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The Connection between Learning and Achievement of Gifted and Talented (GATE) High School Students Using a Personalized Learning Framework from the Perspective of High School Teachers

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The Connection between Learning and Achievement of Gifted and Talented (GATE)

High School Students Using a Personalized Learning Framework from the Perspective of

High School Teachers

A Dissertation by

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ABSTRACT

The Connection between Learning and Achievement of Gifted and Talented (GATE) High School Students Using a Personalized Learning Framework from the Perspective of High School Teachers

by RoseEllen Shea

Purpose. The purpose of this phenomenological qualitative study was to describe how expert teachers at the high school level perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of gifted and talented (GATE) students.

Methodology. Data collected for this study included classroom observations, interviews, and document review. The target population consisted of public high school teachers of gifted learners in grades 9-12. Moreover, teacher participants were chosen using both purposeful and emergent sampling procedures.

Findings. Public high school teachers employ various strategies to implement rigor, relevance, and personalized learning into instruction. These include connecting instruction to real-world situations, engaging students in hands-on learning activities, granting students a choice in their learning, and making learning relevant by incorporating their personal interests.

Conclusions. Experts in education indicated personalized learning and the rigor and relevance framework were effective methods for learners and specifically gifted learners. Although teachers spoke in detail about integrating rigor, relevance, and personalized learning into instruction, observations of instruction indicated lower levels of rigor, relevance, and personalized learning in the classroom.

Recommendations. The research did not produce a unified methodology incorporating

differentiation, personalized learning, rigor, and relevance in a single framework.

Implications suggested a need to develop a concise framework incorporating these

theories to implement student-centered curricula, effective in-class strategies, and a

defined approach for students becoming active participants in their own learning.

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CHAPTER I: INTRODUCTION

Education for gifted learners changed since its origin in the early 1930s to the present (Coleman & Gallagher, 1995; Gagné, 1999). Gifted education experts Kaplan (2009) and Kanevsky (2011) touted the belief learning and achievement for gifted learners depends on a curriculum that includes relevant content and challenging activities. Further, Tomlinson (1996) asserted instructional practices purposefully employed to encourage gifted learners to process and solve dynamic problems are critical for their distinctive academic capabilities. Moreover, these experts supported both long-standing approaches such as differentiation and contemporary paradigms including personalized learning and instructional rigor (Bray & McCluskey, 2015; Daggett, 2008).

Modern day research showed affirmation among experts that advanced curricula and challenging instructional practices are essential for teaching gifted learners (Gagné, Neveu, Simara, & St. Pere, 1996; Ritchotte, Matthews, & Flowers, 2014; Stephens, 2011). Although seminal research conducted by Brown and Garland (2015) and Gallagher (1994) indicated a gifted policy may serve to avoid neglecting the needs of gifted learners in the United States, a nationwide gifted educational framework was missing from the literature. Given this consideration, one succinct approach, personalized learning, encapsulated the four recognized pedagogies for gifted learners: collaboration, differentiation, rigor, and personalization (Daggett, 2008; Hertberg-Davis, 2009; Kaplan, 2016).

Bray and McClaskey (2015) grounded the foundation of a personalized learning framework in three phases: (1) teacher-centered instruction; (2) learner-centered instruction; and (3) learner-driven. These were structured to move from a teacher-

initiated education to a student-driven learning model (Bray & McClaskey, 2015). The personalized learning framework incorporates the key components vital for 21st century learning capabilities, including collaboration, differentiation, rigor, relevance, and personalization within the curriculum (Daggett, 2008; Hertberg-Davis, 2009; Kaplan, 2016). Respectively, experts support these learning modalities as essential for gifted learners for student engagement and achievement, and for taking an active role in their own educational experience (Gallagher, 1997; Kanevsky, 2011, Tomlinson, 1996).

