingly become more heterogeneous.

Research question three: How do AP and IB instructors' attitudes toward gifted education influence the extent to which they differentiate for their gifted students? Only one attitudinal factor significantly influenced instructors' classroom practices with their gifted students: Needs and Support. Educators with more positive attitudes about the need to offer and fund special educational services for the gifted more frequently offered differentiated activities for their gifted students in all measured areas. Differentiated activities included encouraging higher-level questions, allowing students to pursue individual interests, modifying the curriculum and instruction, and assigning projects and reports. No other attitudinal factor had a statistically significant impact on how frequently instructors offered differentiated activities for their gifted students.

Four of the six attitudinal factors related to specific issues or concerns in gifted education, and it was not surprising that they failed to significantly impact instructors' classroom practices. For instance, it seems plausible a teacher might oppose grade skipping (School Acceleration factor), believe gifted programs are elitist (Elitism factor), think average and struggling students deserve more attention (Equal Opportunities factor), and/or think gifted persons are no more socially valuable than any other group of people (Social Value factor) yet still believe gifted students should receive appropriate, specialized services and support overall. However, one attitudinal factors seems closely related to the Needs and Support factor, and it was surprising it did not impact instructors' classroom practices as well. The Mixed-Ability Settings factor measured instructors' attitudes about the appropriateness of the regular school setting for gifted students. It seems logical that instructors' very positive attitudes about the need to support gifted students might result from feeling the regular school program is insufficient. A possible explanation for this disconnect is that the Mixed-Ability Settings factor indicators may have portrayed regular education too negatively. It is possible instructors may think the regular school curriculum does not optimally serve gifted students, but at the same time they may not think it creates adverse conditions such as causing gifted students to feel bored (item 9), waste their time (item 11), and/or feel intellectually stifled (item 32).

Research question four: How do contextual variables influence AP and IB instructors' attitudes toward gifted education and extent to which they differentiate for their gifted students? Because some parameters were eliminated for the structural model to be estimated and achieve an adequate fit, the contextual variables ultimately examined included the course taught (AP, IB, or both), the years of experience teaching gifted students, and whether instructors had some training or no training in gifted education. Two contextual variables had a significant impact on an attitudinal factor. However, no contextual variable significantly impacted any of the classroom practices factors, even when using the attitudinal factors as mediating variables. This result was surprising, as one might expect instructors' attitudes in all measured areas to grow more positive over time as they gain more experience with gifted students and acquire training in gifted education.

The years of experience instructors had teaching gifted students significantly impacted instructors' attitudes about school acceleration. Having fewer years (0-3) of experience positively affected instructors' attitudes, suggesting that AP and IB teachers with minimal experience teaching gifted students harbor more positive attitudes about school acceleration, particularly grade skipping, than teachers with four or more years of experience teaching gifted students. This discovery was surprising because one might expect the positive impact to occur with teachers who have more experience, not less. As experience in gifted education increases over time, it seems logical teachers' awareness of their gifted students' characteristics and needs will grow, leading to an understanding that acceleration is the most effective intervention with gifted students (Colangelo et al., 2004; Steenbergen-Hu & Moon, 2011). Furthermore, years of experience had no significant impact on the other five attitudinal variables, which was surprising for the same reason. Over time and experience working with gifted students, one might expect teachers to increase their understanding of these students' needs, which would be reflected in more positive attitudes.

Additionally, the data showed that having some degree of training in gifted education, as opposed to no training, had a statistically significant, positive effect on the Equal Opportunities attitudinal factor. This factor encompassed perceptions about gifted students' being equally important to serve compared with other groups such as average and struggling students. Instructors with training in gifted education had more positive attitudes about the responsibility to provide gifted students equal opportunities for actual learning. Training did not affect any other attitudinal factor, which was not completely surprising since previous studies on the effects of training on attitudes about gifted education have been mixed (Bégin & Gagné, 1994; Copenhaver & McIntyre, 1992; Lassig, 2003, 2009; McCoach & Siegle, 2007). At the same time, however, it seems that training in gifted education should relate to more positive attitudes toward the gifted, and finding so few attitudinal impacts is somewhat disturbing. It may be possible that professional development activities increase teachers' understanding of the nature and needs of gifted students but do not affect their attitudes about and support for meeting those needs. It also may be possible that specific types, amounts, and/or combinations of training have more significant impacts on instructors' attitudes.

No contextual variable directly impacted classroom practices. Furthermore, no contextual variable indirectly impacted classroom practices using any attitudinal factor as a mediating variable, and there was no interaction effect between training and experience. The fact that years of experience with gifted students and training in gifted education ultimately had no significant effects on classroom practices, even when interaction effects were examined, was not anticipated. Cheung and Phillipson's (2008) research suggested that having experience working with gifted students was the best predictor of desired teaching characteristics, and research strongly suggests that increased consistency in gifted education professional development positively impacts the use of gifted-appropriate strategies in the classroom (Archambault et al., 1993; Hertberg-Davis & Callahan, 2008; Johnsen et al., 2002; VanTassel-Baska, MacFarlane, & Feng, 2006). Again, it may be possible that gains in training and experience increase teachers' understanding of the nature and needs of gifted students but do not affect their curricular and instructional decisions. It also is possible that specific types, amounts, and/or combinations of training have more significant impacts on classroom practices. Further research is needed to tease out these contextual variables into more specific components and look for other potential, significant relationships.

Implications for Theory

This research project encompassed multiple areas concerning secondary gifted education. It examined the differentiated activities AP and IB instructors provide for their gifted students in mixed-ability classes and how frequently these occur, instructors' attitudes toward gifted students and their education, and contextual and attitudinal variables that may impact their classroom practices. The results contribute to important conversations in gifted education research concerning differentiation, teacher attitudes, and influences on teachers' perceptions and instructional decisions.

Differentiation for gifted students. Existing research reveals that regular education teachers with heterogeneous classes, whether at elementary or secondary levels, provide limited differentiation for their gifted students, if any at all (Archambault et al., 1993; Westberg & Daoust, 2003; Westberg et al., 1993). This lack of differentiation has painted "a disturbing picture of the types and instructional services gifted students receive in regular classrooms across the United States" (Archambault et al., 1993, p. 106).

The sample for this study, however, included secondary AP and IB instructors, whose classrooms are contextually different than the average general education classroom. The classes, by nature, are deemed college-level and are more rigorous and fast-paced, offering opportunities for acceleration, the most effective intervention with gifted students (Colangelo et al., 2004; Steenbergen-Hu & Moon, 2011). AP and IB instructors reported that they engaged in multiple types of differentiated practices multiple times per month, sometimes daily, with their gifted students. They encouraged higher-level questions daily, modified the curriculum and instruction and allowed students to pursue individual interests multiple times per month, and assigned projects and reports at least once a month. They rarely, if ever, assigned seatwork or provided learning or enrichment centers. Although the factor structure used in this study differed from the original factor structure used by Archambault et al. (1993), the factor mean scores and differences appear comparable overall with the exception of seatwork and learning or enrichment centers which were used more at the elementary level (see Appendix KK for Archambault et al.'s (1993) factor mean scores). Considering the content of AP and IB courses substantially differs from the regular school program and the courses typically occur during a small fraction of the school day, unlike typical elementary classrooms, this study's results do not contribute to such a "dismal" picture concerning how gifted students are being served.

Although AP and IB instructors indicated they offer their gifted students appropriate differentiated opportunities multiple times each month, sometimes daily, the results indicated the intentional modifications instructors make for their gifted students when compared with their non-gifted students are statistically significant, but seemingly slight. Few researchers have examined the modifications AP and IB instructors, specifically, make for their gifted students. This study's findings align overall with available research that suggests modifications made for gifted students compared with their non-gifted peers are limited in AP and IB classrooms (Draper & Post, 2010; Hertberg-Davis, Callahan, & Kyburg, 2006; MacFarlane, 2008). For example, Draper and Post's (2010) study examined the lived experiences of nine AP and IB instructors and revealed that few AP instructors saw differentiation as applicable in their classrooms. AP instructors cited the amount of material they must cover, rigidity of the AP program, time constraints, and class size as reasons why differentiation did not apply to the AP setting. The majority of instructors teaching IB courses or both AP and IB courses, however, stated that the IB course content and program setup more easily allowed them to differentiate for their gifted learners. Hertberg-Davis, Callahan, and Kyburg's (2006) research found little differentiation taking place for gifted students as well. They interviewed and observed 200 AP and IB instructors and 200 students across 23 high schools. Their results indicated that although students viewed AP and IB courses as the most challenging and satisfying options, the instructors viewed their classes as homogenous groups of successful and motivated students rather than heterogeneous groups of students with unique learning differences. The end-of-course exams drove most teachers’ instructional and curricular decisions, and their courses were largely fast-paced and one-size-fits-all. Additionally, MacFarlane's (2008) dissertation study, which examined 44 AP World Language instructors’ attitudes toward gifted education and differentiated practices with gifted students, revealed an overall low use of differentiated strategies with gifted students.

Data obtained in this study suggest while entire AP and IB classes of mixed-ability students may be receiving opportunities for differentiated work multiple times a month to daily, only slight intentional modifications for gifted students seem to be taking place, similar to findings reported by Draper and Post (2010); Hertberg-Davis, Callahan, and Kyburg (2006); and MacFarlane (2008). The data and comments suggest instructors see their students as homogeneous groups of motivated and bright students, as Hertberg-Davis, Callahan, and Kyburg (2006) described. Unlike Draper and Post's (2010) study, though, the course taught (AP, IB, or both), did not significantly impact the frequency of differentiated activities provided for gifted students. The frequency and type of differentiated practices instructors provide for all students coupled with the accelerated course content may still serve as appropriate and meaningful activities for gifted students, though. However, with AP and IB classes increasingly moving away from serving gifted and high-ability students to serving as many students as possible with a much wider range of potentialities, instructors' understanding the unique needs of gifted students and providing appropriate modifications for them in these heterogeneous environments will become increasingly important (Gallagher, 2009).

Attitudes toward gifted education. Findings and conclusions also contribute to the conversation about instructors' attitudes toward gifted education. In reviewing the literature surrounding teachers' attitudes toward gifted students, McCoach & Siegle (2007) noted that since researchers began showing interest in this area as early as 1942, teachers' attitudes have remained unclear. Some studies such as Gagné's (1983) suggested teachers have positive attitudes toward the gifted, while others (Cramond & Martin, 1987) suggested they harbor negative attitudes. Some studies have shown mixed attitudes as well (Copenhaver & McIntyre, 1992; MacFarlane, 2008; Megay-Nespoli, 2001).

Two fairly recent studies explored instructors' attitudes toward the gifted using Gagné and Nadeau's Attitude Scale (Gagné, 1991-a). McCoach and Siegle (2007) found that teachers generally supported gifted education, but attitudes about acceleration and the notion that gifted education is elitist were primarily neutral or slightly negative. MacFarlane (2008) examined the attitudes of AP World Language teachers, specifically, and found that they held slightly positive attitudes toward the social usefulness of gifted people in society and the necessity to support gifted students through special services; ambivalent attitudes about ability grouping, the isolation of gifted people by others, and the need to actively advocate for gifted students; and slightly negative attitudes toward school acceleration.

Instructors participating in this study did not exhibit overall negative or slightly negative attitudes in any area as found with McCoach and Siegle's (2007) or MacFarlane's (2008) studies. However, they did report less positive (ambivalent) attitudes about school acceleration, as found by both McCoach and Siegle (2007) and MacFarlane (2008). They also reported less positive (ambivalent) attitudes about the perception that gifted education is elitist, as found by McCoach and Siegle (2007). Instructors reported somewhat or very positive attitudes in all other measured areas.

Because teachers' attitudes toward the gifted are still unclear, this study contributes to the current research base from which conclusions ultimately may be drawn. Additionally, these results offer specific insight into the attitudes of AP and IB instructors specifically. Limited attitudinal research has been conducted among AP and IB instructors, which now seems important considering these courses remain the most prevalent option for secondary gifted students (Gallagher, 2009; Hertberg-Davis & Callahan, 2008; Hertberg-Davis, Callahan, & Kyburg, 2006; *State of the States*, 2013), and instructors will serve multiple ability groups as these classes increasingly become more heterogeneous (Bruley, 2014; Bunnell, 2009; Colangelo et al., 2004; College Board, 2014, Gallagher, 2009; "National Inventory," 2006).

Impact of attitudes on classroom practices. VanTassel-Baska, MacFarlane, and Feng (2006) described teacher attitudes, combined with subsequent action, as “critical change factors" (p. 38). They stated that teachers must believe strategies will enhance learning and their attitudes must change first before they integrate new instructional techniques (VanTassel-Baska, MacFarlane, & Feng, 2006). Caldwell's (2012) research supports this notion. In studying predictors of 341 elementary and middle-school teachers' willingness to differentiate instruction for gifted students in heterogeneous classes, he found that teachers' attitudes toward gifted students significantly predict their willingness to differentiate. The notion that teachers' attitudes significantly influence their classroom decisions certainly is logical, and understanding which attitudes best relate to classroom instruction can help inform what kind of interventions may be most likely to improve practice.

However, limited research has examined how AP and IB instructors' attitudes toward gifted education actually impact their practices with gifted students, perhaps because studies thus far have focused on either younger grades and/or regular education teachers with traditionally more heterogeneous classes. MacFarlane's (2008) dissertation study did examine the relationship between AP teachers' attitudes and classroom practices, though. Her research revealed a significant and positive relationship existed between two attitudinal factors and the extent teachers made modifications for their gifted students. AP teachers with more positive attitudes about the isolation of gifted persons by others were more likely to accommodate their gifted students. AP teachers with more positive attitudes about the social value of gifted persons were more likely to use research as an instructional strategy.

The relationship between AP and IB teachers' attitudes and differentiated practices with gifted students in this study proved different. The only statistically significant attitudinal factor positively impacting their differentiated practices with gifted students concerned the need to provide and support specialized gifted education services. This attitude has a positive and highly significant ($p = < .01$) effect on all measured classroom practices. Other attitudinal factors ultimately had no significant impact on teachers' classroom practices. Although a different attitudinal factor influenced classroom practices with gifted students in this study than in MacFarlane's (2008), this finding does support existing research suggesting that attitudes can serve as a strong predictor of classroom decisions (Caldwell, 2012; MacFarlane, 2008; VanTassel-Baska, MacFarlane, & Feng, 2006).

Impact of contextual variables on attitudes and classroom practices. Data regarding how contextual variables frame instructors' attitudes about gifted education and their differentiated practices can especially be useful. Although it is difficult to determine what contextual variables cause desired attitudes or classroom practices, through SEM it is possible to predict the likelihood that changes on one variable will cause changes in another.

Comparing AP and IB instructors' attitudes toward gifted education and the extent to which they differentiate for their gifted students responded to Gallagher's (2009) call to investigate similarities and differences between the two courses. Furthermore, few research studies have examined how other contextual variables influence AP and IB teachers' attitudes and instructional decisions. Therefore, results from this study contribute to a limited research base that may increase in importance as AP and IB courses continue to expand.

Based on the available research, it was anticipated that some contextual variables, including years of experience teaching gifted students and training in gifted education, would directly and/or indirectly impact the extent to which AP and IB instructors differentiate for their gifted students (Archambault et al., 1993; Hertberg-Davis & Callahan, 2008; Johnsen et al., 2002; VanTassel-Baska, MacFarlane, & Feng, 2006). However, the contextual variables–the course taught (AP, IB, or both), years of experience teaching gifted students, and training in gifted education–ultimately had no significant impact on any of the classroom practices. Furthermore, no contextual variable impacted the sole attitudinal factor, Needs and Support, that significantly influenced the measured classroom practices either.

Two contextual variables did impact two other attitudinal variables, however. AP and IB instructors' having fewer years (0-3) of experience teaching gifted students harbored more positive attitudes about school acceleration than teachers with four or more years of experience. It is not clear why instructors' attitudes toward school acceleration are more positive with fewer years of experience working with the gifted, as research is limited in this area. A related early attitudinal study by Copenhaver and McIntyre's (1992) produced a similar, interesting result. Although Copenhaver and McIntyre did not examine attitudes toward acceleration specifically, they found instructors' having at least one or two years of experience teaching gifted students more positively characterized gifted students, while teachers with no experience characterized gifted students more negatively.

Additionally, AP and IB instructors with some degree of training in gifted education reported more positive attitudes about the responsibility to provide gifted students equal opportunities for actual learning compared with other student groups. The fact that training significantly impacted only one of the six attitudinal factors is not surprising. Prior research on how training affects attitudes about gifted education has revealed mixed results (Bégin & Gagné, 1994; Copenhaver & McIntyre, 1992; Lassig, 2003, 2009) and McCoach and Siegle (2007) discovered that teachers both with and without training in gifted education harbored similar attitudes toward the gifted. Findings from this study contribute to the limited research base regarding how contextual variables may shape instructors' attitudes toward gifted education, particularly among AP and IB instructors.

Implications for Practice

Data provided a snapshot into mixed-ability AP and IB classroom that seems hopeful. Students–gifted or not–seem to be receiving opportunities for differentiation multiple times per month, sometimes daily, which seems fairly adequate considering the context and accelerated content associated with these courses. Overall, AP and IB instructors strongly agree that schools should offer special educational services for the gifted and receive supplementary funding. This positive attitude significantly and highly impacted the frequency in which they differentiate for their gifted students. However, no contextual variable directly or indirectly influenced the extent to which instructors differentiate for their gifted students or the attitude that made the biggest positive difference. Without knowing which contextual variables are likely to predict teachers' classroom decisions, implications for practice, on the surface, seem limited.

However, it was clear that the frequency in which instructors offered differentiated activities for their gifted students when compared with their non-gifted students in the same class reflected only slight modifications were being made for the gifted–despite instructors' strong agreement that the gifted should receive special educational services. In fact, the majority of instructors' optional comments indicated they teach all of their students, gifted or non-gifted, the same. Certainly, the types of differentiation offered to all students naturally may yield appropriate and meaningful learning experiences for the gifted. However, the abundance of comments suggesting all students should be taught the same was concerning. Several respondents gave no reason why they do not make modifications for their gifted students. Others attributed their lack of differentiation to all their students' being as equally capable as the gifted, the College Board's or the International Baccalaureate's not differentiating between the two labels, or the AP and IB curriculum's being sufficient enough and/or too rigid. These findings were concerning, as they reflected a lack of understanding of gifted students' unique needs–among the very instructors who most serve gifted students (Gallagher, 2009; *State of the States*, 2013). Understanding gifted students' needs and providing appropriate contexts for challenge and new learning is particularly important as AP and IB classrooms increasingly become more heterogeneous (Gallagher, 2009).

This study's results indicated that training in gifted education did not significantly impact the frequency instructors differentiated for their gifted students. However, because instructors largely cited AP and IB program requirements, curriculums, and constraints among the reasons why they treat all students the same, changes should be addressed by the entities responsible for the programs and teacher preparation–the College Board and the International Baccalaureate. With an increasingly diverse student body in terms of preparation and ability, it is now even more imperative that AP and IB instructors not only help all students be successful in an accelerated and rigorous environment, but also develop and maintain an understanding of how to provide optimal learning experiences for the gifted students within this changing landscape. The College Board and International Baccalaureate therefore should create the expectation that AP and IB teachers, respectively, make optimal modifications for their gifted students. Additionally, the College Board and International Baccalaureate should incorporate a component in how to do so within the the AP and IB context into their training that is offered to AP and IB instructors.

School district and/or individual campus decision makers can help improve the education of their gifted students as well. Although advanced courses typically constitute gifted delivery services at the high-school level (*State of the States*, 2013), cluster grouping 5-10 gifted students in the heterogeneous AP or IB classroom can provide additional differentiation appropriate for the gifted students (Davis & Rimm, 2004). The instructor, of course, should know who the gifted students are. Also, the instructor must have training in gifted education and alter the curriculum and instruction for these gifted students. Alterations may include but are not limited to having individuals or the cluster group engage in enrichment activities that focus on even more advanced and complex content; engage in independent, self-directed learning; skip material they have already mastered; and further accelerate through material they do not know (Davis & Rimm, 2004).

If enough gifted students exist on a campus, placing them together in the same AP or IB course is ideal. Strong research evidence supports homogeneous grouping for gifted students, as grouping them with their like-minded peers allows for more appropriate and effective instruction that matches their rapidly-developing skills and capabilities (NAGC, n.d.-a). Some campuses, such as Huntsville High School in Huntsville, Texas, offer AP courses for non-gifted students and AP–GT courses for identified gifted and talented students in the same subject. Furthermore, the AP–GT instructor has participated in 30 hours of professional development training in the nature and needs of gifted students and is required to obtain six-hour updates annually according to state law.

Recommendations for Further Research

Data collected for this study will accommodate further research in multiple areas. This study used SEM to determine what influences AP and IB instructors' differentiated practices with their gifted students. To provide a more complete picture of what is happening in the classroom, data were also collected about instructors' differentiated practices with their non-gifted students in the same classroom(s), and these results were compared. Although the mean differences of the frequencies instructors differentiated for their gifted verses non-gifted students appeared small, the differences were highly significant (p = .000). Creating another SEM model to examine the attitudinal and contextual influences on the differences, rather than the differentiated practices themselves, will provide important information about what variables impact instructors' modifying instruction for gifted learners.

Additionally, new SEM models can examine other contextual variables that were eliminated or modified during this study. It will be interesting to know if and how the formal identification of gifted students influences AP and IB instructors' attitudes toward gifted education and the extent to which they offer differentiated activities and modify curriculum and instruction for gifted students. The impact of varying types and amounts of gifted education training can be investigated more in-depth as well, rather than just examining whether instructors have some or none.

More research currently is needed to understand what other contextual variables may impact AP and IB instructors' classroom decisions regarding gifted students. This study found that positive attitudes about the need to support gifted students significantly impacts differentiated practices with gifted students, but no contextual variable examined impacted that attitude. Identifying what influences this attitude can lead to a better awareness of what interventions will most likely impact instruction for gifted students. Future research should explore the limited relationship between training in gifted education and AP and IB instructors' attitudes and by teasing out training into more specific types, amounts, and/or combinations. An endless list of other contextual variables can be studied as well including but not limited to instructors' perceptions of themselves as gifted, class size, amount of planning time, the degree to which the classes are heterogeneous, AP/IB program admission requirements, teacher incentives, student incentives, ethnicity, age, and gender. Understanding what influences AP and IB instructors to provide optimal differentiated learning experiences for their gifted students will help determine what interventions will most likely impact their instructional decisions.

As the student makeup of AP and IB courses continues to diversify, it is difficult to determine what student population(s) these courses will best serve in the future and how well these courses will respond to gifted students' unique learning needs. Therefore, replicating this study at a later time to examine changes in AP and IB instructors' attitudes toward gifted education, the extent to which they differentiate instruction for gifted students, and variables that may influence their classroom practices is important to reassess how these courses are serving are nation's brightest youth.

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Students like Maria Fuentes certainly can benefit from exposure to rigorous, advanced AP and IB course material, regardless of their final exam scores. Incentives can encourage more students to participate in these programs and reward their successes, whether through exam fee assistance or drawings for new vehicles such as with HISD's Cool to Be Smart program. Fuentes reflected:

> I feel really grateful that I had the opportunity to participate in magnificent programs such as the AP program and the Cool to Be Smart program. The Cool to Be Smart program is a great program that motivates students to take the initiative to take AP courses. The AP classes can be really challenging at times, but the long-term reward of either earning credit for college classes or having the college classes during high school better prepares you for college and/or saves you money on college classes. (M. Fuentes, personal communication, September 12, 2013)

As more students like Fuentes take on the challenge of AP and IB, as the programs continue to grow and diversify, educators must continue to serve those students and serve them well. At the same time, they must not lose sight of "Chris Harris," the gifted student who does not feel challenged by the same experiences given to the rest of the class, who needs more individualized instruction, who needs to live up to something more than the final exam.

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Footnotes

[1]The name of this student was changed.

[2]The name of this student was changed.

Appendix A

Teacher Information Questionnaire

<u>Directions</u>: This section is designed to collect information about contextual factors. Please select the appropriate answer(s).

Which course(s) do you currently teach?

□ 11th and/or 12th Grade Advanced Placement
□ 11th and/or 12th Grade International Baccalaureate
□ Both 11th and/or 12th Grade Advanced Placement and International Baccalaureate

Does your campus identify gifted students?

□ Yes
□ No
□ Not sure

Not including the current year, how many years of teaching experience do you have teaching *gifted* students?

□ 0-3
□ 4-6
□ 7-10
□ 11-15
□ 16-20
□ 21-30
□ 31+

What training in gifted education do you have? <u>For the purpose of this study, AP and IB training do not apply</u>. You may select more than one answer option.

□ None
□ 1-10 hours of district professional development or workshops
□ 11-20 hours of professional development or workshops
□ 21-30 hours of professional development or workshops
□ 31 or more hours of professional development or workshops
□ 1-2 course(s) at college/university
□ 3-4 course(s) at college/university
□ 5 or more course(s) at college/university
□ Endorsement or supplemental certificate in gifted education
□ Bachelor's degree in gifted education
□ Master's degree in gifted education
□ Doctorate in gifted education

Appendix B

Original Gagné and Nadeau's Attitude Scale

Opinions About the Gifted and Their Education (Gagné, 1991-a)

Francois Gagné, Ph.D., and Lorraine Nadeau, M.A.
Université du Québec à Montréal (Canada)

Directions: Using a five-point Likert scale, indicate your agreement or disagreement by circling the appropriate number for each statement below.

1 = Totally disagree
2 = Partially disagree
3 = Undecided
4 = Partially agree
5 = Totally agree

1. Our schools should offer special educational services for the gifted.	1	2	3	4	5
2. The best way to meet the needs of the gifted is to put them in special classes.	1	2	3	4	5
3. Children with difficulties have the most need of special educational services.	1	2	3	4	5
4. Special programs for gifted children have the drawback of creating elitism.	1	2	3	4	5
5. Special educational services for the gifted are a mark of privilege.	1	2	3	4	5
6. When the gifted are put in special classes, the other children feel devalued.	1	2	3	4	5
7. Most gifted children who skip a grade have difficulties in their social adjustment to a group of older students.	1	2	3	4	5
8. It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade.	1	2	3	4	5
9. Gifted children are often bored in school.	1	2	3	4	5
10. Children who skip a grade are usually pressured to do so by their parents.	1	2	3	4	5
11. The gifted waste their time in regular classes.	1	2	3	4	5
12. We have a greater moral responsibility to give special help to children with difficulties than to gifted children.	1	2	3	4	5
13. Gifted persons are a valuable resource for our society.	1	2	3	4	5
14. The specific educational needs of the gifted are too often ignored in our schools.	1	2	3	4	5
15. The gifted need special attention in order to fully develop their talents.	1	2	3	4	5
16. Our schools are already adequate in meeting the needs of the gifted.	1	2	3	4	5
17. I would very much like to be considered a gifted person.	1	2	3	4	5
18. It is parents who have the major responsibility for helping gifted children develop their talents.	1	2	3	4	5
19. A child who has been identified as gifted has more difficulty in making friends.	1	2	3	4	5
20. Gifted children should be left in regular classes since they serve as an intellectual stimulant for the other children.	1	2	3	4	5
21. By separating students into gifted and other groups, we increase the labeling of children as strong–weak, good–less good, etc.	1	2	3	4	5
22. Some teachers feel their authority threatened by gifted children.	1	2	3	4	5
23. The gifted are already favored in our schools.	1	2	3	4	5

24. In order to progress, a society must develop the talents of gifted individuals to a maximum.	1	2	3	4	5
25. By offering special educational services to the gifted, we prepare the future members of a dominant class.	1	2	3	4	5
26. Tax-payers should not have to pay for special education for the minority of children who are gifted.	1	2	3	4	5
27. Average children are the major resource of society; so, they should be the focus of our attention.	1	2	3	4	5
28. Gifted children might become vain or egotistical if they are given special attention.	1	2	3	4	5
29. When skipping a grade, gifted students miss important ideas. (They have “holes” in their knowledge.”)	1	2	3	4	5
30. Since we invest supplementary funds for children with difficulties, we should do the same for the gifted.	1	2	3	4	5
31. Often, gifted children are rejected because people are envious of them.	1	2	3	4	5
32. The regular school program stifles the intellectual curiosity of gifted children.	1	2	3	4	5
33. The leaders of tomorrow’s society will come mostly from the gifted of today.	1	2	3	4	5
34. A greater number of gifted children should be allowed to skip a grade.	1	2	3	4	5

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Appendix C

Scoring Procedures for Gagné and Nadeau's Attitude Scale (Gagné, 1991-b)

Instructions: Transfer your answers from the questionnaire to the corresponding spaces below, taking care to invert answers (5 = 1; 4 = 2; etc.) to items within brackets. Then, do the requested computations to obtain totals and means.

											Totals	**Means**
A. Answer:	___	___	___	___	___	___	___	___			____	/ 8 = ____
Items >	1	9	11	14	15	24	30	32				
B. Answer:	___	___	___	___	___	___	___	___	___	___	____	/ 10 = ____
Items >	3	4	5	12	16	18	23	26	27	28		
C. Answer:	___	___	___	___							____	/ 4 = ____
Items >	13	17	[25]	33								
D. Answer:	___	___	___								____	/ 3 = ____
Items >	19	22	31									
E. Answer:	___	___	___	___							____	/ 4 = ____
Items >	2	[6]	[20]	[21]								
F. Answer:	___	___	___	___	___						____	/ 5 = ____
Items >	[7]	8	[10]	[29]	34							
Total score (Sum of A to F, inverting B [60 – B total]):											____	/ 34 = ____

Titles of sections:

A. Needs and support (Needs of gifted children and support for special services)
B. Resistance to objections (Objections based on ideology and priorities)
C. Social value (Social usefulness of gifted persons in society)
D. Rejection (Isolation of gifted persons by others in the immediate environment)
E. Ability grouping (Attitudes toward special homogeneous groups, classes, schools)
F. School acceleration (Attitudes toward accelerative enrichment)

Care must be taken to invert the appropriate answers those items in sections 3, 5 and 6 which load negatively on the factor. The total of section 2 must also be inverted for the total score to be correctly interpreted as a continuum from a global positive attitude (high total score or mean) to a global negative attitude (low total score or mean). It also has to be inverted when computing the mean of the B section, in order for that mean to be comparable to the others.

The total score can range from a minimum of 34 to a maximum of 170. Section scores have corresponding minima (1 x n. of items) and maxima (5 x n. of items). All the means can take values from 1.00 to 5.00.

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Appendix D

Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

Ordered List of Item Pool

Note: 1-30 = common items, 31-60 = Form A, 61-90 = Form B, * items to be inverted in the computation of the total score

1. Talent is a rare commodity which we must encourage.
2. Devoting special funds to the education of gifted children constitutes a profitable investment in the future of our society.
3. *Offering special help to the gifted helps perpetuate social inequalities.
4. *Special services for the gifted constitute an injustice to other children.
5. *Special programs for gifted children have the drawback of creating elitism.
6. Since we invest supplementary funds for children with difficulties, we should do the same for the gifted.
7. It is unfair to deprive gifted children of the enrichment which they need.
8. *Children with difficulties have the most need of special educational services.
9. In our schools, it is not always possible for gifted children to fully develop their talents.
10. *Our schools are already adequate in meeting the needs of the gifted.
11. *Gifted children don't need special educational services.
12. *The gifted are already favoured in our schools.
13. *Whatever the school program, the gifted will succeed in any case.
14. Because of a lack of appropriate programs for them, the gifted of today may become the dropouts and delinquents of tomorrow.
15. The gifted waste their time in regular classes.
16. If the gifted are not sufficiently motivated in school, they may become lazy.
17. The gifted come mostly from wealthy families.
18. *All children are gifted.
19. People are born gifted; you can't become gifted.
20. A greater number of gifted children should be allowed to skip a grade.
21. *Most gifted children who skip a grade have difficulties in their social adjustment to a group of older students.
22. Schools should allow gifted students to progress more rapidly.
23. Enriched school programs respond to the needs of gifted children better than skipping a grade.
24. An enriched school program can help gifted children to completely develop their abilities.
25. The best way to meet the needs of the gifted is to put them in special classes.
26. Most teachers do not have the time to give special attention to their gifted students.
27. *By separating students into gifted and other groups, we increase the labeling of children as strong-weak, good-less good, etc.
28. Special programs for gifted children make them more motivated to learn.
29. *When the gifted are put in special classes, the other children feel devalued.
30. Often, gifted children are rejected because people are envois of them.
31. *Gifted children might become vain or egotistical if they are given special attention.
32. The speed of learning in our schools is far too slow for the gifted.
33. *I am sometimes uncomfortable before people I consider to be gifted.

34. *Average children are the major resource of or society, so, they should be the focus of our attention.
35. We should give special attention to the gifted just as we give special attention to children with difficulties.
36. Some teachers are jealous of the talents their gifted students possess.
37. *It isn't a compliment to be described as a "whiz kid."
38. The enrichment tract is a good means with which to meet certain special needs of gifted children.
39. The gifted need special attention in order to fully develop their talents.
40. It is less profitable to offer special education to children with difficulties than to gifted children.
41. Gifted students often disturb other students in the class.
42. *The idea of offering special educational services to gifted children goes against the democratic principles of our society.
43. Sooner or later, regular school programs may stifle the intellectual curiosity of certain gifted children.
44. *We have a greater moral responsibility to give special help to children with difficulties than to gifted children.
45. In order to progress, a society must develop the talents of gifted individuals to a maximum.
46. *Gifted children are often unsociable.
47. *The gifted should spend their spare time helping those who progress less rapidly.
48. *It is parents who have the major responsibility for helping gifted children develop their talents.
49. It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade.
50. Equal opportunity in education does not mean having the same program for everyone, but rather programs adapted to the specific needs of each child.
51. *Special educational services for the gifted are a mark of privilege.
52. Generally, teachers prefer to teach gifted children rather than those who have difficulties.
53. Some children are more gifted than others.
54. *In our schools, it is possible to meet the educational needs of the gifted without investing additional resources.
55. *A child who has been identified as gifted has more difficulty in making friends.
56. *All children could be gifted if they benefited from a favourable environment.
57. *When gifted children are put together in a special class most adapt badly to the fact that they are no longer at the head of the class.
58. Skipping a grade emphasizes scholastic knowledge too much.
59. *Skipping grade forces children to progress too rapidly.
60. *There are no gifted children in our school.
61. In regular classes, teachers devote more attention to those who learn more slowly than to the gifted.

62. The gifted should not be forced to hear repeated explanations of things they understood the first time.
63. *I would not like to have a gifted child.
64. It is not right to offer the same education to children who have very different levels of abilities.
65. The leaders of tomorrow's society will come from the gifted of today.
66. *What gifted children most need to learn is a little more humility.
67. Some teachers feel their authority threatened by gifted children.
68. The gifted have the right, like all other children, to benefit from a system of education which facilitates the full development of their personality.
69. *If they are gifted, they don't need help.
70. Gifted children are often bored in school.
71. A complex, technological society needs the talents of gifted persons in order to function well.
72. *There are too few gifted children to justify our offering special educational services to them.
73. *Tax-payers should not have to pay for special education for the minority of children who are gifted.
74. Gifted children are often the leaders in a group.
75. The specific educational needs of the gifted are too often ignored in our schools.
76. *I find it unfair that some people are more gifted than others.
77. To be gifted is to be good in everything.
78. Gifted children are more motivated when they work with students of the same ability level.
79. *Enriched school programs emphasize intellectual aspects too much.
80. Giftedness depends as much on heredity as on the quality of the environment.
81. I would very much like to be considered a gifted person.
82. By offering special educational services to the gifted we prepare the future members of a dominant class.
83. *Gifted children should be left in regular classes, since they serve as an intellectual stimulant for the other children.
84. Gifted persons are a valuable resource for our society.
85. *The gifted learn to adapt to all kinds of people by mixing in regular classes with children with different abilities.
86. *By skipping grades, gifted students miss important ideas (they have "holes" in their knowledge).
87. Some gifted children may fail certain subjects if they are not sufficiently motivated.
88. Gifted children represent less than 10% of the population.
89. Our schools should offer special educational services for the gifted.
90. *Children who skip a grade are usually pressured to do so by their parents.

Appendix E

Original Archambault et al.'s (1993) Classroom Practices Teacher Survey

Classroom Practices - Teacher Survey

The National Research Center on the Gifted and Talented

NRC G/T

University of Connecticut **University of Georgia**
University of Virginia **Yale University**

This study focuses on the nature of regular classroom practices used in schools across the United States. You can help us learn more about these practices by taking a few minutes to complete this questionnaire. Please be assured that your answers will be kept strictly confidential and that all reporting will be done at the group level.

I. Teacher Information
Please check the box that describes you.

1. **Gender** ☐ Male ☐ Female

2. **Ethnicity**
☐ Hispanic-American ☐ African-American ☐ Native-American
☐ Caucasian-American ☐ Asian-American/Pacific Islander ☐ Other (____________)

3. **Years of teaching experience** ____________

4. **Highest Degree Earned**
☐ BA/BS ☐ MA/MS ☐ (Sixth year/Ed. Spec.)
☐ Ph.D./Ed.D. ☐ Professional Diploma ☐ Other (____________)

5. **Training in teaching of gifted/talented**
(Check all that apply)
☐ None ☐ District inservice ☐ Workshop outside district
☐ Course(s) at college/university ☐ Educational degree in area

6. **Grade level now teaching** ______________

II. School and District Information
Please answer the following questions about your school and district.

1. **Using the scale below, what percent of students in your school belong to each of the following ethnic groups?**
0 = 0%, 1 = Up to 10%, 2 = 11% to 25%, 3 = 26% to 50%, 4 = 51% or more, 5 = Don't Know
____ African-American
____ Asian-American/Pacific Islander
____ Hispanic-American
____ Native-American
____ Caucasian-American
____ Other

2. **Has a formal definition of giftedness been adopted by your district?**
☐ Yes ☐ No ☐ Don't Know

3. **What is the lowest grade level for which there is a formal gifted program in your district?** ______________

4. Which of the following measures and/or checklists does your district use to formally identify gifted students? (Check all that apply)

- ☐ IQ Tests (Group or Individual)
- ☐ Achievement Tests
- ☐ Grades
- ☐ Teacher Rating Scales
- ☐ Student Products/Portfolios
- ☐ Teacher Nomination
- ☐ Parent Nomination
- ☐ Student Self-Nomination
- ☐ Student Interview
- ☐ Peer Nomination
- ☐ Creativity Tests
- ☐ Don't Know
- ☐ Other, Specify: ________

5. Does your district have a policy regarding the acceleration of the regular curriculum for high ability students?

☐ Yes. ☐ No ☐ Don't Know

If yes, which of the following applies?

- ☐ Classroom teachers are encouraged to accelerate students into the next level or the next academic grade.
- ☐ Classroom teachers are encouraged to provide higher level or enriched content material in their classrooms, but are not permitted to accelerate students into the next level or academic grade.
- ☐ Classroom teachers are not allowed to provide advanced level curriculum for higher ability students and are not permitted to accelerate students into the next level or academic grade.
- ☐ Other (Specify ________)

6. Does your school district employ a coordinator of programs for the gifted?

☐ Yes ☐ No ☐ Don't Know

7. Is there a full-time teacher of the gifted in your school building?

☐ Yes ☐ No ☐ Don't Know

8. Is there a part-time teacher of the gifted in your school building?

☐ Yes ☐ No ☐ Don't Know

9. Do students in your school building participate in a gifted program in which they are transported to a different school or site?