Current trends in gifted education recognize the need for a personalized approach giving learners more choice and control over their own learning (Bray & McClaskey, 2015; Clark, 2013; Netcoh 2017). Additionally, Walkington and Bernacki (2004) contended affording students appropriate levels of academic rigor is indispensable for gifted learners. Furthermore, the incorporation of a personalized learning model offers gifted learners more control regarding what they learn, how they demonstrate knowledge, and how their personal interests get included within instruction (Netcoh, 2017; Waldeck, 2007). This personalized learning method outlines three stages of classroom implementation that helps teachers move from a teacher-centered model to a learner-centered model (Treffinger, n.d.; Waldrip, Yu, & Prain, 2016; Willoughby, 2013). Although research pertaining to gifted education indicates the need for pedagogies such as differentiation, collaboration, personalization, and rigor, there remains insufficient research that includes all these elements in one cohesive framework (Buchanan & Woerner, 2000; Gallagher, 1997; Kanevsky, 2011).

<center>**Background**</center>

This section covers 11 components: brief history of gifted education; definition of giftedness; educational philosophical issues; gifted education today; personalized learning; rigor and relevance; personalized learning frameworks; connections between gifted education, personalized education, and rigor and relevance; key findings; strengths and weaknesses; and gaps in research.

A Brief History of Gifted Education

The birth of research in connection with gifted learners, and subsequently gifted education, began in earnest in the early 20th century. Initial studies conducted by Hollingsworth (1942) and Terman (1925) supported the belief a structured school system could not effectively meet the needs of all learners, and they instead focused on the educational differences between students with high and low intellect. Gifted education became a focal point during the Space Race of the 1950s, which culminated in the Soviet Union's launch of the inaugural satellite, Sputnik, and the call for the nation to invest in the country's intellectual resources, its gifted learners (National Association for Gifted Children [NAGC], 2017). To better comprehend gifted learners and their intellectual and programmatic needs, the Jacob Javits Gifted and Talented Students Education Act of 1988 was passed for conducting research related to gifted learners on a national scale (Brown & Garland, 2015; Renzulli, Callahan, & Gubbins, 2014). A decade later, the federal government's reports concerning gifted education brought to light the paucity of educational research; assessments for identifying the gifted; and programs, standards, and curriculum specific to gifted and talented learners. Currently, contemporary research addressing gifted education continues to reaffirm the need for accelerated methods and

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instructional strategies that provide appropriately challenging, meaningful, and relevant learning experiences for gifted learners (Ritochotte et al., 2014; Stephens, 2011; Tomlinson, 1996).

Educational programs for gifted students remain without a consistent and dedicated national framework to address the unique needs of gifted learners. According to NAGC (2017), gifted learners comprise 6-10% of all students world-wide, which equates to approximately three to five million students in the United States. Researchers long expounded the view that education for gifted students should emulate the Individuals with Disabilities Act (IDEA) in its structure and policy to avoid neglecting the needs of intellectually gifted students (Brown & Garland, 2015; Gallagher, 1994). Although to date there is no recognized, nationwide gifted educational construct, gifted experts such as Dai and Chen (2014) produced gifted frameworks associated with curriculum and programmatic models pertaining to student learning and achievement, coherent pedagogy, and methodologies regarding the gifted.

Defining giftedness. Since the genesis of gifted education, the definition of giftedness underwent many iterations. For instance, Hollingsworth (1942) and Terman (1925) based their gifted definition on intellectual ability and intellectual quotient (IQ) results of 180 and higher (NAGC, 2017). Later, gifted education expert Francois Gagné (1999) produced descriptions of giftedness that separated the designations of gifted and talented. Currently, the federal government recognizes the definition in the *Marland Report to Congress of 1972*, which characterized giftedness as high achievement capability in areas such as intellectual, creative, artistic, and leadership capacity, or in specific academic fields (NAGC, 2017).

Educational philosophical issues. Gifted education expert Gallagher (1994)

long appealed for a gifted framework to be established in the United States. Determining

an approach to serve gifted learners remains an enduring philosophical issue in today's

education. Regarding assessment tools used for determining gifted designation, there is

growing insistence among experts and educators for evaluative instruments to include all

gifted characteristics and ensure equality in the selection of under-represented gifted

populations (Kitano, 1991). Although current assessments are accepted for establishing

student giftedness, a need to establish an equitable, uniform designation tool remains

(Coleman & Gallagher, 1995).

Gifted experts supported the consistent utilization of pedagogical practices,

including differentiation, individualization, and personalization as curricular structures

for gifted learning. However, experts disagree on a specific or mixed-method educational

approach (Bray & McClaskey, 2015; Kaplan, 2009; Tomlinson et al., 2003). Although

recent research substantiates the assertion gifted learners are unique in their academic

abilities (Gubbins & Callahan, 2014), there was no course of action sanctioned to govern

gifted education in the United States.

Gifted Learners and Gifted and Talented Education Today

Dai and Chen (2014), Gagné (1997), and Gallagher (1997) asserted the absence of

a standard educational model for gifted and talented students is insufficient for meeting

the needs of today's advanced learners. Coleman and Gallagher (1995) cited the

complexity of meeting the diverse learning needs of gifted students, including those of

under-represented cultural backgrounds, low-socio-economic means, and learners with

disabilities. Although countries such as Finland have highly developed gifted programs

(Tirri & Kuusisto, 2013), the United Stated remains in need of a gifted education reformation.

Tomlinson (1996) and Winner (1997) believed learning and achievement for gifted students requires relevant content and activities allowing them to process and solve meaningful problems at high levels. Theorists adopted this depiction and designed frameworks to promote the progression of learning for the gifted such as Gagné's (2000) Differentiated Model of Giftedness, Renzulli's (1977) Enrichment Triad Model, and Dai and Chen's (2014) Paradigms of Gifted Education. Correspondingly, each theoretical approach depends upon the use of four fundamental instructional pedagogies essential to the learning and achievement of gifted learners: collaboration, differentiation, rigor, and personalization.

Gifted Learners and Personalized Learning

Bray and McClaskey (2015), Clark (2013), and Belkhouche and Ismail (2016) recognized the importance of combining four vital instructional practices of learning (differentiation, collaboration, rigor, and personalization) to meet the growing needs of 21st century students. Bray and McClaskey (2015) developed a personalized learning framework focusing on the gradual release from teacher-centered classroom practices to student-centered approaches incorporating the needs of each individual student (Waldrip et al., 2016). For gifted learners, the advantages of embedding personalized learning into curriculum are the level of control students have regarding what they learn, how they demonstrate knowledge, and how their personal interests are embedded into the curriculum (Netcoh, 2017; Waldeck, 2007).

Gifted Learners and Rigor and Relevance

According to Kaplan (2016) and Daggett (2008), incorporation of challenge and relevance into curriculum for gifted learners continue to be prominent educational necessities for highly intelligent students. For example, Diezmann and Watters (2006) concluded lack of appropriate levels of individualized curricular rigor and personal relevance in gifted classes left students unmotivated, disengaged, and academically underperforming. Educational models emphasize a structured approach to engaging students in the highest levels of learning from the acquisition of knowledge to the innovative stages of intellectual application. This method is in accordance to each individual's capabilities while simultaneously propelling students to advance beyond generalized, educational standards, which is also the central focus of gifted education (Kaplan, 2016).

Framework

The purpose of compulsory education is to develop learners as intellectual resources amenable to change, effective collaborators, innovative critical thinkers and problem solvers, and successful global citizens (Waldrip et al., 2016). Current standardized learning targets support the foundational aspirations of these general education goals by narrowing the curriculum (Netcoh, 2017). Although no mandated instructional strategies reinforce desired instructional outcomes, Bray and McClaskey (2015), Clark (2013), and Netcoh (2017) acknowledged the current trend in education to recognize learners' unique needs, interests, and abilities and provide them with more choice and control over their own learning, while also providing appropriate levels of

grade specific rigor. Bray and McClaskey's (2015) personalized learning framework encapsulates the emerging 21st century learning requisites for today's learners.