☐ Yes ☐ No ☐ Don't Know

10. Do students in your school go to a resource room (pull-out program) for instruction provided by a teacher of the gifted?

☐ Yes ☐ No ☐ Don't Know

III. Classroom Issues

Please answer the questions below regarding issues in your classroom.

1. Which of the following best describes the type of class you teach?

- ☐ Intact or self-contained class (i.e., the same students all day)
- ☐ Departmentalized arrangement (i.e., teach one or more subjects to different classes)

2. If you teach an intact class, please skip to question 3 and answer the remaining questions in this section for that class. If you teach in a departmentalized arrangement, please select one (1) class and answer the remaining questions in this section based on that class. Please indicate which class you have selected.

- ☐ Science
- ☐ Math
- ☐ Other (Specify ________)
- ☐ Social Studies
- ☐ Reading
- ☐ Language Arts
- ☐ Art

3. What is the enrollment of your class by gender? (Give number) _____ Boys _____ Girls

4. Indicate the number of limited English proficient students in your classroom. ________

5. **Indicate the number of students in your classroom for each of the following groups.**
____ Visually Impaired
____ Hearing Impaired
____ Physically Handicapped (Muscle Impairment)
____ Other Health Impairment (Specify ____________________)

6. **What is the number of students in your class for each of the following ethnic groups?** (Give number)
____ African-American
____ Asian-American/Pacific Islander
____ Hispanic-American
____ Native-American
____ Caucasian-American
____ Other

7. **What is the number of formally identified gifted students in your classroom?____________________.**

8. **Which of the following measures and/or checklists <u>do You Use</u> (or if you don't have a gifted program, woulc you use) to identify gifted students in your classroom?** (Check all that apply)

☐ IQ Tests (Group or Individual)
☐ Achievement Tests
☐ Grades
☐ Teacher Rating Scales
☐ Student Products/Portfolios
☐ Teacher Nomination
☐ Parent Nomination
☐ Student Self-Nomination
☐ Student Interview
☐ Peer Nomination
☐ Creativity Tests
☐ Don't Know
☐ Other, Specify:
____
____

9. **Are there students in your class you believe are gifted but <u>have not been formally identified</u> as such by your district?**

☐ Yes ☐ No ☐ Don't know

10. **Indicate the number of limited English proficient students in your classroom who are formally identified as gifted and also those who <u>may</u> be gifted but are not formally identified as such.**

Formally Identified As Gifted	May be Gifted But **Not** Formally Identified
________	________

11. **Indicate the number of students in your classroom formally identified as gifted and also those who may be gifted but are not formally identified as such for each of the following groups:**

	Formally Identified As Gifted	May be Gifted But **Not** Formally Identified
Visually impaired	________	________
Hearing Impaired	________	________
Physically Handicapped	________	________
Other Health Impairment (specify)	________	________

12. **How many boys and girls in your classroom have been formally identified as gifted and how many may be gifted but have not been formally identified as such for each of the ethnic groups listed below?**

	Formally Identified As Gifted		May be Gifted But **Not** Formally Identified	
	Boys	Girls	Boys	Girls
African-American	________	________	________	________
Asian-American/Pacific Islander	________	________	________	________
Hispanic-America	________	________	________	________
Native-American	________	________	________	________
Caucasian-American	________	________	________	________
Other	________	________	________	________

IV. Classroom Practices

This section is designed to provide information about the instructional strategies and approaches you use in your classroom. It is very important that the answers you provide reflect actual practices. Please be assured that your individual responses will be held in the strictest confidence.

Above you told us whether you teach an intact class or specific subject(s) (i.e., departmentalized arrangement). If you teach an intact class, please respond to the following items for that class. If you teach in a departmentalized arrangement, please respond to the following items using the same class you selected earlier as your point of reference. PLEASE DO NOT CHANGE CLASSES.

Please read the directions below, check one of the boxes, and then proceed as directed.

1 If you have students in your class formally identified as gifted by your district, **check box one (1) and respond to items 1-39 for Average AND Gifted students.**

2 If you **do not** have students in your class **formally identified** as gifted by your district **but have students you believe are gifted, check box two (2) and respond to items 1-39 for Average AND Gifted students.**

3 If you have **neither** students **formally identified by the district as gifted nor students you believe are gifted, check box three (3) and respond to items 1-39 for Average students only.**

Please use the following response scale based on the academic year to indicate what actually occurs in your classroom. Circle the most appropriate response.

Response Scale
0 - Never
1 - Once a month, or less frequently
2 - A few times a month
3 - A few times a week
4 - Daily
5 - More than once a day

Average Students		Gifted Students
0 1 2 3 4 5	1. Use basic skills worksheets	0 1 2 3 4 5
0 1 2 3 4 5	2. Use enrichment worksheets	0 1 2 3 4 5
0 1 2 3 4 5	3. Assign reading of more advanced level work	0 1 2 3 4 5
0 1 2 3 4 5	4. Use self-directed instructional kits such as S.R.A.	0 1 2 3 4 5
0 1 2 3 4 5	5. Assign reports	0 1 2 3 4 5
0 1 2 3 4 5	6. Assign projects or other work requiring extended time for students to complete	0 1 2 3 4 5
0 1 2 3 4 5	7. Assign book reports	0 1 2 3 4 5
0 1 2 3 4 5	8. Use activities such as puzzles or word searches	0 1 2 3 4 5
0 1 2 3 4 5	9. Give creative or expository writing assignments on topics selected by the teacher	0 1 2 3 4 5
0 1 2 3 4 5	10. Give creative or expository writing assignments on topics selected by the students	0 1 2 3 4 5

Response Scale
0 - Never
1 - Once a month or less frequently
2 - A few times a month
3 - A few times a week
4 - Daily
5 - More than once a day

Average Students							Gifted Students					
0	1	2	3	4	5	11. Make time available for students to pursue self-selected interests	0	1	2	3	4	5
0	1	2	3	4	5	12. Use pretests to determine if students have mastered the material covered in a particular unit or content area	0	1	2	3	4	5
0	1	2	3	4	5	13. Eliminate curricular material that students have mastered	0	1	2	3	4	5
0	1	2	3	4	5	14. Repeat instruction on the coverage of more difficult concepts for some students	0	1	2	3	4	5
0	1	2	3	4	5	15. Substitute different assignments for students who have mastered regular classroom work	0	1	2	3	4	5
0	1	2	3	4	5	16. Modify the instructional format for students who learn better using an alternative approach	0	1	2	3	4	5
0	1	2	3	4	5	17. Encourage students to move around the classroom to work in various locations	0	1	2	3	4	5
0	1	2	3	4	5	18. Allow students to leave the classroom to work in another location, such as the school library or media center	0	1	2	3	4	5
0	1	2	3	4	5	19. Assign different homework based on student ability	0	1	2	3	4	5
0	1	2	3	4	5	20. Use learning centers to reinforce basic skills	0	1	2	3	4	5
0	1	2	3	4	5	21. Use enrichment centers	0	1	2	3	4	5
0	1	2	3	4	5	22. Teach thinking skills in the regular curriculum	0	1	2	3	4	5
0	1	2	3	4	5	23. Teach a unit on a thinking skills, such as critical thinking or creative problem solving	0	1	2	3	4	5
0	1	2	3	4	5	24. Participate in a competitive program focusing on thinking skills/problem solving, such as Future Problem Solving, Odyssey of Mind, etc.	0	1	2	3	4	5
0	1	2	3	4	5	25. Use contracts or management plans to help students organize their independent study projects	0	1	2	3	4	5
0	1	2	3	4	5	26. Provide time within the school day for students to work on their independent study projects	0	1	2	3	4	5
0	1	2	3	4	5	27. Allow students within your classroom to work from a higher grade level textbook	0	1	2	3	4	5
0	1	2	3	4	5	28. Provide a different curricular experience by using a more advanced curriculum unit on a teacher-selected topic	0	1	2	3	4	5

Response Scale
0 - Never
1 - Once a month or less frequently
2 - A few times a month
3 - A few times a week
4 - Daily
5 - More than once a day

Average Students		Gifted Students
0 1 2 3 4 5	29. Group students by ability across classrooms at the same grade level	0 1 2 3 4 5
0 1 2 3 4 5	30. Send students to a higher grade level for specific subject area instruction	0 1 2 3 4 5
0 1 2 3 4 5	31. Establish interest groups which enable students to pursue individual or small group interests	0 1 2 3 4 5
0 1 2 3 4 5	32. Consider students' opinion in allocating time for various subjects within your classroom	0 1 2 3 4 5
0 1 2 3 4 5	33. Provide opportunities for students to use programmed or self-instructional materials at their own pace	0 1 2 3 4 5
0 1 2 3 4 5	34. Give assignments that encourage students to organize their own work schedule to complete a long range project	0 1 2 3 4 5
0 1 2 3 4 5	35. Provide questions that encourage reasoning and logical thinking	0 1 2 3 4 5
0 1 2 3 4 5	36. Ask open-ended questions	0 1 2 3 4 5
0 1 2 3 4 5	37. Encourage students to ask higher-level questions	0 1 2 3 4 5
0 1 2 3 4 5	38. Encourage student participation in discussions	0 1 2 3 4 5
0 1 2 3 4 5	39. Use computers	0 1 2 3 4 5

COMMENTS

Please provide any comments you believe will help us in understanding classroom practices within your school.

Appendix F

Summary of Pilot Study Results

PARTICIPANTS, ROUND 1, MAY 25-30, 2013

- **L. Tung**: Former AP teacher, Michigan Association of Gifted Children (MAGC) executive board member

- **S. Sparks**: President-elect of MAGC; teacher, curriculum director, education consultant for school district; teacher trainer/mentor; and gifted consultant; M.Ed. and Educational Specialist

- **K. Morse**: Head of school for the gifted, MAGC executive board member

- **T. Schwettmann**: IB/AP teacher in Texas, MFA
-
- **P. Smith**: IB/AP teacher, Ph.D. in Education, PDK member

TIME TO COMPLETE

- **Sparks**: 2:17
- **Tung**: 16:29
- **Morse**: 17:00
- **Schwettmann**: 13:32
- **Smith**: 12:00

DISCUSSION/RECOMMENDED CHANGES

- **Directions/Gagné**: (McWilliams) Eliminate “Using a five-point Likert scale” because it is not necessary and some teachers may now know what a Likert scale is. All agreed.
- **#18/Gagné**: It is parents who “should” have…. (Morse and Tung recommended to add the word "should." Sparks was opposed because it changes the nature of the question. All decided to leave as is.)
- **#25/Gagné**: (Tung) The nature of this question is not 100% clear concerning “dominant class.” Does the item suggest that the dominant class is only made up of gifted? Or that gifted will be “part” of a larger dominant class? Is the dominant class the people with the highest earnings? What does “dominant class” mean? All recommended to leave it as is because we do not know and were “beating the horse to death.”
- **Gagné**: All agreed to change all “children” to “students,” as this survey is for high-school teachers and “children” will be confusing.
- **#26/Archambault**: (Sparks) Change “higher-level textbook” to “higher-level books and resources,” as AP/IB teachers will not necessarily only be using basal texts. All agreed.

- **Archambault**: All agreed to delete items 4, 29, and 30 because they are not relevant to the secondary AP/IB classroom

PARTICIPANTS, ROUND 2, JUNE 18, 2013

- **J. Ashburn**: IB teacher, 3 years of experience, 2 with IB/GT
- **J. Clark**: IB teacher, 16 years of experience, 9 with IB/GT
- **D. Lieberman**: IB teacher, 26 years of experience, 4 with IB/GT, rest with middle school and honors
- **K. Noshari**: AP teacher, 44 years of experience, 39 with AP/GT
- **R. Seymour**: IB teacher, 18 years of experience, 15 with IB/GT

TIME TO COMPLETE

- **Ashburn**: 13:30
- **Clark**: 04:10
- **Lieberman**: 07:00
- **Noshari**: 15:00
- **Seymour**: 10:36

RECOMMENDED CHANGES:

- **Contextual data**: (Seymour) There is not a box to check for teachers teaching both 11th and 12th-grade IB or AP. An appropriate choice was added to the instrument.
- **Archambault**: (Seymour) Some activities like worksheets might not apply to 11th and 12th graders. Items left as is because they may or may not apply.
- **Archambault**: (Lieberman) The item, "Participate in a competitive program focusing on thinking skills/problem solving, such as Future Problem Solving, Odyssey of the Mind, etc.," is confusing because it is the students who participate, not the teacher. Item changed to "Have students participate in a competitive program focusing on thinking skills/problem solving, such as Future Problem Solving, Odyssey of the Mind, etc."
- **Archambault**: (Lieberman) The item, "Group students by ability across classrooms at the same grade level," is not typically done at the high-school level. Students remain in assigned classes. Item deleted.

Appendix G

Revised Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

Directions: This section is designed to gather information about attitudes toward gifted education in general. Please indicate your agreement or disagreement by circling the appropriate number for each statement below.

1 = Totally disagree
2 = Partially disagree
3 = Undecided
4 = Partially agree
5 = Totally agree

1. Our schools should offer special educational services for the gifted.	1	2	3	4	5
2. The best way to meet the needs of the gifted is to put them in special classes.	1	2	3	4	5
3. Students with difficulties have the most need of special educational services.	1	2	3	4	5
4. Special programs for gifted students have the drawback of creating elitism.	1	2	3	4	5
5. Special educational services for the gifted are a mark of privilege.	1	2	3	4	5
6. When the gifted are put in special, homogeneous classes, the other students feel devalued.	1	2	3	4	5
7. Most gifted students who skip a grade have difficulties in their social adjustment to a group of older students.	1	2	3	4	5
8. It is more damaging for a gifted student to waste time in class than to adapt to skipping a grade.	1	2	3	4	5
9. Gifted students are often bored in school.	1	2	3	4	5
10. Students who skip a grade are usually pressured to do so by their parents.	1	2	3	4	5
11. The gifted waste their time in regular classes.	1	2	3	4	5
12. We have a greater moral responsibility to give special help to students with difficulties than to gifted students.	1	2	3	4	5
13. Gifted persons are a valuable resource for our society.	1	2	3	4	5
14. The specific educational needs of the gifted are too often ignored in our schools.	1	2	3	4	5
15. The gifted need special attention in order to fully develop their talents.	1	2	3	4	5
16. Our schools are already adequate in meeting the needs of the gifted.	1	2	3	4	5
17. I would very much like to be considered a gifted person.	1	2	3	4	5
18. It is parents who have the major responsibility for helping gifted students develop their talents.	1	2	3	4	5
19. A student who has been identified as gifted has more difficulty in making friends.	1	2	3	4	5
20. Gifted students should be left in regular classes since they serve as an intellectual stimulant for the other students.	1	2	3	4	5
21. By separating students into gifted and other groups, we increase the labeling of students as strong–weak, good–less good, etc.	1	2	3	4	5
22. Some teachers feel their authority is threatened by gifted students.	1	2	3	4	5
23. The gifted are already favored in our schools.	1	2	3	4	5
24. In order to progress, a society must develop the talents of gifted individuals to a maximum.	1	2	3	4	5

25. By offering special educational services to the gifted, we prepare the future members of a dominant class.	1	2	3	4	5
26. Tax-payers should not have to pay for special education for the minority of students who are gifted.	1	2	3	4	5
27. Average students are the major resource of society; so, they should be the focus of our attention.	1	2	3	4	5
28. Gifted students might become vain or egotistical if they are given special attention.	1	2	3	4	5
29. When skipping a grade, gifted students miss important ideas. (They have "holes" in their knowledge.)	1	2	3	4	5
30. Since we invest supplementary funds for students with difficulties, we should do the same for the gifted.	1	2	3	4	5
31. Often, gifted students are rejected because people are envious of them.	1	2	3	4	5
32. The regular school program stifles the intellectual curiosity of gifted students.	1	2	3	4	5
33. The leaders of tomorrow's society will come mostly from the gifted of today.	1	2	3	4	5
34. A greater number of gifted students should be allowed to skip a grade.	1	2	3	4	5

Appendix H

Revised Archambault et al.'s (1993) Classroom Practices Teacher Survey

Directions: This section is designed to provide information about the instructional strategies and approaches you use in your AP or IB classroom with both average/non-gifted and gifted students. It is very important that the answers you provide reflect actual practices.

Please use the following response scale to indicate what practices occur in your current or most recent AP or IB classroom for average/non-gifted and gifted students and mark the appropriate responses.

0 = Never
1 = Once a month or less frequently
2 = A few times a month
3 = A few times a week
4 = Daily
5 = More than once a day

Average Students		**Gifted Students**
0 1 2 3 4 5	1. Use basic skills worksheets	0 1 2 3 4 5
0 1 2 3 4 5	2. Use enrichment worksheets	0 1 2 3 4 5
0 1 2 3 4 5	3. Assign reading of more advanced level work	0 1 2 3 4 5
0 1 2 3 4 5	4. Assign reports	0 1 2 3 4 5
0 1 2 3 4 5	5. Assign projects or other work requiring extended time for students to complete	0 1 2 3 4 5
0 1 2 3 4 5	6. Assign book reports	0 1 2 3 4 5
0 1 2 3 4 5	7. Use activities such as puzzles or word searches	0 1 2 3 4 5
0 1 2 3 4 5	8. Give creative or expository writing assignments on topics selected by the teacher	0 1 2 3 4 5
0 1 2 3 4 5	9. Give creative or expository writing assignments selected by the students	0 1 2 3 4 5
0 1 2 3 4 5	10. Make time available for students to pursue self-selected interests	0 1 2 3 4 5
0 1 2 3 4 5	11. Use pretests to determine if students have mastered the material covered in a particular unit or content area	0 1 2 3 4 5
0 1 2 3 4 5	12. Eliminate curricular material that students have mastered	0 1 2 3 4 5
0 1 2 3 4 5	13. Repeat instruction on the coverage of more difficult concepts for some students	0 1 2 3 4 5

0	1	2	3	4	5	14. Substitute different assignments for students who have mastered regular classroom work	0	1	2	3	4	5
0	1	2	3	4	5	15. Modify the instructional format for students who learn better using an alternative approach	0	1	2	3	4	5
0	1	2	3	4	5	16. Encourage students to move around the classroom to work in various locations	0	1	2	3	4	5
0	1	2	3	4	5	17. Allow students to leave the classroom to work in another location, such as the school library or media center	0	1	2	3	4	5
0	1	2	3	4	5	18. Assign different homework based on student ability	0	1	2	3	4	5
0	1	2	3	4	5	19. Use learning centers to reinforce basic skills	0	1	2	3	4	5
0	1	2	3	4	5	20. Use enrichment centers	0	1	2	3	4	5
0	1	2	3	4	5	21. Teach thinking skills	0	1	2	3	4	5
0	1	2	3	4	5	22. Teach a unit on thinking skills, such as critical thinking or creative problem solving	0	1	2	3	4	5
0	1	2	3	4	5	23. Have students participate in a competitive program focusing on thinking skills/problem solving, such as Future Problem Solving, Odyssey of the Mind, etc.	0	1	2	3	4	5
0	1	2	3	4	5	24. Use contracts or management plans to help students organize their independent study projects	0	1	2	3	4	5
0	1	2	3	4	5	25. Provide time within the school day for students to work on their independent study projects	0	1	2	3	4	5
0	1	2	3	4	5	26. Allow students within your classroom to work from higher-level books and resources	0	1	2	3	4	5
0	1	2	3	4	5	27. Provide a different curricular experience by using a more advanced curriculum unit on a teacher-selected topic	0	1	2	3	4	5
0	1	2	3	4	5	28. Establish interest groups which enable students to pursue individual or small-group interests	0	1	2	3	4	5

0	1	2	3	4	5	29. Consider students' opinion in allocating time for various subjects within your classroom	0	1	2	3	4	5
0	1	2	3	4	5	30. Provide opportunities for students to use programmed or self-instructional materials at their own pace	0	1	2	3	4	5
0	1	2	3	4	5	31. Give assignments that encourage students to organize their own work schedule to complete a long-range project	0	1	2	3	4	5
0	1	2	3	4	5	32. Provide questions that encourage reasoning and logical thinking	0	1	2	3	4	5
0	1	2	3	4	5	33. Ask open-ended questions	0	1	2	3	4	5
0	1	2	3	4	5	34. Encourage students to ask higher-level questions	0	1	2	3	4	5
0	1	2	3	4	5	35. Encourage student participation in discussions	0	1	2	3	4	5
0	1	2	3	4	5	36. Use computers	0	1	2	3	4	5

COMMENTS

Please provide any comments you believe will assist with understanding your instructional practices with gifted students.

Appendix I

Committee for the Protection of Human Subjects Approval Letter

UNIVERSITY of HOUSTON

DIVISION OF RESEARCH

September 11, 2013

Christie McWilliams
c/o Dr. F. Richard Olenchak
Curriculum and Instruction

Dear Christie McWilliams,

Based upon your request for exempt status, an administrative review of your research proposal entitled “Secondary Advanced Academic Courses: Factors Influencing Differentiation for Gifted Students in Heterogeneous AP and IB Classrooms” was conducted on August 16, 2013.

At that time, your request for exemption under **Category 2** was approved pending modification of your proposed procedures/documents.

The changes you have made adequately respond to the identified contingencies. As long as you continue using procedures described in this project, you do not have to reapply for review. * Any modification of this approved protocol will require review and further approval. Please contact me to ascertain the appropriate mechanism.

If you have any questions, please contact Nettie Martinez at 713-743-9204.

Sincerely yours,

Kirstin Rochford, MPH, CIP, CPIA
Director, Research Compliance

*Approvals for exempt protocols will be valid for 5 years beyond the approval date. Approval for this project will expire **August 1, 2018**. If the project is completed prior to this date, a final report should be filed to close the protocol. If the project will continue after this date, you will need to reapply for approval if you wish to avoid an interruption of your data collection.

Protocol Number: 13553-EX

316 E. Cullen Building Houston, TX 77204-2015 (713) 743-9204 Fax: (713) 743-9577
COMMITTEES FOR THE PROTECTION OF HUMAN SUBJECTS

Appendix J

E-Mail Invitation to Participate in the Study

E-Mail Subject Line: AP/IB Teachers Needed for Dissertation Research! Incentives Offered/15 Min.!

E-Mail Invitation:

Dear Educator:

As a former high-school teacher now completing a doctoral program at the University of Houston's College of Education, I understand the value of every minute of your day. In the midst of planning lessons, grading papers, and attending to your students' various needs, you may have little time to complete a short survey to support a fellow educator's dissertation study. However, your feedback will play an important role in gifted education research, and I am offering participation incentives for respondents in hopes that you will take a few minutes to respond.

This study explores relationships among AP and IB instructors' attitudes toward gifted education, instructional practices for their high-ability learners, and contextual factors such as their training in gifted education. Please respond to the brief, anonymous, online survey **if you are currently teaching an AP or IB course to mixed-ability (both gifted and non-gifted) students.**

To thank you for your participation and encourage you to respond as soon as possible, the first 20 qualified AP/IB instructors who submit a completed survey will receive $10 either paid directly to their PayPal account or as an Amazon gift card, whichever is preferred. Furthermore, *all* AP and IB instructors who respond will be entered into a drawing for the chance to win one of two $50 Amazon gift cards.

At the end of the survey, you will be directed to a separate site to enter your personal information for the financial incentives and/or to receive a copy of the study's results anticipated to be distributed by May 2014. To access the survey, visit https://www.surveymonkey.com/s/G6JCD96 and respond within five days. Please plan to spend approximately 10-15 minutes completing the survey in a comfortable space free from distractions. I would deeply appreciate your help in providing data for this dissertation.

This project has been reviewed by the University of Houston Committee for the Protection of Human Subjects (713) 743-9204.

Sincerely,

Christie McWilliams, Doctoral Candidate, University of Houston
Former High-School English Teacher

Appendix K

Cover Letter Describing Terms of Consent and Assurance of Confidentiality

September 2013

Dear Educator:

You are being invited to take part in a research project conducted by Christie McWilliams from the Department of Education at the University of Houston. This research, Secondary Advanced Academic Course: Factors Influencing Differentiation for Gifted Students in Heterogeneous AP and IB Classrooms, is part of a dissertation and is being conducted under the supervision of Dr. Richard Olenchak.

The purpose of this study is to explore the relationships among AP and IB instructors' attitudes toward gifted education, the degree of differentiated practices for their gifted learners, and contextual factors such as their training in gifted education. If you agree to participate, you will be asked to respond to 74 items online that gather information about your attitude toward gifted education, differentiated instructional practices for your gifted students, and contextual factors such as the type and amount of training you have in gifted education. You will be provided with a space to make additional comments. This study may be completed at your convenience in a comfortable space free from distractions and will take approximately 10-15 minutes to complete. You are one of 10,000 subjects invited to participate in this research study.

There are no foreseeable risks or discomforts by participating in this study. Participating in this research is voluntary, and the only alternative to this project is non-participation. If you feel uncomfortable with a question, you can skip that question or withdraw from the study altogether. If you decide to withdraw at any time before you have finished the survey, your answers will not be recorded. If you do not want to continue, simply leave this website. If you do not click on the "submit" button at the end of the survey, your answers and participation will not be recorded. The number of questions you answer will not affect your chances of receiving the incentive(s).

Your participation in this project is anonymous, and your IP address will not be available to the researcher. You will not be asked to disclose your name on any part of the survey. To be eligible for the financial incentives and be entered in the drawing, you will be directed to a site not connected in any way to the survey to enter personal information. All participants may enter a drawing for one of two $50 Amazon.com gift cards. Additionally, the first 20 respondents to complete the survey in its entirety will receive either a $10 cash payment delivered via PayPal or a $10 Amazon.com gift card.

You will be contributing to current research in the field of gifted education. While you will not directly benefit from participation in this study, your participation will help the investigator better understand AP and IB instructors' attitudes toward gifted education, how they differentiate instruction for gifted learners, and factors that may influence these choices.

The results of this study will be used for scholarly purposes only. Results may help connect AP and IB courses and gifted education better through specific recommendations for professional development and may be published in professional publications and/or presented at professional workshops and conferences. Because your responses will remain anonymous, no individual subjects will be identified.

Any questions regarding your rights as a research subject may be addressed to the University of Houston Committee for the Protection of Human Subjects (713-743-9204).

Sincerely,

Christie McWilliams
Principal Investigator
College of Education
University of Houston
4800 Calhoun Road
Houston, TX 77004

Appendix L

Follow-Up E-Mail

E-Mail Subject Line: AP/IB Teachers Sill Needed for Dissertation Research - Incentives Offered

E-Mail Invitation:

Dear Educator:

A few days ago, you received an invitation to participate in my dissertation study. I'd like to extend a second-chance invitation to participate, and qualified participants are still eligible for the incentives!

This dissertation research explores relationships among AP and IB instructors' attitudes toward gifted education, instructional practices for their high-ability learners, and contextual factors such as their training in gifted education. Please respond to the brief, anonymous, online survey **if you are currently teaching an AP or IB course to mixed-ability (both gifted and non-gifted) students.**

The first 20 qualified AP/IB instructors who submit a completed survey will receive $10 either paid directly to their PayPal account or as an Amazon gift card, whichever is preferred. Furthermore, *all* qualified participants who respond will be entered into a drawing for the chance to win one of two $50 Amazon gift cards.

At the end of the survey, you will be directed to a separate site to enter your personal information for the financial incentives and/or to receive a copy of the study's results anticipated to be distributed by May 2014. To access the survey, please visit https://www.surveymonkey.com/s/G6JCD96 and respond within five days. Please plan to spend approximately 10-15 minutes completing the survey in a comfortable space free from distractions. I would deeply appreciate your help in providing data for this dissertation.

This project has been reviewed by the University of Houston Committee for the Protection of Human Subjects (713) 743-9204.

Sincerely,

Christie McWilliams
Doctoral Candidate, University of Houston
Former High-School English Teacher

Appendix M

Descriptive Statistics for Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

Question	Mean	Standard Deviation	N
1. Our schools should offer special educational services for the gifted.	4.3024	.98327	377
2. The best way to meet the needs of the gifted is to put them in special classes.	3.5862	1.13626	377
3. Students with difficulties have the most need of special educational services.	3.0773	1.25255	375
Reverse Coded Mean	2.9227		
4. Special programs for gifted students have the drawback of creating elitism.	3.2713	1.30877	376
Reverse Coded Mean	2.7287		
5. Special educational services for the gifted are the mark of privilege.	2.5989	1.26813	374
Reverse Coded Mean	3.4011		
6. When the gifted are put in special, homogeneous classes, the other students feel devalued.	2.6765	1.23819	374
Reverse Coded Mean	3.3235		
7. Most gifted students who skip a grade have difficulties in their social adjustment to a group of older students.	3.2042	1.10520	377
Reverse Coded Mean	2.7958		
8. It is more damaging for a gifted student to waste time in class than to adapt to skipping a grade.	3.4468	1.10144	376
9. Gifted students are often bored in school.	3.8488	1.03706	377
10. Students who skip a grade are usually pressured to do so by their parents.	3.3803	.95305	376
Reverse Coded Mean	2.6197		
11. The gifted waste their time in regular classes.	2.9335	1.19481	376
12. We have a greater moral responsibility to give special help to students with difficulties than to gifted students.	2.3617	1.22943	376
Reverse Coded Mean	3.6383		
13. Gifted persons are a valuable resource for our society.	4.6340	.65939	377
14. The specific educational needs of the gifted are too often ignored in our schools.	3.9920	1.04548	377
15. The gifted need special attention in order to fully develop their talents.	4.0133	.93532	377
16. Our schools are already adequate in meeting the needs of the gifted.	2.6075	1.15006	372
Reverse Coded Mean	3.3925		
17. I would very much like to be considered a gifted person.	3.4171	1.19531	374
18. It is parents who have the major responsibility for helping gifted students develop their talents.	3.0858	1.13029	373
Reverse Coded Mean	2.9142		
19. A student who has been identified as gifted has more difficulty in making friends.	2.0504	.96486	377
Reverse Coded Mean	3.9496		
20. Gifted students should be left in regular classes since they serve as an intellectual stimulant for the other students.	2.5332	1.15067	377
Reverse Coded Mean	3.4668		

21. By separating students into gifted and other groups, we increase the labeling of students as strong–weak, good–less good, etc.	3.3013	1.24203	375
Reverse Coded Mean	2.6987		
22. Some teachers feel their authority threatened by gifted students.	3.2453	1.22957	375
Reverse Coded Mean	2.7547		
23. The gifted are already favored in our schools.	2.8453	1.15280	375
Reverse Coded Mean	3.1547		
24. In order to progress, a society must develop the talents of gifted individuals to a maximum.	4.0928	.93932	377
25. By offering special educational services to the gifted, we prepare the future members of a dominant class.	2.5963	1.16476	374
Reverse Coded Mean	3.4037		
26. Tax-payers should not have to pay for special education for the minority of students who are gifted.	1.7507	.98467	377
Reverse Coded Mean	4.2493		
27. Average students are the major resource of society; so, they should be the focus of our attention.	2.6277	1.13827	376
Reverse Coded Mean	3.3723		
28. Gifted students might become vain or egotistical if they are given special attention.	2.6107	1.25510	375
Reverse Coded Mean	3.3893		
29. When skipping a grade, gifted students miss important ideas. (They have "holes" in their knowledge.)	2.8912	1.13050	377
Reverse Coded Mean	3.1088		
30. Since we invest supplementary funds for students with difficulties, we should do the same for the gifted.	4.1520	.93411	375
31. Often, gifted students are rejected because people are envious of them.	2.6640	1.08670	375
Reverse Coded Mean	3.3360		
32. The regular school program stifles the intellectual curiosity of gifted students.	3.4069	1.19637	376
33. The leaders of tomorrow's society will come mostly from the gifted of today.	3.0027	1.14812	375
34. A greater number of gifted students should be allowed to skip a grade.	2.6347	1.06845	375

Appendix N

Factor Mean Scores for Original Factor Structure on Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

		N	Mean	Std. Deviation	Std. Error
Needs and Support	AP	179	3.9267	.62468	.04669
	IB	88	3.7571	.60954	.06498
	Both AP/IB	61	3.9016	.64150	.08214
	Total	328	3.8765	.62618	.03458
Resistance to Objections	AP	171	3.3772	.69621	.05324
	IB	86	3.2721	.63997	.06901
	Both AP/IB	58	3.3138	.70124	.09208
	Total	358	3.3128	.69274	.03661
Rejection	AP	180	3.3222	.72544	.05407
	IB	86	3.4186	.84046	.09063
	Both AP/IB	62	3.2366	.81513	.10352
	Total	377	3.3476	.78694	.04075
Ability Grouping	AP	177	3.3347	.86267	.06484
	IB	87	3.1695	.79743	.08549
	Both AP/IB	63	3.3175	.78828	.09931
	Total	327	3.2875	.83235	.04603
School Acceleration	AP	179	3.0369	.68251	.05101
	IB	87	2.8690	.74760	.08015
	Both AP/IB	63	2.7714	.75079	.09459
	Total	329	2.9416	.71959	.03967
Social Value	AP	177	3.7034	.51084	.03840
	IB	86	3.5262	.56102	.06050
	Both AP/IB	61	3.6148	.58018	.07428
	Total	324	3.6397	.54159	.03009

Appendix O

ANOVA for Instructors' Responses on Original Factors for Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

		Sum of Squares	df	Mean Square	F	Sig.
Needs & Support	Between Groups	1.744	2	.872	2.240	.108
	Within Groups	126.474	325	.389		
	Total	128.218	327			
Resistance to Objections	Between Groups	.670	2	.335	.719	.488
	Within Groups	145.243	312	.466		
	Total	145.913	314			
Rejection	Between Groups	1.227	2	.613	1.024	.360
	Within Groups	194.772	325	.599		
	Total	195.999	327			
Ability Grouping	Between Groups	1.662	2	.831	1.201	.302
	Within Groups	224.191	324	.692		
	Total	225.854	326			
School Acceleration	Between Groups	3.908	2	1.954	3.839	.022
	Within Groups	165.931	326	.509		
	Total	169.840	328			
Social Value	Between Groups	1.865	2	.932	3.222	.041
	Within Groups	92.878	321	.289		
	Total	94.743	323			

Appendix P

Surprising Items on Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

Note: Data is in its original form and has not been reverse coded to ease readability and interpretation.

3. Students with difficulties have the most need of special educational services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	30	8.0	8.0	8.0
	Partially Disagree	136	36.1	36.3	44.3
	Undecided	38	10.1	10.1	54.4
	Partially Agree	117	31.0	31.2	85.6
	Totally Agree	54	14.3	14.4	100.0
	Total	375	99.5	100.0	
Missing		2	.5		
Total		377	100.0		

4. Special programs for gifted students have the drawback of creating elitism.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	51	13.5	13.6	13.6
	Partially Disagree	75	19.9	19.9	33.5
	Undecided	27	7.2	7.2	40.7
	Partially Agree	167	44.3	44.4	85.1
	Totally Agree	56	14.9	14.9	100.0
	Total	376	99.7	100.0	
Missing		1	.3		
Total		377	100.0		

5. Special educational services for the gifted are a mark of privilege.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	92	24.4	24.6	24.6
	Partially Disagree	108	28.6	28.9	53.5
	Undecided	53	14.1	14.2	67.6
	Partially Agree	100	26.5	26.7	94.4
	Totally Agree	21	5.6	5.6	100.0
	Total	374	99.2	100.0	
Missing		3	.8		
Total		377	100.0		

6. When the gifted are put in special, homogeneous classes, the other students feel devalued.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	76	20.2	20.3	20.3
	Partially Disagree	119	31.6	31.8	52.1
	Undecided	48	12.7	12.8	65.0
	Partially Agree	112	29.7	29.9	94.9
	Totally Agree	19	5.0	5.1	100.0
	Total	374	99.2	100.0	
Missing		3	.8		
Total		377	100.0		

7. Most gifted students who skip a grade have difficulties in their social adjustment to a group of older students.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	26	6.9	6.9	6.9
	Partially Disagree	87	23.1	23.1	30.0
	Undecided	82	21.8	21.8	51.7
	Partially Agree	148	39.3	39.3	91.0
	Totally Agree	34	9.0	9.0	100.0
	Total	377	100.0	100.0	

11. The gifted waste their time in regular classes.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	36	9.5	9.6	9.6
	Partially Disagree	141	37.4	37.5	47.1
	Undecided	43	11.4	11.4	58.5
	Partially Agree	124	32.9	33.0	91.5
	Totally Agree	32	8.5	8.5	100.0
	Total	376	99.7	100.0	
Missing		1	.3		
Total		377	100.0		

16. Our schools are already adequate in meeting the needs of the gifted.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	60	15.9	16.1	16.1
	Partially Disagree	151	40.1	40.6	56.7
	Undecided	52	13.8	14.0	70.7
	Partially Agree	93	24.7	25.0	95.7
	Totally Agree	16	4.2	4.3	100.0
	Total	372	98.7	100.0	
Missing		5	1.3		
Total		377	100.0		

18. It is parents who have the major responsibility for helping gifted students develop their talents.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	25	6.6	6.7	6.7
	Partially Disagree	120	31.8	32.2	38.9
	Undecided	54	14.3	14.5	53.4
	Partially Agree	146	38.7	39.1	92.5
	Totally Agree	28	7.4	7.5	100.0
	Total	373	98.9	100.0	
Missing		4	1.1		
Total		377	100.0		

21. By separating students into gifted and other groups, we increase the labeling of students as strong–weak, good–less good, etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	39	10.3	10.4	10.4
	Partially Disagree	82	21.8	21.9	32.3
	Undecided	31	8.2	8.3	40.5
	Partially Agree	173	45.9	46.1	86.7
	Totally Agree	50	13.3	13.3	100.0
	Total	375	99.5	100.0	
Missing		2	.5		
Total		377	100.0		

23. The gifted are already favored in our schools.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	42	11.1	11.2	11.2
	Partially Disagree	139	36.9	37.1	48.3
	Undecided	46	12.2	12.3	60.5
	Partially Agree	131	34.7	34.9	95.5
	Totally Agree	17	4.5	4.5	100.0
	Total	375	99.5	100.0	
Missing		2	.5		
Total		377	100.0		

27. Average students are the major resource of society; so, they should be the focus of our attention.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	62	16.4	16.5	16.5
	Partially Disagree	141	37.4	37.5	54.0
	Undecided	60	15.9	16.0	69.9
	Partially Agree	101	26.8	26.9	96.8
	Totally Agree	12	3.2	3.2	100.0
	Total	376	99.7	100.0	
Missing		1	.3		
Total		377	100.0		

28. Gifted students might become vain or egotistical if they are given special attention.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally Disagree	84	22.3	22.4	22.4
	Partially Disagree	123	32.6	32.8	55.2
	Undecided	44	11.7	11.7	66.9
	Partially Agree	103	27.3	27.5	94.4
	Totally Agree	21	5.6	5.6	100.0
	Total	375	99.5	100.0	
Missing		2	.5		
Total		377	100.0		

Appendix Q

ANOVA for Surprising Items on Gagné and Nadeau's Attitude Scale

(Gagné, 1991-a)