Personalized learning framework. Bray and McClaskey's (2015) personalized learning framework is predicated on three stages of instituting an effective personalized education environment (PLE): (1) teacher-centered, (2) learner-centered, and (3) learner-driven. Teacher-centered concentrates on the teacher garnering an understanding of how each learner learns, designing lessons and assessments, and purposefully encouraging learners' voice and choice by helping them to develop their own learning goals. Learner-centered focuses on a more collaborative approach with students and teachers working together to co-design lessons, assessments, and the learning environment. The third and final stage, learner-driven, endeavors to have learners self-direct and engage in learner-identified, edifying challenges to develop deeper-level learning opportunities (Bray & McClaskey, 2015).

Connection Between Giftedness, Personalization, and Appropriate Levels of Rigor

Gifted learners and intrinsic motivation. Gifted learners have unique educational needs that require support for their rapid attainment of knowledge at deep levels while also ensuring appropriate rigor in accordance to each learners' potential (Gallagher, 1997; Hertzberg-David, 2009; Kaplan, 2009). Recent research accentuated collaboration, differentiation, rigor, and PLEs as provisions essential for gifted students to maintain motivation and full engagement in the learning process (Bray & McClaskey 2015; Prior, 2011; Walkington & Bernacki, 2004). Page (2010) stated if gifted learners educational needs were met not met. they became unmotivated and "it can lead to frustration, a loss of self-esteem, boredom, laziness, and underachievement" (p. 1).

Under a similar premise Gallagher (1997) often identified the neglect of gifted education as a detriment to society.

Personalized learning, rigor, and the gifted learner. Prominent aspects of effectively teaching 21st century gifted learners include providing learners a voice and choice in their own education and ensuring appropriate levels of academic rigor (Kaplan, 2016; Stott & Hobden, 2016; Tomlinson et al., 2003). However, there remains little research on the amalgamation of both educational concepts. Bray and McClaskey's (2015) personalized framework with three stages from teacher-centered to learner-centered and Dagget's (2008) Four Quadrants of Knowledge and Application provide educational models for learning, there remains no clear educational framework exclusive to the instruction of gifted learners.

Strengths and weaknesses. Strengths and weaknesses lie in the research from gifted and talented education (GATE) proponents including Gallagher (1994), Kaplan (2016), Renzulli et al. (1996), and Tomlinson (1996) who created dedicated, effective gifted education frameworks, methods, and paradigms in support of gifted learners' exceptional needs. Moreover, current educational movements that incorporate personalized learning methodologies and the concepts of rigor and relevance in curricula may correspond with the education theories for gifted learners (Treffinger, n.d.; Waldrip et al., 2016; Willoughby, 2013).

Key findings. Empirical research pertaining to the subject of gifted learners strongly advocates for a unique framework including aspects of personalized learning, as well as curriculum with significant rigor and relevance to appropriately challenge students with academic abilities beyond standard grade level expectations (Clark, 2013;

Dagget, 2008; Dai & Chen, 2014). Gifted education experts agreed on several aspects regarding the needs of gifted learners; these fundamental elements include the requirement for curriculum and instruction to be flexible according to each student's need, inclusive of student personal interests, and scaffolded to engage students with high levels of intellectual ability (Bray & McClaskey, 2015; Dagget, 2008; Dai & Chen, 2014). Although no current framework for gifted education exists nationwide, research showed several features within multiple frameworks such as differentiation, collaboration, personalization, and rigor/relevance support effective learning for gifted learners.

Gaps in literature. There is a gap in literature related to gifted education. To date, no universal framework supports the consistent use of effective strategies and curriculum for gifted learners (Brown & Garland, 2015). Journal articles and research studies explain the absence of an accepted framework relational to a lack of governmental policy that would mandate gifted education standards (Brown & Garland, 2015; Gubbins & Callahan, 2014). Moreover, articles related to gifted education illustrate the need for gifted learning to include aspects of differentiation, collaboration, personalization, and rigor, but no article unites all these components (Buchanan & Woerner, 2000; Gallagher, 1997; Kanevsky, 2011).