		Sum of Squares	df	Mean Square	F	Sig.
3. Students with difficulties have the most need of special educational services.	Between Groups	.841	2	.420	.262	.770
	Within Groups	523.603	326	1.606		
	Total	524.444	328			
4. Special programs for gifted students have the drawback of creating elitism.	Between Groups	2.765	2	1.382	.819	.442
	Within Groups	551.769	327	1.687		
	Total	554.533	329			
5. Special educational services for the gifted are a mark of privilege.	Between Groups	.406	2	.203	.126	.882
	Within Groups	525.199	326	1.611		
	Total	525.605	328			
6. When the gifted are put in special, homogeneous classes, the other students feel devalued.	Between Groups	6.477	2	3.239	2.107	.123
	Within Groups	501.201	326	1.537		
	Total	507.678	328			
7. Most gifted students who skip a grade have difficulties in their social adjustment to a group of older students.	Between Groups	9.723	2	4.861	3.959	.020
	Within Groups	402.724	328	1.228		
	Total	412.447	330			
11. The gifted waste their time in regular classes.	Between Groups	1.065	2	.532	.028	.973
	Within Groups	472.341	327	1.444		
	Total	473.406	329			
16. Our schools are already adequate in meeting the needs of the gifted.	Between Groups	5.845	2	2.922	2.200	.112
	Within Groups	431.765	325	1.329		
	Total	437.610	327			
18. It is parents who have the major responsibility for helping gifted students develop their talents.	Between Groups	1.453	2	.726	.580	.560
	Within Groups	405.636	324	1.252		
	Total	407.089	326			
21. By separating students into gifted and other groups, we increase the labeling of students as strong–weak, good–less good, etc.	Between Groups	1.490	2	.745	.481	.619
	Within Groups	505.318	326	1.550		
	Total	506.809	328			
23. The gifted are already favored in our schools.	Between Groups	1.856	2	.928	.710	.492
	Within Groups	426.089	326	1.307		
	Total	427.945	328			
27. Average students are the major resource of society; so, they should be the focus of our attention.	Between Groups	2.345	2	1.172	.910	.404
	Within Groups	421.428	327	1.289		
	Total	423.773	329			
28. Gifted students might become vain or egotistical if they are given special attention.	Between Groups	.087	2	.043	.028	.973
	Within Groups	506.752	326	1.554		
	Total	506.839	328			

Appendix R

Descriptive Statistics for Archambault et al.'s (1993) Classroom Practices Teacher Survey

Item	Mean (GT)	Std. Dev. (GT)	N (GT)	Mean (AV)	Std. Dev. (AV)	N (AV)	Mean Diff.	N (Mean Diff.)
1. Use basic skills worksheets	1.2199	1.16980	332	1.8263	1.29671	334	-.5879	330
2. Use enrichment worksheets	1.9485	1.19029	330	1.9429	1.06691	333	.0214	327
3. Assign reading of more advanced level work	2.9879	1.21350	331	2.2844	1.29213	334	.7143	329
4. Assign reports	1.5427	.98831	328	1.2711	.89578	332	.2883	326
5. Assign projects or other work requiring extended time for students to complete	1.9940	.96607	331	1.6616	.93437	331	.3160	326
6. Assign book reports	.5137	.87685	329	.4012	.68307	329	.1138	325
7. Use activities such as puzzles or word searches	.5982	.96853	331	.8253	1.05135	332	-.2317	328
8. Give creative or expository writing assignments on topics selected by the teacher	1.6898	1.18276	332	1.4910	1.5161	332	.2097	329
9. Give creative or expository writing assignments on topics selected by the students	1.3689	1.10374	328	1.1054	1.02139	332	.2577	326
10. Make time available for students to pursue self-selected interests	1.6524	1.21708	328	1.3921	1.14820	329	.2615	325
11. Use pretests to determine if students have mastered the material covered in a particular unit or content area	1.2073	1.00138	328	1.2091	.91021	330	-.0123	325
12. Eliminate curricular material that students have mastered	1.7401	1.30467	327	1.4012	1.19072	329	.3354	325
13. Repeat instruction on the coverage of more difficult concepts for some students	2.1450	1.12955	331	2.6295	1.05072	332	-.4756	328
14. Substitute different assignments for students who have mastered regular classroom work	1.4529	1.30842	329	1.1788	1.11422	330	.2607	326

15. Modify the instructional format for students who learn better using an alternative approach	2.2273	1.32770	330	2.2152	1.27844	330	-.0030	328
16. Encourage students to move around the classroom to work in various locations	2.6898	1.22048	332	2.5227	1.19415	331	.1702	329
17. Allow students to leave the classroom to work in another location, such as the school library or media center	1.6344	1.28011	331	1.3061	1.14866	330	.3293	328
18. Assign different homework based on student ability	1.30946	1.1333	330	.9939	1.18423	329	.1437	327
19. Use learning centers to reinforce basic skills	1.09514	.6647	331	.8154	1.15860	325	-.1646	322
20. Use enrichment centers	.7591	1.19373	328	.7538	1.11154	325	.0217	322
21. Teach thinking skills	3.3299	1.14926	294	3.2121	1.09303	297	.1199	292
22. Teach a unit on thinking skills, such as critical thinking or creative problem solving	1.8811	1.59353	328	1.7073	1.45882	328	.1754	325
23. Have students participate in a competitive program focusing on thinking skills/problem solving, such as Future Problem Solving, Odyssey of the Mind, etc.	1.1303	1.46841	330	.8152	1.21506	330	.3089	327
24. Use contracts or management plans to help students organize their independent study projects	1.0151	1.29713	332	.9124	1.16834	331	.1000	330
25. Provide time within the school day for students to work on their independent study projects	1.4109	1.24331	331	1.3444	1.22442	331	.0762	328

26. Allow students within your classroom to work from higher-level books and resources	2.7417	1.48465	333	2.2349	1.47862	332	.5015	331
27. Provide a different curricular experience by using a more advanced curriculum unit on a teacher-selected topic	2.3303	1.50884	330	1.7713	1.41405	328	.5583	326
28. Establish interest groups which enable students to pursue individual or small-group interests	1.4146	1.31982	328	1.0890	1.18765	326	.3302	324
29. Consider students' opinion in allocating time for various subjects within your classroom	2.0633	1.42238	332	1.7311	1.37408	331	.3333	330
30. Provide opportunities for students to use programmed or self-instructional materials at their own pace	1.6163	1.43154	331	1.3000	1.31313	330	.3211	327
31. Give assignments that encourage students to organize their own work schedule to complete a long-range project	2.0937	1.21866	331	1.6647	1.11705	331	.4268	328
32. Provide questions that encourage reasoning and logical thinking	3.8731	.93529	331	3.4924	1.16610	331	.3720	328
33. Ask open-ended questions	4.0725	.88122	331	3.7583	1.09636	331	.2927	328
34. Encourage students to ask higher-level questions	4.1121	.83402	330	3.8055	1.07855	329	.2954	325
35. Encourage student participation in discussions	4.2900	.75510	331	4.0758	.95667	330	.2049	327
36. Use computers	2.7423	1.46587	326	2.5919	1.42471	321	.1514	317

Appendix S

ANOVA for Original Factors for Archambault et al.'s (1993) Classroom Practices Teacher Survey

		Sum of Squares	df	Mean Square	F	Sig.
Questioning and Thinking (AV)	Between Groups	2.090	2	1.045	1.365	.257
	Within Groups	219.755	287	.766		
	Total	221.845	289			
Providing Challenges and Choices (AV)	Between Groups	.606	2	.303	.466	.628
	Within Groups	199.574	307	.650		
	Total	200.180	309			
Reading and Written Assignments (AV)	Between Groups	.759	2	.380	.795	.452
	Within Groups	150.856	316	.477		
	Total	151.616	318			
Curriculum Modifications (AV)	Between Groups	.334	2	.167	.269	.764
	Within Groups	194.614	314	.620		
	Total	194.947	316			
Enrichment Centers (AV)	Between Groups	1.931	2	.965	1.504	.224
	Within Groups	198.393	309	.642		
	Total	200.324	311			
Seatwork (AV)	Between Groups	1.599	2	.799	.975	.378
	Within Groups	264.764	323	.820		
	Total	266.363	325			
Questioning and Thinking (GT)	Between Groups	2.010	2	1.005	2.059	.129
	Within Groups	138.664	284	.488		
	Total	140.674	286			
Providing Challenges and Choices (GT)	Between Groups	.214	2	.107	.124	.883
	Within Groups	262.677	305	.861		
	Total	262.891	307			
Reading and Written Assignments (GT)	Between Groups	.057	2	.029	.051	.950
	Within Groups	174.964	315	.555		
	Total	175.021	317			

Curriculum Modifications (GT)	Between Groups	.080	2	.040	.048	.953
	Within Groups	263.445	313	.842		
	Total	263.525	315			
Enrichment Centers (GT)	Between Groups	1.023	2	.512	.691	.502
	Within Groups	234.820	317	.741		
	Total	235.844	319			
Seatwork (GT)	Between Groups	.493	2	.247	.308	.735
	Within Groups	256.305	320	.801		
	Total	256.798	322			

Appendix T

ANOVA for Factor Mean Differences on Classroom Practices Teacher Survey

		Sum of Squares	df	Mean Square	F	Sig.
Questioning and Thinking	Between Groups	.472	2	.236	.974	.379
	Within Groups	66.929	276	.242		
	Total	67.402	278			
Providing Challenges and Choices	Between Groups	.982	2	.491	1.793	.168
	Within Groups	80.515	294	.274		
	Total	81.498	296			
Reading and Written Assignments	Between Groups	.534	2	.267	.837	.434
	Within Groups	97.970	307	.319		
	Total	98.504	309			
Curriculum Modifications	Between Groups	1.225	2	.612	2.679	.070
	Within Groups	70.384	308	.229		
	Total	71.609	310			
Enrichment Centers	Between Groups	.363	2	.182	.829	.437
	Within Groups	66.813	305	.219		
	Total	67.176	307			
Seatwork	Between Groups	.432	2	.216	.600	.550
	Within Groups	113.870	316	.360		
	Total	114.302	318			

Appendix U

EFA Factor Structure and Loadings for Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

Rejection

Item Number	Item	Loading
19	A student who has been identified as gifted has more difficulty in making friends.	.734
22	Some teachers feel their authority threatened by gifted students.	.605
31	Often, gifted students are rejected because people are envious of them.	.808

School Acceleration

Item Number	Item	Loading
7*	Most gifted students who skip a grade have difficulties in their social adjustment to a group of older students.	.726
8	It is more damaging for a gifted student to waste time in class than to adapt to skipping a grade.	.631
10*	Students who skip a grade are usually pressured to do so by their parents.	.672
29*	When skipping a grade, gifted students miss important ideas. (They have "holes" in their knowledge.)	.678
34	A greater number of gifted students should be allowed to skip a grade.	.632

Elitism

Item Number	Item	Loading
4*	Special programs for gifted students have the drawback of creating elitism.	.761
5*	Special educational services for the gifted are a mark of privilege.	.666
6*	When the gifted are put in special, homogeneous classes, the other students feel devalued.	.671
21*	By separating students into gifted and other groups, we increase the labeling of students as strong–weak, good–less good, etc.	.697
23*	The gifted are already favored in our schools.	.655
28*	Gifted students might become vain or egotistical if they are given special attention.	.675

Needs and Support

Item Number	Item	Loading
1	Our schools should offer special educational services for the gifted.	.616
2	The best way to meet the needs of the gifted is to put them in special classes.	.681
14	The specific educational needs of the gifted are too often ignored in our schools.	.649
15	The gifted need special attention in order to fully develop their talents.	.711
20*	Gifted students should be left in regular classes since they serve as an intellectual stimulant for the other students.	.548
26*	Tax-payers should not have to pay for special education for the minority of students who are gifted.	.684
30	Since we invest supplementary funds for students with difficulties, we should do the same for the gifted.	.808

Social Value

Item Number	Item	Loading
13	Gifted persons are a valuable resource for our society.	.713
17	I would very much like to be considered a gifted person.	.666
24	In order to progress, a society must develop the talents of gifted individuals to a maximum.	.754
33	The leaders of tomorrow's society will come mostly from the gifted of today.	.703

Mixed-Ability Settings

Item Number	Item	Loading
9	Gifted students are often bored in school.	.783
11	The gifted waste their time in regular classes.	.803
32	The regular school program stifles the intellectual curiosity of gifted students.	.719

Equal Opportunities

Item Number	Item	Loading
3*	Students with difficulties have the most need of special educational services.	.721
12*	We have a greater moral responsibility to give special help to students with difficulties than to gifted students.	.720
16*	Our schools are already adequate in meeting the needs of the gifted.	.619
27*	Average students are the major resource of society; so, they should be the focus of our attention.	.603

Note: Per Gagné's scoring procedures (Gagné, 1991-b), items marked with a * were reverse coded during analysis so high scores indicate high attitudes toward giftedness.

Appendix V

ANOVA for New Factors for Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

		Sum of Squares	df	Mean Square	F	Sig.
Social Value	Between Groups	3.044	2	1.522	3.366	.036
	Within Groups	148.288	328	.452		
	Total	151.332	330			
Elitism	Between Groups	1.245	2	.622	.866	.422
	Within Groups	235.877	328	.719		
	Total	237.122	330			
School Acceleration	Between Groups	3.812	2	1.906	3.758	.024
	Within Groups	166.339	328	.507		
	Total	170.152	330			
Mixed-Ability Settings	Between Groups	3.844	2	1.922	2.491	.084
	Within Groups	253.003	328	.771		
	Total	256.847	330			
Rejection	Between Groups	1.147	2	.574	.963	.383
	Within Groups	195.405	328	.596		
	Total	196.553	330			
Equal Opportunities	Between Groups	1.510	2	.755	1.190	.306
	Within Groups	208.155	328	.635		
	Total	209.664	330			
Needs & Support	Between Groups	.913	2	.457	1.1101	.334
	Within Groups	136.020	328	.415		
	Total	136.933	330			

Appendix W

EFA Factor Structure and Loadings for Archambault et al.'s (1993) Classroom Practices Teacher Survey

Assigning Seatwork

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
1	Use basic skills worksheets	.851	.856
2	Use enrichment worksheets	.813	.748
7	Use activities such as puzzles or word searches	.729	.731

Encouraging Higher-Level Questions and Discussions

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
32	Provide questions that encourage reasoning and logical thinking	.778	.828
33	Ask open-ended questions	.882	.913
34	Encourage students to ask higher-level questions	.909	.919
35	Encourage student participation in discussions	.833	.847

Allowing Students to Pursue Individual Interests

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
10	Make time available for students to pursue self-selected interests	.710	.740
24	Use contracts of management plans to help students organize their independent study projects	.687	.631
25	Provide time within the school day for students to work on their independent study projects	.712	.676
28	Establish interest groups which enable students to pursue individual or small-group interests	.797	.773
29	Consider students' opinion in allocating time for various subjects within your classroom	.693	.685
30	Provide opportunities for students to use programmed or self-instructional materials at their own pace	.734	.698
31	Give assignments that encourage students to organize their own work schedule to complete a long-range project	.686	.602

Assigning Projects and Writing Assignments

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
4	Assign reports	.672	.694
5	Assign projects or other work requiring extended time for students to complete	.655	.647
6	Assign book reports	.701	.683
8	Give creative or expository writing assignments on topics selected by the teacher	.749	.768
9	Give creative or expository writing assignments on topics selected by the students	.786	.806

Modifying the Curriculum and Instruction

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
11	Use pretests to determine if students have mastered the material covered in a particular unit or content area	.687	.650
12	Eliminate curricular material that students have mastered	.634	.574
13	Repeat instruction on the coverage of more difficult concepts for some students	.551	.561
14	Substitute different assignments for students who have mastered regular classroom work	.793	.782
15	Modify the instructional format for students who learn better using an alternative approach	.701	.684
18	Assign different homework based on student ability	.731	.674

Using Learning and Enrichment Centers

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
19	Use learning centers to reinforce basic skills	.938	.910
20	Use enrichment centers	.938	.910

Varying Locations

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
16	Encourage students to move around the classroom to work in various locations	.721	.718
17	Allow students to leave the classroom to work in another location, such as the school library or media center	.791	.792
36	Use computers	.650	.623

Encouraging the Development of Thinking Skills

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
21	Teach thinking skills	.644	.661
22	Teach a unit on thinking skills, such as critical thinking or creative problem solving	.794	.773
23	Have students participate in a competitive program focusing on thinking skills/problem solving, such as Future Problem Solving, Odyssey of the Mind, etc.	.686	.719
27	Provide a different curricular experience by using a more advanced curriculum unit on a teacher-selected topic	.695	.645

Providing Higher-Level Reading Opportunities

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
3	Assign reading of more advanced-level work	.850	.869
26	Allow students within your classroom to work from higher-level books and resources	.850	.869

Appendix X

Overall Mean Scores for New Factors for Archambault et al.'s (1993) Classroom Practices Teacher Survey

	N		Mean	Std. Error of Mean	Std. Deviation	Variance
	Valid	Missing				
Assigning Seatwork (Non-Gifted)	377	0	1.5075	.04364	.84741	.718
Assigning Seatwork (Gifted)	377	0	1.2246	.04324	.83949	.705
Encouraging Higher-Level Questions and Discussion (Non-Gifted)	377	0	3.8097	.04562	.88581	.785
Encouraging Higher-Level Questions and Discussion (Gifted)	377	0	4.0763	.03501	.67977	.462
Allowing Students to Pursue Individual Interests (Non-Gifted)	377	0	1.3221	.04058	.78791	.621
Allowing Students to Pursue Individual Interests (Gifted)	377	0	1.5688	.04551	.88367	.781
Assigning Projects and Writing Assignments (Non-Gifted)	377	0	1.1390	.03330	.64659	.418
Assigning Projects and Writing Assignments (Gifted)	377	0	1.4186	.03563	.69188	.479
Modifying the Curriculum and Instruction (Non-Gifted)	377	0	1.5911	.03559	.69112	.478
Modifying the Curriculum and Instruction (Gifted)	377	0	1.6322	.04078	.79178	.627
Using Learning and Enrichment Centers (Non-Gifted)	377	0	.6764	.05099	.99000	.980
Using Learning and Enrichment Centers (Gifted)	377	0	.6220	.05291	1.02740	1.056
Varying Locations (Non-Gifted)	377	0	2.1176	.04321	.83900	.704
Varying Locations (Gifted)	377	0	2.3537	.04622	.89746	.805

Encouraging the Development of Thinking Skills (Non-Gifted)	377	0	1.7918	.04413	.85681	.734
Encouraging the Development of Thinking Skills (Gifted)	377	0	2.1631	.04922	.95576	.913
Providing Higher-Level Reading Opportunities (Non-Gifted)	377	0	2.2294	.05843	1.13445	1.287
Providing Higher-Level Reading Opportunities (Gifted)	377	0	2.8806	.05556	1.07884	1.164

Appendix Y

ANOVA for Archambault et al.'s (1993) Classroom Practices Teacher Survey New Factor Scale

		Sum of Squares	df	Mean Square	F	Sig.
Assigning Seatwork (Non-Gifted)	Between Groups	1.611	2	.805	.995	.371
	Within Groups	265.605	328	.810		
	Total	267.215	330			
Assigning Seatwork (Gifted)	Between Groups	.392	2	.196	.247	.781
	Within Groups	259.570	328	.791		
	Total	259.962	330			
Encouraging Higher-Level Questions and Discussion (Non-Gifted)	Between Groups	2.185	2	1.093	1.240	.291
	Within Groups	288.968	328	.881		
	Total	291.153	330			
Encouraging Higher-Level Questions and Discussion (Gifted)	Between Groups	2.112	2	1.056	2.031	.133
	Within Groups	170.539	328	.520		
	Total	172.651	330			
Allowing Students to Pursue Individual Interests (Non-Gifted)	Between Groups	1.882	2	.941	1.352	.260
	Within Groups	228.253	328	.696		
	Total	230.135	330			
Allowing Students to Pursue Individual Interests (Gifted)	Between Groups	.372	2	.186	.213	.808
	Within Groups	286.043	328	.872		
	Total	286.415	330			
Assigning Projects and Writing Assignments (Non-Gifted)	Between Groups	.736	2	.368	.803	.449
	Within Groups	150.388	328	.458		
	Total	151.124	330			
Assigning Projects and Writing Assignments (Gifted)	Between Groups	.083	2	.041	.075	.927
	Within Groups	179.329	328	.547		
	Total	179.411	330			
Modifying the Curriculum and Instruction (Non-Gifted)	Between Groups	.560	2	.280	.519	.596
	Within Groups	177.115	328	.540		
	Total	177.675	330			

Modifying the Curriculum and Instruction (Gifted)	Between Groups	.414	2	.207	.292	.747
	Within Groups	232.192	328	.708		
	Total	232.606	330			
Using Learning and Enrichment Centers (Non-Gifted)	Between Groups	1.482	2	.741	.748	.474
	Within Groups	324.705	328	.990		
	Total	326.187	330			
Using Learning and Enrichment Centers (Gifted)	Between Groups	.852	2	.426	.381	.684
	Within Groups	367.216	328	1.120		
	Total	368.068	330			
Varying Locations (Non-Gifted)	Between Groups	4.284	2	2.142	2.725	.067
	Within Groups	257.867	328	.786		
	Total	262.151	330			
Varying Locations (Gifted)	Between Groups	3.848	2	1.924	2.122	.121
	Within Groups	297.351	328	.907		
	Total	301.199	330			
Encouraging the Development of Thinking Skills (Non-Gifted)	Between Groups	.418	2	.209	.264	.768
	Within Groups	259.579	328	.791		
	Total	259.996	330			
Encouraging the Development of Thinking Skills (Gifted)	Between Groups	.058	2	.029	.028	.972
	Within Groups	334.761	328	1.021		
	Total	334.819	330			
Providing Higher-Level Reading Opportunities (Non-Gifted)	Between Groups	1.401	2	.701	.481	.619
	Within Groups	477.771	328	1.457		
	Total	479.172	330			
Providing Higher-Level Reading Opportunities (Gifted)	Between Groups	1.244	2	.622	.472	.624
	Within Groups	432.082	328	1.317		
	Total	433.326	330			

Appendix Z

ANOVA for Factor Mean Differences for Archambault et al.'s (1993) Classroom Practices Teacher Survey

		Sum of Squares	df	Mean Square	F	Sig.
Assigning Seatwork	Between Groups	.725	2	.363	.988	.373
	Within Groups	120.370	328	.367		
	Total	121.096	330			
Encouraging Higher-Level Questions and Discussion	Between Groups	.800	2	.400	1.060	.348
	Within Groups	123.763	328	.377		
	Total	124.563	330			
Allowing Students to Pursue Individual Interests	Between Groups	.712	2	.356	1.313	.270
	Within Groups	88.950	328	.271		
	Total	89.662	330			
Assigning Projects and Writing Assignments	Between Groups	.340	2	.170	.639	.529
	Within Groups	87.171	328	.266		
	Total	87.510	330			
Modifying the Curriculum and Instruction	Between Groups	.578	2	.289	1.607	.202
	Within Groups	58.955	328	.180		
	Total	59.533	330			
Using Learning and Enrichment Centers	Between Groups	.522	2	.261	.696	.499
	Within Groups	122.888	328	.375		
	Total	123.409	330			
Varying Locations	Between Groups	.257	2	.128	.386	.680
	Within Groups	109.088	328	.333		
	Total	109.345	330			

Encouraging the Development of Thinking Skills	Between Groups	.767	2	.384	1.175	.310
	Within Groups	107.116	328	.327		
	Total	107.883	330			
Providing Higher-Level Reading Opportunities	Between Groups	1.139	2	.569	.686	.504
	Within Groups	272.221	328	.830		
	Total	273.360	330			

Appendix AA

CFA Factor Structure and Loadings for Gagné and Nadeau's Attitude Scale

(Gagné, 1991-a)

Social Value (F1)

Item Number	Item	Loading
13	Gifted persons are a valuable resource for our society.	.48
14	The specific educational needs of the gifted are too often ignored in our schools.	.64
15	The gifted need special attention in order to fully develop their talents.	.71
24	In order to progress, a society must develop the talents of gifted individuals to a maximum.	.59
33	The leaders of tomorrow's society will come mostly from the gifted of today.	.47

Elitism (F2)

Item Number	Item	Loading
4*	Special programs for gifted students have the drawback of creating elitism.	.62
5*	Special educational services for the gifted are a mark of privilege.	.54
21*	By separating students into gifted and other groups, we increase the labeling of students as strong–weak, good–less good, etc.	.59
23*	The gifted are already favored in our schools.	.63
28*	Gifted students might become vain or egotistical if they are given special attention.	.57

Equal Opportunities (F3)

Item Number	Item	Loading
12*	We have a greater moral responsibility to give special help to students with difficulties than to gifted students.	.46
16*	Our schools are already adequate in meeting the needs of the gifted.	.41
26*	Tax-payers should not have to pay for special education for the minority of students who are gifted.	.72
27*	Average students are the major resource of society; so, they should be the focus of our attention.	.44

Mixed-Ability Settings (F4)

Item Number	Item	Loading
9	Gifted students are often bored in school.	.60
11	The gifted waste their time in regular classes.	.64
32	The regular school program stifles the intellectual curiosity of gifted students.	.59

School Acceleration (F5)

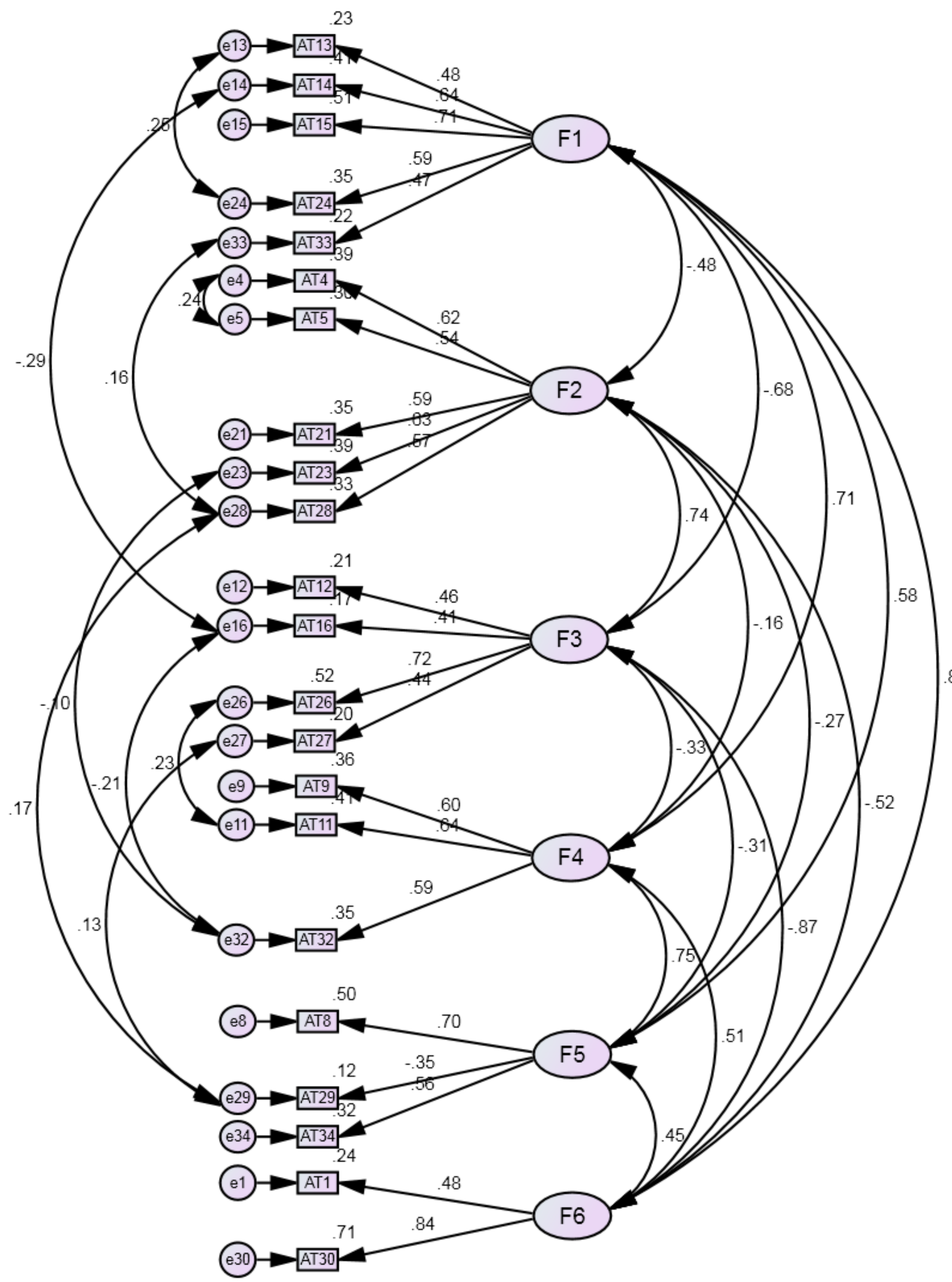
Item Number	Item	Loading
8	It is more damaging for a gifted student to waste time in class than to adapt to skipping a grade.	.70
29*	When skipping a grade, gifted students miss important ideas. (They have "holes" in their knowledge.)	.35
34	A greater number of gifted students should be allowed to skip a grade.	.56

Needs and Support (F6)

Item Number	Item	Loading
1	Our schools should offer special educational services for the gifted.	.48
30	Since we invest supplementary funds for students with difficulties, we should do the same for the gifted.	.84

Appendix BB

Estimated CFA Model for Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)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Appendix CC

ANOVA for Final Factors for Gagné and Nadeau's Attitude Scale (Gagné, 1991-a)

		Sum of Squares	df	Mean Square	F	Sig.
Acceleration	Between Groups	2.248	2	1.124	1.751	.175
	Within Groups	210.519	328	.642		
	Total	212.767	330			
Elitism	Between Groups	.913	2	.457	.597	.551
	Within Groups	251.004	328	.765		
	Total	251.917	330			
Social Value	Between Groups	1.894	2	.947	2.413	.091
	Within Groups	128.718	328	.392		
	Total	130.612	330			
Mixed Ability Settings	Between Groups	3.844	2	1.922	2.491	.084
	Within Groups	253.003	328	.771		
	Total	256.847	330			
Needs and Support	Between Groups	.207	2	.104	.190	.827
	Within Groups	178.563	328	.544		
	Total	178.770	330			
Equal Opportunities	Between Groups	2.760	2	1.380	2.512	.083
	Within Groups	180.216	328	.549		
	Total	182.977	330			

Appendix DD

CFA Factor Structure and Loadings for Archambault et al.'s (1993) Classroom Practices Teacher Survey

Encouraging Higher-Level Questions (F1)

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
32	Provide questions that encourage reasoning and logical thinking	.67	.75
33	Ask open-ended questions	.86	.91
34	Encourage students to ask higher-level questions	.90	.90

Allowing Students to Pursue Individual Interests (F2)

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
10	Make time available for students to pursue self-selected interests	.67	.73
16	Encourage students to move around the classroom to work in various locations	.42	.36
17	Allow students to leave the classroom to work in another location, such as the school library or media center	.56	.49
24	Use contracts of management plans to help students organize their independent study projects	.60	.53
25	Provide time within the school day for students to work on their independent study projects	.60	.58
28	Establish interest groups which enable students to pursue individual or small-group interests	.77	.75
29	Consider students' opinion in allocating time for various subjects within your classroom	.65	.82
30	Provide opportunities for students to use programmed or self-instructional materials at their own pace	.65	.57
36	Use computers	.42	.41

Modifying the Curriculum and Instruction (F3)

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
3	Assign reading of more advanced-level work	.59	.46
12	Eliminate curricular material that students have mastered	.44	.43
13	Repeat instruction on the coverage of more difficult concepts for some students	.44	.26
15	Modify the instructional format for students who learn better using an alternative approach	.53	.40
27	Provide a different curricular experience by using a more advanced curriculum unit on a teacher-selected topic	.65	.54

Using Learning and Enrichment Centers (F4)

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
19	Use learning centers to reinforce basic skills	.81	.69
20	Use enrichment centers	.94	.94

Assigning Projects and Reports (F5)

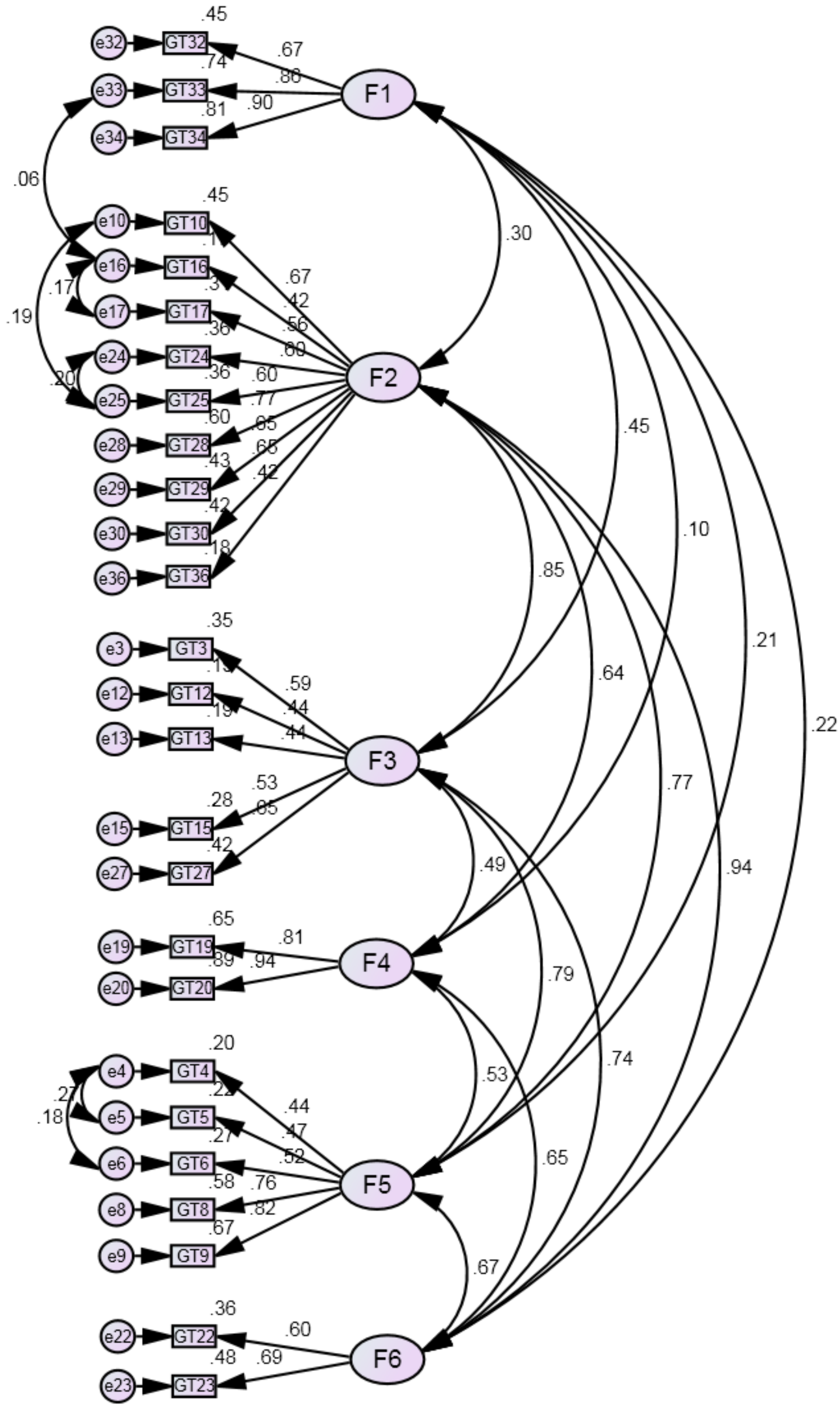
Item Number	Item	Loading for Gifted	Loading for Non-Gifted
4	Assign reports	.44	.56
5	Assign projects or other work requiring extended time for students to complete	.47	.54
6	Assign book reports	.52	.57
8	Give creative or expository writing assignments on topics selected by the teacher	.76	.66
9	Give creative or expository writing assignments on topics selected by the students	.82	.69

Encouraging the Development of Thinking Skills (F6)

Item Number	Item	Loading for Gifted	Loading for Non-Gifted
22	Teach a unit on thinking skills, such as critical thinking or creative problem solving	.60	.59
23	Have students participate in a competitive program focusing on thinking skills/problem solving, such as Future Problem Solving, Odyssey of the Mind, etc.	.69	.70

Appendix EE

Estimated CFA Model for Archambault et al.'s (1993) Classroom Practices Teacher Survey for Gifted Students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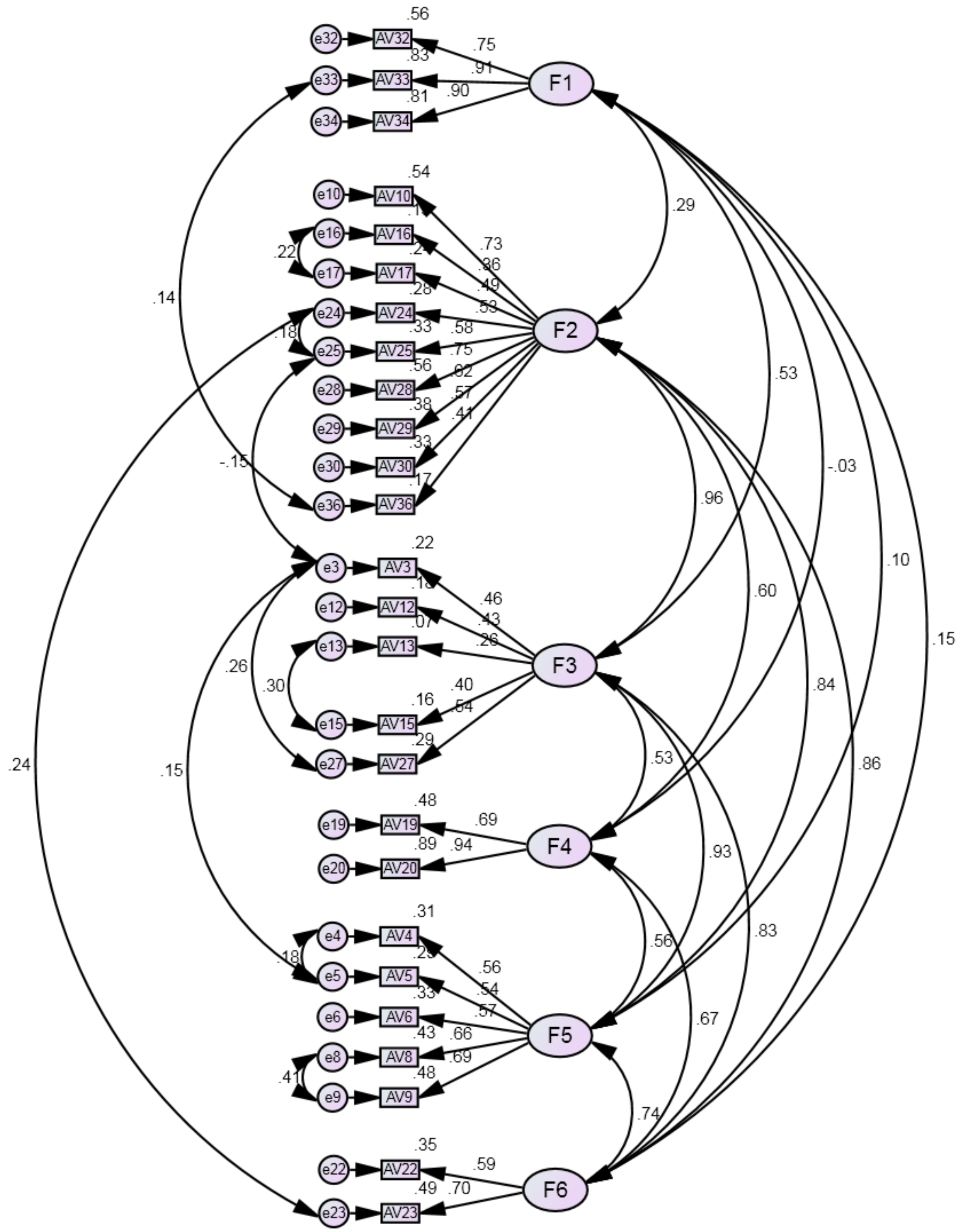
Appendix FF