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Statement of the Research Problem

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Compelling research pertaining to education in the United States emphasizes a growing lack of parity concerning gifted education services in today's school system (Gagné, 1997; Gallagher, 1997; Renzulli, et al., 1996). Kitano (1991) and Coleman and Gallagher (1995) identified meeting the needs of gifted students with cultural

backgrounds, low-socio-economic means, and learners with disabilities as a challenge within the school system. Moreover, Stephens (2011) maintained the United States was historically slow to support the education of gifted learners. Stephens (2011) further asserted this was due to a general perception that gifted learners were a privileged population who would be successful with or without specified attention. Seminal researchers corroborated the learning and achievement of gifted learners necessitated the use of an educational model that includes differentiation, collaboration, rigor, and personalization to meet the foundational requirements of 21st century gifted learners (Tomlinson, 1996; Winner, 1997; Diezmann & Watters, 2006).

Although research relating to gifted education validated the distinctive academic capacity and need for accelerated methods of gifted learners, the United States remains without an approved gifted education framework (Gubbins et al., 2014; Ritochotte et al., 2014; Stephens, 2011). Gifted experts agreed there was no singular method to educate gifted learners due to the diverse educational variances necessary to meet their individual needs (Kaplan, 2009; Page, 2010; Tomlinson et al., 2003). Experts concurred a blended approach inclusive of best learning practices for students would be beneficial (Bray & McClaskey, 2015). Researchers suggested a comprehensive educational model that incorporated a gradual release from teacher-centered practices to student-centered approaches (Waldeck, 2007; Waldrip et al., 2016; Walkington & Bernacki, 2004). Additionally, in accordance with educational recommendations for gifted learners, Dagget (2008) and Kaplan (2016) emphasized the inclusion of appropriate levels of rigor in all instructional practices. Although researchers contend an educational model inclusive of purposeful instructional practices would meet the needs of both gifted

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learners and general education students, insufficient research unified the two educational methodologies (Walkington & Bernacki, 2004; Winner, 1997; Willoughby, 2013).

Contemporary research regarding education supports the need for a consistent educational model including aspects of personalized learning, appropriate levels of rigor, and the need for learning to be relevant and meaningful (Dagget, 2008; Dai & Chen, 2014). Although gifted education experts recognize one approach to educating gifted learners would not be appropriate (Kaplan, 2009), no concerted gifted education research advocated for a blended framework. According to the experts in the field of gifted education, specialists need to advocate for cohesive educational practices comprised of curriculum that includes student personal interests and appropriate levels of rigor to support the advancement of their exceptional intellectual abilities (Dai & Chen, 2014; Stott & Hobden, 2016; Tomlinson, 1996). Moreover, although empirical research concurred gifted learners had specialized educational needs, limited research examined giftedness, personalized learning, and appropriate levels of rigor.

Researchers remained in agreement about gifted learners requiring educational practices that afford them academic advancements in alignment with their individual academic abilities (Dai & Chen, 2014; Gallagher, 1997; Tomlinson et al., 2003). For example, Wallington and Bernacki (2014) stated the need for research that determines personalized learning components and the feasibility of incorporating these elements into daily teaching. In addition, Renzulli's (2012) appealed for further studies to be conducted that explore 21st century instructional practices that can be effectively embedded into gifted curricula.

Purpose Statement

The purpose of this phenomenological qualitative study was to describe how teachers at the high school level perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of gifted and talented (GATE) students.

Research Questions

The following overarching research question guided this study: *How do high school teachers perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of GATE students?* The research sub-questions were:

1. How do high school teachers perceive the impact of rigor on the learning experience and achievement of GATE students?

2. How do high school teachers perceive the impact of curriculum relevance on the learning experience and achievement of GATE students?

3. How do high school teachers perceive the impact of personalized learning on the learning experience and achievement of GATE students?