Estimated CFA Model for Archambault et al.'s (1993) Classroom Practices Teacher Survey for Non-Gifted/Average Students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F6

Appendix GG

ANOVA for Final Factors on Archambault et al.'s (1993) Classroom Practices Teacher Survey

		Sum of Squares	df	Mean Square	F	Sig.
Encouraging Higher-Level Questions (Non-Gifted)	Between Groups	1.920	2	.960	.959	.384
	Within Groups	328.426	328	1.001		
	Total	330.346	330			
Encouraging Higher-Level Questions (Gifted)	Between Groups	1.775	2	.887	1.495	.226
	Within Groups	194.659	328	.593		
	Total	196.434	330			
Allowing Students to Pursue Individual Interests (Non-Gifted)	Between Groups	2.023	2	1.012	1.666	.191
	Within Groups	199.127	328	.607		
	Total	201.150	330			
Allowing Students to Pursue Individual Interests (Gifted)	Between Groups	.929	2	.465	.612	.543
	Within Groups	249.043	328	.759		
	Total	249.972	330			
Modifying the Curriculum and Instruction (Non-Gifted)	Between Groups	.519	2	.260	.447	.640
	Within Groups	190.286	328	.580		
	Total	190.805	330			
Modifying the Curriculum and Instruction (Gifted)	Between Groups	.341	2	.171	.237	.789
	Within Groups	235.936	328	.719		
	Total	236.278	330			
Assigning Projects and Reports (Non-Gifted)	Between Groups	.846	2	.423	1.033	.357
	Within Groups	134.370	328	.410		
	Total	135.217	330			
Assigning Projects and Reports (Gifted)	Between Groups	.033	2	.017	.031	.970
	Within Groups	178.891	328	.545		
	Total	178.924	330			

Appendix HH

ANOVA for Final Factor Mean Differences on Archambault et al.'s (1993)

Classroom Practices Teacher Survey

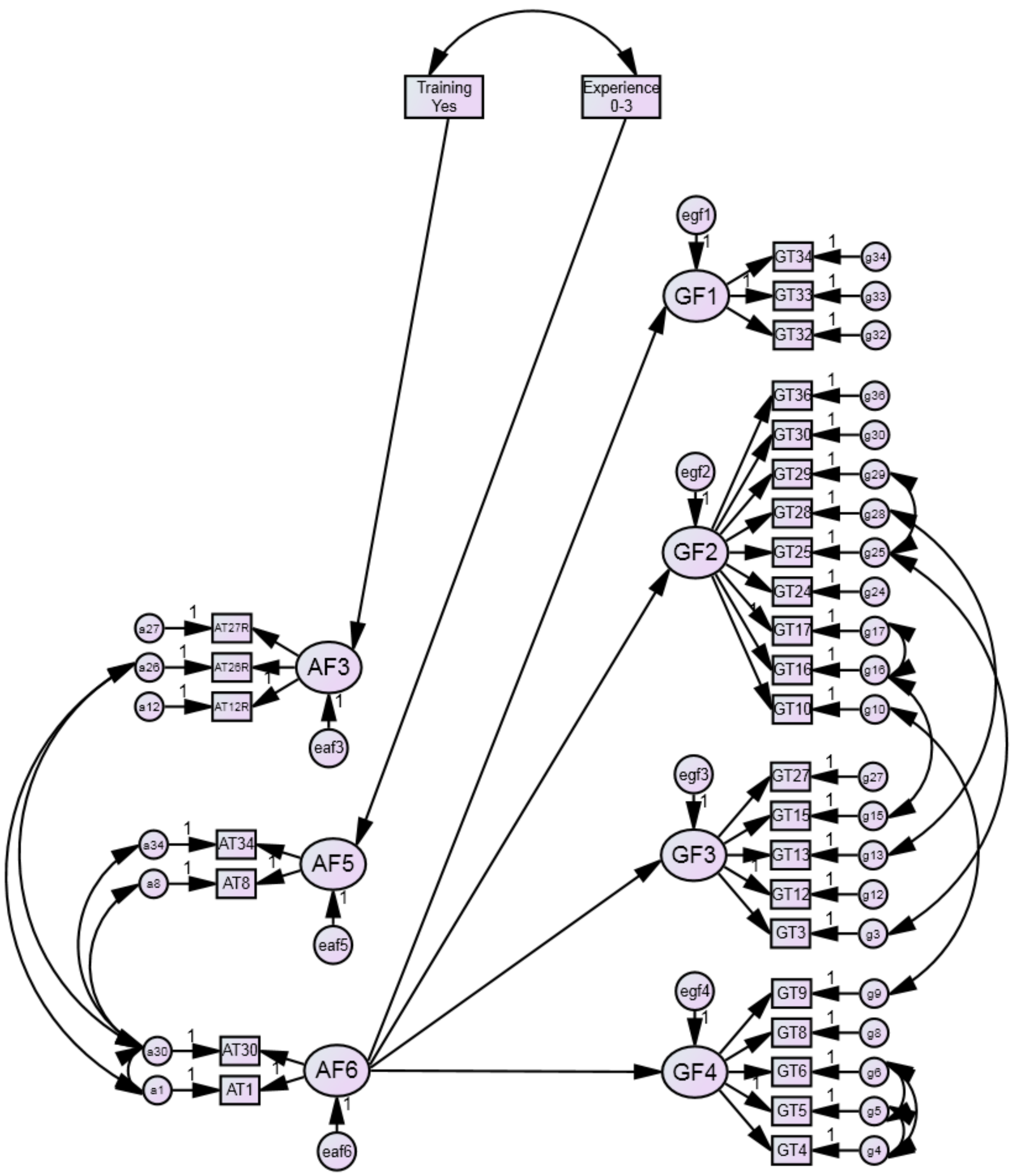
		Sum of Squares	df	Mean Square	F	Sig.
Encouraging Higher-Level Questions	Between Groups	.794	2	.397	.891	.411
	Within Groups	146.083	328	.445		
	Total	146.877	330			
Allowing Students to Pursue Individual Interests	Between Groups	.213	2	.106	.448	.639
	Within Groups	77.897	328	.237		
	Total	78.109	330			
Modifying the Curriculum and Instruction	Between Groups	.130	2	.065	.283	.754
	Within Groups	75.207	328	.229		
	Total	75.337	330			
Assigning Projects and Reports	Between Groups	.544	2	.272	.866	.422
	Within Groups	103.079	328	.314		
	Total	103.623	330			

Appendix II

Structural Equation Model

<u>Structural Equation Model Key</u>

AF3: Equal Opportunities Attitudinal Factor
AF5: School Acceleration Attitudinal Factor
AF6: Needs and Support Attitudinal Factor
GF1: Encouraging Higher-Level Questions Classroom Practices Factor (Gifted)
GF2: Allowing Students to Pursue Individual Interests Classroom Practices Factor (Gifted)
GF3: Modifying the Curriculum and Instruction Classroom Practices Factor (Gifted)
GF4: Assigning Projects and Reports Classroom Practices Factor (Gifted)



Appendix JJ

Comments

Note: Comments are presented in their original forms. No changes to grammar, spelling, punctuation, and/or content have been made.

<u>Category: Beliefs about Gifted Students and Gifted Education</u>

<u>Themes</u>:

- Gifted students do not thrive in regular classes.
- Gifted students need challenge and differentiation.
- We should not label students as gifted and should give all students individualized instruction.

Gifted students do not thrive in regular classes.

You have to allow the gifted to express themselves and be individuals. They not work in a regular class where class displince is a major focus. They think and work different. You have to let them go more.

I teach both Gifted and AP.The Gifted in a regular setting hate to be tutors and used. They are bored and need instruction that encourages them to expand their strengths. However, this should also be happening in a regular class setting as well but many teachers are not sure of what or how to teach this way.

The gifted student should be nurtured to develop their talents and not restricted by so called practices that are mandated for everyone

Gifted students need challenge and differentiation.

All students need to be challenged. They must learn to think, reason, solve and implement. This is especially true of gifted students.

I believe that instruction has to be differentiated for the gifted child, especially if the groups are heterogeneous. I believe that best practices allows for the gifted student to utilize choice as well as interests.

I believe it is important understanding that gifted students are not adults. They are still kids that can make impulsive choices and they have various work ethics just like average students. I believe it is more difficult keeping gifted students motivated to perform at the level they are capable of than regular students.

I view dealing with giftedness as an educational need requiring specialized education. By the purest definition, gifted education IS special education–meeting the needs of students who don't learn ""normally."" As a parent of two young boys identified as gifted, I am against grade skipping due to social/maturity issues. Profoundly gifted students are still ahead when gradeskipped one year, and to gradeskip a child multiple years provides more problems than solutions. Truly gifted children don't get bored–they are creative problem-solvers who find ways to chanel their energy when given the opportunity by their classroom teacher(s).

There are far less truly gifted students in all areas. Some struggle with math for example, but are gifted in art. Gifted is a social term more oftern than not.Truly gifted students will find ways to express their giftedness that do not require a classroom.

We should not label students as gifted and should give all students individualized instruction.

I believe that we are focusing to much on the gifted who are only making up 1% of the school population, yet they receive small classes with 10 students vs. regular education students that average 32 per class. We are complicating education by adding to many programs in schools and expecting the teacher to do more and more which is impossible with all that must be covered. Really what needs to happen is all teachers need to teach and reach all kids it does not matter what level they are at. I believe we have lost the focus of what education is and am focused to much on offering students so much choice that many of them are not receiving a quality education. I have taught at all levels IB AP and regular education and at all levels all students do not have basic skills, they cannot read well or write well. Even IB students had a difficult time with analysis and reading the level texts necessary for that level. It also seems that society is labeling students gifted when if fact they are not. What is the definition of gifted? I mean I have students that are suppose to be gifted but cannot write or understand what they are reading. I just think that we are making education to complicated, we are offering to many programs instead of just focusing on teaching students well. Even when gifted go to college many do not make it. I believe that high school education is focused too much on projects instead of reading, writing, and thinking. The biggest problem I honestly see at all levels that I have taught is students today do not read as well as I did at their level and cannot write. The problem is that students do not do well with reading and writing because they have not been taught well. In schools that are one to one with computers students are distracted by the computer. I do not know what the answer is but as is and doing this for 20 years the system needs to quit separating students and tracking them. Honestly, the education I received and my parents was one that prepared them for the world and allowed them to succeed. They could read well and continue with higher education and be successful. They also even know more than most students who graduate today. With the education I received which was basic but done well, I managed to get a full ride to Arizona State and was successful in receiving a Masters in History. So in my opinion and nothing against gifted education but the reality is it still is not accomplishing educating students well for their future.

I believe all students are individuals with individual needs who need individualized/differentiated instruction. Gifted students as well as regular students and special needs students all require their individual needs and learning styles to be met within the structure of the assignment and classroom. Only differentiating for some students or lumping all students of a certain type (gifted, regular, special needs, etc.) together limits the classroom experience.

Too often kids are labeled GT and not pushed to that level. The label creates a sense of entitlement in those kids. Rigor is the most important thing for gifted kids. Far too many students ""earn"" the gifted label, know it, and feel they don't need to apply themselves.

A challenging program like IB, without labels is far more valuable. It pushes students intellectually without creating in them the sense that they are owned something, or that they don't need to work because they are ""gifted

I consider every student to have a gift of some sort. Those who are academically gifted are supported in all that I do; but I avoid creating situations and/or responses that might allow them to develop an elitist attitude.

<u>Category: Instructional Activities</u>

<u>Themes</u>:

- Specific examples of how teachers differentiate instruction
- How technology supports differentiated instruction
- Lack of resources

Specific Examples of How Teachers Differentiate Instruction

I allow all my student to have access to any enrichment materials.

My school does not identify gifted students. As a teacher of IB Computer Science however, I have students of extremely varying degrees of ability/experience. For the most part, I try to keep the class working together in topic breadth, but vary the differentiation in topic depth.

I didn't see any options for tiered assignments. Most of the work I provide in class has options to allow for student choice in working alone or in a group, selecting the specific subject matter to work with and often selecting the method of sharing the information created. Therefore, I don't ""create a separate assignment"" since every assignment is open to student choice.

I try to create a student centered classroom in which the kids collaborate and strive for mastery.

Encourage them to apply their learning in unexpected ways

Ib and ap students are. In sa E clAss.use ib approach of creative thinking. And 100percent participation

Since I teach AP and IB classes most of the days pass in class room discussion on assigned reading. Tjhis requires student participation and facilitation by me. I am also constrained by a 49 minute class, school activities, syllabus completion requirements. I wish to make student independent learners and push them towards their own thinking on topics discussed in class and asisignments. Projects are created with student involvement but stay close to syllabus requirements.

Our AP classes are open to all students who choose to participate; there is no 'gate-keeping' to keep students of certain ability levels or persuasions out of these higher-level classes. This has been part of our core philosophy since our opening eight years ago. The effects speak for themselves: We have consistently won recognition from CollegeBoard for increasing our scores while simultaneously increasing our participation rates - especially among traditionally under-represented groups. In order to achieve these results, we've found that differentiating at the ASSESSMENT level works best. An example of this practice: When I'm ready to return timed-writes, I will break students into three groups (one focused on developing ideas, one focused on developing evidence, and one focused on refining language and rhetorical effect). I don't label these groups as low, middle, and high, and I tell students that they may end up in any of the groups for any given revision. I then start by working with the 'Evidence' group to get them started, then I spend a few minutes with the 'Language' group to focus their revision, and then I spend a large chunk of time with the 'Ideas' group to help them develop ideas and supporting evidence. My expectation at the end of the class period is that EVERYONE revise (even the very, very occasional students who initially earned a 9 on their timed write). This philosophy is also reflected in our 9th and 10th grade classes, where we grade students on a 4-point rubric (3 = proficient; 4 = exemplary). In order to qualify for honors credit in our heterogeneous classes, a student must demonstrate that their skills are consistently at the exemplary level. In addition to this differentiated rubric, we also often offer two prompts for major assessments. One will measure the target with a grade-level prompt/reading, while the other will measure the same target with a more sophisticated prompt/reading. ALL students receive BOTH prompts and may choose which assessment they wish to complete. –I notice that only a few of your survey's questions touch on this idea of differentiation through assessment, so I would encourage you to look into it further as you do your research.

Hands on instruction in Physics: lots of labs and inquiry based activities.

In an AP Math class, I emphasize that students need to learn collaboratively and in almost every class I structure time for students to read, write, talk, and listen.

I teach science, so I use creative writing as a science fiction scenario based on prior knowledge. We are not allowed to make students go into FPS or Science Olympiad, but most are in one of these types of clubs.

I teach in a private high school where I can design my own curriculum. Your questions seem directed to public and perhaps elementary or middle school– enrichment centers, etc. My class room for AP and IB is an enrichment center, I hope.

Questions presume gifted exists outside govt. program. APIB ethically ought to match survey classes for which colleges give credit. My one research paper (HI) makes a few of these answers misleading. Analytical essays are assigned, not reports. Student curiosity much more valuable than acronym tests.

Though my responses make it seem that I do not differentiate my instruction, I do, usually by having students work independently, and also in how I conduct my discussions.

Anyone can enroll in my AP English class. Every year I have 1 or 2 students whom I consider ""gifted,"" and 1 or 2 students who will struggle, usually due to a low reading rate or poor vocabulary. I try to tier my instruction so that the gifted students have to work hard in order to complete homework, reading, and studying. The average students do not learn as much material as thoroughly as the upper end kids, but they certainly learn more than they would in a ""regular"" English class. Kids who excel get different work as they consistently demonstrate mastery of one concept, and then they are assigned more advanced or different work. The bulk of the class does not get altered work because those students do not consistently demonstrate mastery. The course contains many written assignments, and the feedback I provide varies more than anything else in my room. Gifted kids get much-marked papers filled with commentary on vocabulary nuance and the artistry of writing (and earn high grades), because their organization needs no feedback, and their conventions are flawless, for example. Less skilled students get more basic input on sentence structure, organization, clarity of ideas and things like that.

In teaching music, we are constantly working beyond the establishes curriculum to meet the needs of ALL students. When playing their instruments, students are ability grouped, but all are still challenged.

Because I am only a second year teacher, I am still learning along with my students. For my IB classes, I hold them to a higher standard and expect the same from all students whether they are average achievers or high achievers. Occasionally, However, I will differentiate their readings or assignments according to ability level to see what they can do with their skills.

A properly differentiated class provides opportunities for all levels of students.

I was a college science professor prior to teaching at my IB school. My high school classes operate based on a Socratic model of inquiry that I guide. I rarely give answers to direct student questions, rather through questions back to the student I weave a path for the students to come to understanding on their own.

In general, I give my IB students more freedom in discovering and learning the material. I just feel less pressure than in my Honors HSA Biology prep.

choice and guided selection is common; option to work collaboratively and independently; grading structure to reward improvement and growth in writing/critical reading; community building and frequently discussed value of collaboration/consensus AND divergent thinking.

The bulk of my practice differentiation occurs in assessment (formal and informal, formative and summative), rather than in substitute work, projects, etc. The ability to engage gifted students is directly related to how well we know those students. This can only come from a thorough understanding of what they know, don't know and how they learn. Individual engagement of gifted students in the classroom is of the utmost importance for the teaching of gifted students. Each student brings a different skill set ('gift') to the room which must be addressed on an individual basis. In fact, I would argue that this is the essence of ""gifted"": a particular skill, ability or cognitive bent that allows for more rapid movement through Bloom's taxonomy toward synthesis of ideas.

I teach all AP Calculus right now including Calculus AB, Calculus BC, and Multi-variable calculus. I would say that I challenge all of my students at a very high level every day. The gifted are allowed to extend and pursue knowledge any time they have mastered the days' concepts.

Many times are given more challenging tasks and assignments

These are art classes, the IB students are given time period with basic perimeters, whereas the regular art student are given specific projects with time limits, they must meet structured guidelines, yet they are given freedom with the creative aspect within the guidelines

In my AP and non AP classes, I try to structure consistent projects that allow some degree of student choice, as well as a varying levels of autonomy in research and creation of final products. This allows students who are intellectually curious to pursue their curiosity and have their thinking challenged while also allowing me to support those who need more concrete input on research processes and other relevant skills and content.

If I had a separate gifted class, I would certainly do more with independent projects and interest driven work. Currently I am not the Gifted Teacher at my school, although I have an endorsement and plan to take over the program when she retires. I do as much as I can in my AP class and Academic Decathlon class.