Significance of the Problem

The use of effective pedagogies and instructional methodologies to meet the needs of gifted learners remains an important focus for gifted education experts (Coleman & Gallagher, 1995; Gagné, 1999). Research indicated embedding instructional practices including collaboration, differentiation, personalization, and rigor in gifted curricula is necessary to support learners' advanced academic capabilities (Kaplan, 2009; Tomlinson et al, 2003). Recent studies validated incorporating gifted learners' personal interests

helps make curricula relevant, therefore supporting learner engagement in coursework (Bray & McClaskey, 2015; Dai & Chen, 2014). Although the gifted comprise three to five million learners in the United States, determining an effective gifted framework remains a challenge among educational experts (Gallagher, 1994; Gagné et al., 1996; NAGC, 2017).

Research regarding gifted learners and their unique educational needs spans decades. Primarily, gifted research emphasized learners' academic potential in connection with various instructional methodologies from the perspective of gifted education experts (Renzulli, Purcell, & Jeanne, 1996; Treffinger, n.d.; Young & Balli, 2014). Limited studies examined effective gifted methodologies within the classroom setting from the perspective of teachers (Walden, 2014). Studies conducted inclusive of teacher perspectives consistently emphasized teacher induction and professional development programs to prepare teachers for teaching gifted learners (Walden, 2014; Watters, Hudson, & Hudson, 2013).

This study added to the body of knowledge pertaining to effective methodologies for gifted learners. The study focused on providing additional data about: (1) the impact rigor and relevance have on gifted learners' experience and achievement from high school teachers' perspective, (2) perspectives garnered from teachers of the gifted who embed personalized learning into the coursework, and (3) teachers who implement specific instructional pedagogies: differentiation, collaboration, personalization, rigor, and relevance. This study provided additional research about teacher perceptions of the impact rigor, relevance, and personalized learning have on gifted learners and their achievement outcomes.

The results from this study may provide insight into the most successful instructional practices that positively impact the learning experiences and academic achievement of gifted high school learners. Gifted teachers and administrators can use the study's results to develop consistent instructional frameworks to meet the needs of gifted learners. Moreover, the results from this study may influence educators to develop a consistent education program to support the unique learning needs of gifted learners.

Definitions

Operational Definitions

Collaboration. Students working together, in pairs or small groups, to discuss, research, and/or work on activities, assignments, and projects in accordance with learning objectives.

Curriculum. The methods, materials, and additional resources teachers utilize to meet student educational standards (Elbert, Ebert, & Bentley, 2014).

Differentiation. A systematic method of planning curriculum and instruction for students in a heterogeneous learning environment for meeting everyone's individual needs and intellectual capacities. Five instructional areas can be adapted to meet the needs of diverse learners, (1) content, (2) process, (3) products, (4) affect, and (5) learning environment (Tomlinson & Strickland, 2005).

Gifted and Talented. Learners in grades K-12 with high achievement capability in areas such as intellect, creativity, artistry, leadership, or a specific academic field (NAGC, 2017).

Relevance. Curriculum, instruction, and activities related to learners' prior knowledge and/or personal interests to help them make informed connections for deeper levels of understanding and comprehension of learning objectives (Daggett, 2004).

Rigor. Instructional practices and coursework that challenge students to learn through critical thinking processes such as debate, research, application of concepts, synthesis, problem-solving, and reflection. Additionally, these efforts serve to advance learners' cognitive abilities to reach their full academic capacities (Daggett, 2004).

Theoretical Definitions

Personalized Learning Framework. A theoretical methodology grounded in the practice of purposefully incorporating learners' distinct educational needs, personal interests, and ability levels into curriculum and instructional strategies (Bray & McClaskey, 2015; Clark, 2013; Netcoh, 2017).

Rigor and Relevance Framework. A theoretical methodology based on Bloom's Taxonomy's original six educational learning goals, knowledge, comprehension, application, analysis, synthesis, and evaluation (Anderson et al., 2001). This theoretical framework provides an educational model that establishes four learning quadrants representing a step in the structured approach to integrating appropriate levels of rigor and relevance into curriculum and instructional practices (Daggett, 2008).