My content is AP Chemistry. Most students have not seen this material prior to this class. I feel these questions would have been better suited to an English teacher and not my content area. I do ask my gifted students to participate in academic contests and we plan all year for those competitions. I do include higher level thinking questions embedded in tests to make the content challenging for the gifted students. They tend to learn the material at a faster rate. They only need to be shown a few examples, whereas the regular students need to be shown numerous examples. I usually do not grade homework even though I assign it. This is partially due to the fact that gifted students do not need the same amount of practice as regular students; however, all students will be required to know the content and will be graded on their knowledge.

As a former college professor, I run my AP class as close to a college class as possible in the high school setting.

I try to push my ""average"" students to do most of the same things as my gifted students. However, with the ""average"" students I use more scaffolding.

Everyone is treated the same unless I can see the need for intervention, up or down, in the curriculum. Usually the kids that need more help seek me out on their own time. We do a lot of inquiry so they have control of the second half of all experiments. They can be as challenging as they want. I can make suggestions for them to choose more difficulty or ask them to stretch themselves but I do not impose that upon them. I also take my kids to hear speakers and other professors at local universities for lab. I teach to the highest level in those situations and support the kids that have trouble. In the classroom we tend to start at the average level and adapt for the kids that need more or less.

I put students in panels. They pick their own groups and plan both in and out of class. They present their own findings in panel discussions, respond to comments from the audience, and field questions that I make based on their completeness of presentations.

IB has the potential to be very challenging. I provide a variety of readings of different levels to my students. They are able to pick topics to research for most units.

How Technology Supports Differentiated Instruction

We are fortunate to have a 1:1 laptop program, so we make use of the resources available on-line to encourage HOTS and inquiry.

All our students have iPads which means that we have a lot of individualized projects & research projects.

I teach at a career tech high school where ipads and Problem Based Learning are a part of the methodology.

Lack of Resources

We don't have student computers in our classrooms.

The use of Learning centers, enrichment centers and higher level texts are not an option for my class, as we have no access to those resources.

Category: Lack of Differentiation

Themes:

- I do not differentiate for all/most of my AP/IB students.
- The course content alone is enough challenge for all students.
- The AP and IB curriculum does not allow for differentiation.
- I don't know who is gifted.
- Most/all students in AP/IB courses are gifted/equally capable.
- I'm confused! Regular/average/non-gifted students are only in the regular classes!
- It's difficult to provide for gifted students with the current trend to enroll students of all abilities
- All students are gifted.

I do not differentiate for all/most of my AP/IB students.

If the classes are mixed, I teach everyone the same way. gifted students generally do better.

As you can tell, despite the fact that both my AP courses (English Lit and English Lang) are open enrollment, I don't really differentiate a great deal within the classroom; however, ours is a very small, rural school which happens to be ranked the #1 traditional public high school in our state) whose size allows me ample time to work independently with individual students outside of the classroom (68% of our students will take at least one AP course, and in most cases it is one of mine).

I have very little difference in my regular and gifted approach

I teach an IB Film HL course. I do not differentiate my curriculum even though some students are not gifted in the class. I am available for help after school most days for those who need extra attention (frequently the gifted who want more info!). Many of the responses are once a month or less frequently because we have about 3 long-term projects a semester. Sometimes they are not using computers at all, but when editing we are using them daily for about 7-9 days straight.

I teach AP BC Calculus and AP Physics. My responses are the same for GT and regular kids, because I treat students the same in these classes - we don't have special project time, etc in these classes. It is problem-solving / critical thinking intensive, rather than creative writing, etc.

Any student who chooses to take one of my advanced classes will have the same assignments and expectations as all students.

As an IB & AP studio art teacher who has mixed classes with advance and beginning students, My instructional practices are the same with all. I just expect the more advance students to challenge themselves more.

The vast majority of my students are either labeled as gifted or might have been if their parents had chosen to have them tested. I treat them all the same. I teach math, so book reports and the like are irrelevant.

In my AP class, I don't alter my assignments for the average/non-gifted student.

I hold all students to a very high level in AP classes whether they are labeled gifted or not

Within our IB program, gifted students and non gifted students are provided the same opportunity. However, regular classes do not provide much opportunity for growth or independent learning.

While not designated gifted, I started school at 5 & then skipped 4th grade, so I know personally that students can and do benefit from being allowed to learn where when they are able. Jumping ahead at the early ages prevented me from having holes in the more advanced materials and skills, while also learning to adapt social before it became an issue. I do see social and skills problems with students who don't do the jump ahead until 8th or 9th grade level. My 2 AP courses are open door policy so I treat & teach everyone the same. My biggest problems are with students who may be designated gifted, but who are lacking in basic skills. They may think outside the box, but may not know what the box is.

At the high school level, for which I have taught AP and now teach IB, there are no specifically gifted classrooms, so I give my gifted children the same assignments as my non-gifted IB students. Therefore, I answered the first column from my previous experience teaching regular English.

I am a math teacher so many of the report/open ended questions dont usually apply. I also have gifted students that use the gifted label to be lazy and claim boredom. I treat all of my students the same in a group setting, but when I work with them indivually, I cater to their indivual needs. Here in Florida (at least Brevard County) our gvt/school board are killing us, squeezing every second of our time for things that have very little to do with student achievement. We are treated as political pawns which takes a lot of time away from things like one on one time with students.

The Course Content Alone is Enough Challenge for All Students

The AP curriculum should already be at a college level or a rather rigorous level. It involves higher level thinking by necessity. Much of the same things therefore apply for both the average students and the gifted students.

Due to the challenging topics in IB HL Physics, I do not differentiate my instruction for ""average"" and gifted students.

In my IB classes, I teach all the students the same material, whether they are gifted or not. The material is a stretch for all students, but not as much of a stretch for gifted students.

I left some questions blank because they were not relevant to my particular course, but I can see their relevance to other courses. My goal is to provide challenges for my students to foster their growth, whether the students are gifted or not. I have both average and highly gifted students in my AP English Literature course; in twenty-three years I have never had any student state that the course was NOT challenging.

I teach IB Chemistry, by nature it is a higher level course.

I do not treat them differently, I incorporate advanced topics in the classroom designed to foster growth at all levels of students

The curriculum in AP is challenging and most of my students haven't been exposed to this level of material previously. Consequently, they are regularly challenged and stretched.

My class is fast-paced and demanding. The main differentiation happens with extra school help for the students who struggle to keep up with that pace.

In IB and AP classes students should be working at a college level. Therefore I teach the material using college level materials. Common Core requires students to be reading materials at a much higher level than before, so gifted and ""average"" alike are being challenged.

Since AP Lang is all about developing close-reading, analysis, and persuasive skills at a college level, performance is a matter of degree, and I always give feedback based on where students are, thus even the gifted have significant opportunities for improvement.

First of all, my school has one computer lab currently in operation, so nobody can go in there more than a few times each month. I teach Theory of Knowledge IB, so my answers reflect that I teach highly conceptual, abstract subject matter on a daily basis. What we do on a daily basis is something that students without a penchant for abstract thought would find intolerable and unsuitable, in my experience.

I teach AP ARt History and all students no matter their level, I feel are on an even playing field. This subject is alien to most students.

Most students have never had exposure to the topics I teach; therefore, some of the items in the survey were not relevant and that is why I checked never.

I feel that a lot of these questions are moot for teachers of a foreign language classroom. Foreign language learning, in my opinion, often levels the playing field. I have seen so-called average students surpass gifted students in their abilities in a foreign language, because they are more motivated. Here lies the key to teaching: student motivation. I also feel that many of the above questions are geared to schools with a lot of resources.

The AP and IB Curriculum Does Not Allow for Differentiation.

In both cases (Regular and Gifted - IB) the curriculum is well established and demands a fast pace. Because of that, there is little time for independent exploration of topics outside curriculum requirements. Even with the individual laboratory designs of Biology in IB, there are still limits to content focus.

All of my students are in AP classes, whether or not they are considered gifted, and I have to use the curriculum set by the college board. There is no time or incentive for long term projects.

I enjoyed this survey. The truth is I feel that teaching I.B. courses truly narrows the amount of ""thinking skills"" such as problem-solving, that one can do in a classroom due to the prescribed nature of the program. The reality is that I have more room and opportunity to teach, what I feel, is most important in today's 21st century. My ""general"" classes do an abundance of problem-solving, reasoning and applications to today's top issues-both good and bad. My I.B. students are forced to learn prescribed material that is ultimately attached to a high-stakes exam after the end of two years. So, my gifted students are being held back by this ""special"" program (I.B.) meanwhile my ""general"" classes are thriving with thinking skills that truly engaged their minds and stimulate their enthusiasm/attitude towards school.

I only differentiate my instruction between AP and IB in the same classroom sections. The basic content is the same, but the assignments are tailored to meet the demands of the AP or the IB exam, accordingly.

In my AP class - following College Board's Equity and Access policy - all students are treated the same and equally. We all work toward the AP Exam goal of a ""3"" or higher.

Our curriculum is very specific- we can't leave out or add in anything.

My gifted students are mixed with regular students in my IBO courses. All of my students are required to complete the rigorous IBO curriculum whether they are gifted or regular. IBO does not differentiate between the two labels.

I was in the gifted program in high school (1970s) and my own experiences shaped my opinions about this. My AP program is aimed at test performance, so gifted and regular kids are treated the same. I will say the course has become less and less aimed at the gifted, based on need (revealed by AP Test scores).

Regular and gifted students must hit the same standards and the exit summative assessment is exactly the same (i.e. the IB exams in May). Therefore little differentiation takes place among the different ability groups aside from extra (out-of-class) help for lower ability students

I teach AP Chemistry. There is not much flexibility in the curriculum for student choice. My students enter my class poorly prepared by their previous coursework and I do not see much difference in those students who are classified as GT and those who are not.

We do not treat our regular students differently from the gifted students; all students are taught material for the gifted. All of our students prepare for and take AP and IB tests

I Don't Know Who is Gifted.

I don't identify gifted students in my class, since my district doesn't, so everyone automatically has the same opportunities.

I usually don't know which of my students are identified as gifted and which ones aren't. In an AP course, I feel it's important for them all to do the same work and all to be considered capable of doing the same work.

In my classroom, I do not know which students have received gifted education. Students opt into the class as they desire. I offer out of class support to students who are struggling. The pace and the curriculum are more geared to motivated students–those students are not necessarily designated gifted.

I don't distinguish between gifted and non-gifted students in my IB course. In fact, I don't have that kind of data about my students. I do differentiate at times, but it is not based on ""gifted status;"" it is based on achievement within my class.

We often do not know who is categorized as gifted. I just differentiate for AP versus regular English

Most/All Students in AP/IB Courses Are Gifted/Equally Capable.

I really don't treat my regular ed students any different from my gifted students in my AP class. I treat them all like gifted kids because they are all in an advanced class.

I have found that in the AP/IB classroom, there really is no difference between the Gifted and the Non-Gifted student. Therefore, students usually have choices as to projects and assignments based on preference, not label.

As you consider the results of my answers, please be aware that as a doctoral candidate myself (in curriculum) I try to teach all my students as if they were gifted or accelerated. I push them as far as I can without causing frustration and failure. In Indiana we encourage students not labeled gifted to enroll in AP/IB courses to stretch their minds and knowledge. For that reason many of my answers will be the same for both types of students.

I believe that the average student in my advanced classes can rise to the level of the gifted student. Teaching gifted students also requires one to be flexible and tolerant of certain ""oddities"" in learning, behavior, and social skills.

I teach 4 classes: Biology IIAP, Biology IB/SL, Biology IB/HL and Honors Anatomy & Physiology. I have only one or two ""average students

I believe that ""smart is as smart does""; emphasis on IQ often encourages smugness and laziness, but emphasis on a strong work ethic encourages critical thinking and provides a natural form of differentiated learning. I'm a big fan of Carol Dweck's work, because it validates my own experiences as a learner and my inclinations as a teacher. Instead of focusing resources on special populations, we should be focusing resources on ALL students.

What is good for gifted is often good for average, however, the average often need much more repitition.

Whether identified or not, all students have the opportunity for enrichment activities, critical thinking and problem-solving activities and project-based learning during which the students can take an idea and run with it!

I teach AP Physics to mixed classes of identified GT and other students. Students who take these classes are academically capable students regardless of whether they are gifted as defined by the district.

I'm Confused! Regular/Average/Non-Gifted Students are Only in the Regular Classes!

I teach both AP and regular classes. In the regular classes students drag through the prescribed curriculum. They rarely study. In AP the students go above and beyond. My expectations are not any different....the students are different. As an advanced student, I would HATE being in the regular course.

I don't teach any general ed classes anymore, so I did not fill out the average student side. I teach AP Literature, IB TOK, and Honors 11 English.

I try not to vary my teaching style too much for the different levels. The main difference is the IB students follow directions, and carry out their work, in a much more timely and serious manner.

I have more freedom to do activities I design myself with my gifted students, whereas in my regular classroom I am restricted to following a rather restrictive curriculum map provided by the county focused exclusively on passage of the FCAT state exam.

It's Difficult to Provide for Gifted Students with the Current Trend to Enroll Students of All Abilities

The current trend to automatically sign up students for AP, along with teachers' concientious attempt to teach all students in the room, has not allowed us to meet the needs of the gifted. Whereas in the past I have had students who said they had not been intellectually challenged in school until my class, I now have a difficult time doing that with the varied needs in the room.

One difficulty is that in my AP program there are a variety of ability levels and experience. It can be hard to meet the needs of those who need more time versus those who are ready to move on.

As a country, we are being told to teach to the standards and we are held accountable to the mastery of the standards by all students. As a result it is important to make sure that the less gifted meet the standard. We are not evaluated on whether the gifted or academically talented students' potential is developed. Since standards based tests have been around (the last 7 years in my state), I have seen students coming to me with less knowledge and fewer skills than they used to have. This focus on minimum requirements for all and heterogeneous grouping for all is a disaster in my opinion. I think that we will discover this at some point and the pendulum will swing back as colleges find that students are not ""college ready"". In fact, I think they are already seeing this. The standards have ""dumbed down"" our curriculum. When you are being evaluated only for how well students do on a standardized test, what incentive is there to provide more material and make sure that students are challenged to the best of their ability? I am glad I am close to retirement age, but I feel bad for the students coming through the school systems today.

When average students are placed with truly gifted learners, they are sometimes like prey in a shark tank. They are more likely to cheat to keep up. They tend to circle up like a herd, for protection. They sense they are at a disadvantage and aren't sure how to increase their position in the social hierarchy. The teacher usually has to pick a particular middle of the class target and plow ahead. The truly gifted tend to create their own challenges; for example, writing their extended essay in a foreign language for IB program. As a teacher, I try to determine the middle of the class and target to them, since we have too many students to do much individualized instruction.

All Students are Gifted

I do not separate kids in my classes into groups, all kids have the propensity to be gifted in their own way.

Category: Comments Regarding Survey Items

Themes:

- The items do not apply well to specific content areas.
- The items apply better to younger grades.
- The items are too broadly stated.

The items do not apply well to specific content areas.

I am an art teacher who teaches IB art classes on a variety of levels. some of these questions are hard to apply to what I do

These questions appear not to consider there are different instructional practices for different subjects. I teach chemistry AP and college prep and I also teach environmental science AP and college prep. I use different practices in chem from env. science. Also some of your questions seemed geared to a elementary classroom not high school where students day are already differentrated. example student in the same grade level may be taking alg I, geo. or alg II. so there is not the same need to let student work at a higher level then in an elementary classroom. Also I look at my class and change the pace based on each class. Some classes will do an extra lab if they understand the basic lab more quickly then another period. (Note from researcher: This comment also applies to the subsequent theme about better application to younger grades.)

The items apply better to younger grades.

The questions seem designed for younger students. I teach all seniors in AP or IB.

These questions seemed to be written for elementary or middle school classes, not AP classes

As a math instructor, I feel many of these questions did not represent an atmosphere found in my field. Thus there are several ""Never"" answers.

The items are too broadly stated.

I read the question as regular students in ap versus regular students in regular classes.

These questions are non-specific. I answered as best I could but the nuances are important and I feel they may not be reflected when interpreting resonses. Good luck in generating an important national conversation!!

I don't believe that my non-gifted IB students should be labeled ""average."" In fact, the majority of them are quite above average.

I teach only IB - and have for 31 years. It is difficult to state whether some things in the classroom are done ""once a month"" or ""a few times a month"" since much of what we do overlaps. Some weeks I will do none of those items, while at other times nearly all of the items are conducted. The attitudes, too, are difficult to reduce to a check list. For example, questions on elitist feelings - this depends completely on the environment and how a particular program is presented to the public. I, for one, absolutely believe that this group of students cannot be ignored- they will be our doctors, lawyers and politicians of the future. This is not to say that traditional program students will not be any of these things - but there is a much higher percentage coming from IB programs than any other.

I could have been even more accurate in my responses if the option of ""As Needed"" had been available.

You should have defined what you mean by 'special education' as it appears you mean non-classroom additional consideration as opposed to the conventional understanding of the state/federally mandated provision for 'assisting' the 'learning disabled'. I am unsure if you mean those who are diagnosed as needing 'special ed.' who are also gifted is in the conventional definition or something else.

Category: Miscellaneous Comments

Themes:

- Courses taught
- Descriptions of student ability levels
- Identification/testing
- Other comments

Courses Taught

I teach IB Theory of Knowledge

I am an AP Math teacher

I teach studio art, so my answers may reflect the subject area.

I currently only teach IB 11th and 12th graders, but also must meet state and AP curriculum requirements.

I teach AP Computer Science with a mix of all kinds of students. (Note from researcher: This comment also applies to the subsequent theme of student ability levels.)

Descriptions of Students

We are an ""IB for all"" I.B. school so I have special needs students mixed along with my most gifted students in the same classes.

Each student is different ad their commitment to the class is different and varies as they jockey their time between their other classes.

Identification/Testing

I am certified in Gifted Education as well as math education and the world is run by talented students who have good organizational skills. Gifted students can be strong or weak, and a great problem of gifted education is that students are tested very young when reading is not a part of the student's world. Students labeled previously as gifted should be retested in middle school. We would find that with the inclusion of reading that many ""gifted"" students were simply students of promise who may or may not develop their potential.

my school uses placement test for freshman to placed them in regular or advance, honor, AP classes

Other Comments

I have been teaching for 20 years. During my first parent teacher conference, a mother commended me for addressing the lack of services for gifted students. Her son, who later graduated from Harvard, was clearly figured. Best of luck with your research.

Thanks! I need to think more about my gifted students. I don't feel that I have been thinking about them as much as I should.

I need a good working definition, not just parents that think their child is gifted

none that I can think of at the moment

None.

I teach gifted kids–and my own child, boy age 7, has been identified as highly gifted and has skipped a grade.

We use calculators

I think inclusion and specialized opportunities have equal value. I think the average kids get lost in the shuffle. If we treated our average kids with the same expectation and value in which we treat our AP kids they would probably surprise us all over the country.

Appendix JJ

Original Factor Mean Scores and Differences for Archambault et al.'s (1993) Classroom Practices Teacher Survey

Means and Standard Deviations of Factor Scores for Gifted and Average Students: Public School Sample

Factor	Mean (Gifted)	Mean (Average)	Mean Difference
Questioning and Thinking	4.08	4.03	.05
Providing Challenges and Choices	1.74	1.54	.20
Reading and Writing Assignments	2.10	1.79	.31
Curriculum Modification	2.37	2.17	.20
Enrichment Centers	2.64	2.51	.13
Seatwork	2.38	2.24	.14

Means and Standard Deviation of Classroom Practices Factor Scores for Gifted and Average Students: Private School with Programs for the Gifted Sample

Factor	Mean (Gifted)	Mean (Average)	Mean Difference
Questioning and Thinking	3.95	3.83	.12
Providing Challenges and Choices	1.82	1.52	.30
Reading and Writing Assignments	2.16	1.72	.44
Curriculum Modification	2.40	2.09	.31
Enrichment Centers	2.90	2.72	.18
Seatwork	2.56	2.36	.20