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Delimitations

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The delimitations of this qualitative study relate to the population, research focus, and theoretical framework. The delimitations include: (1) the focus on GATE students with the exclusion of students in general and special education programs, (2) the exclusive concentration on teacher perspectives, (3) the geographic region of participants

was limited to Los Angeles County, (4) the exclusive emphasis on one theory (personalized learning), and (5) the number of teachers interviewed and observed for this study.

Organization of the Study

This study was structured using five chapters, each designed to provide systematic segments of information related to the study. Chapter I is a precis of the study including background information related to gifted learners and personalized learning. Additionally, Chapter I established the research problem. Chapter II provides a broad historical perspective, current research and literature associated with gifted learners and personalized learning, and delineates the purpose of the study. Chapter III is dedicated to the methodology and analysis tools chosen for the study. Chapter IV focuses on reporting findings based on the interview and observation data. Chapter V serves to analyze and evaluate data, determine the effects of the study, and develop recommendations for further research pertaining to gifted learners and personalized learning.

CHAPTER II: REVIEW OF THE LITERATURE

Chapter II is a review of literature pertaining to gifted and talented education (GATE) and the learning of gifted and talented students in connection with personalized learning and appropriate rigor and relevance at the high school level. This chapter presents seminal literature focused on gifted education from a historical perspective, gifted learners, current GATE practices, a personalized learning framework, and appropriate levels of rigor and relevance for GATE learners. Although the development of gifted education and the unique needs of GATE learners existed in the country's educational system for almost a century (United States Department of Education [ED], 2010), there remains no dedicated framework based on a theoretical foundation such as a personalized learning that specifically focuses on the relationship between learning and achievement of gifted high school level students (Belkhouche & Ismail, 2016; Bray & McClaskey, 2015; Netcoh, 2017). Recent research indicating student learning and achievement in connection with personalized learning and appropriate levels of rigor and relevance is emerging as vital to providing GATE students with appropriate curriculum to meet their educational needs.

This review of literature was grounded in the utilization of books written by experts in the fields of gifted education and personalized learning, conference papers, dissertations, empirical studies, and scholarly journal articles. It is arranged in six sections. Section I provides an overview of gifted education, defines the gifted learner, and explores educational philosophical issues related to providing programs for GATE students. Section II describes theoretical foundations, establishes the meaning of learning and achievement according to GATE standards, and describes the current use of

differentiation, individualization, and personalization pedagogies. Section III describes personalized learning, the 21st century learning model, and the need to ensure rigor and relevance in relationship to the learning of GATE students. Section IV describes rigor and relevance and current practices that denote appropriate levels of this model. Section V presents GATE practices and personalized learning for high school students that motivate gifted learners to learn and achieve, describes strengths and weaknesses of rigor and relevance within personalized education, identifies key findings of the research, and indicates gaps in research.

Education of Gifted Students

Brief History of Gifted Education

GATE educators are well-versed in the foundational understanding that learning and achievement for gifted learners of all ages are dependent on curriculum that includes relevant content and challenging activities (Kaplan, 2009; Kanevsky, 2011). Tomlinson (1996) asserted teachers who utilized purposeful instructional practices were indispensable to encourage gifted learners to process and solve dynamic problems critical for their distinct academic capabilities. These curriculum needs are in alignment with recent research by Brown, Avery, VanTassel, Worley, and Stambaugh (2006) that asserted "the future of gifted education must include a consistent process that has research-based identification practices, a system that provides programs and services for curriculum development and design, program management, and personnel preparation for the gifted" (p. 8). Although research studies consistently showed accelerated curriculum that provides appropriate levels of challenge and rigor are a necessity for gifted learners, the GATE program in the United States remains without a coherent framework.

Historically, GATE in the United States in the 20th century was acknowledged as a special education designation for students with high intelligence quotients (IQs) and/or high academic abilities (Hollingsworth, 1942; Ibata-Arens, 2012; Terman, 1925). In the 1950s, the National Defense Education Act of 1958 monetarily funded educational research and program development in an inaugural effort to invest in the human capital of the United States (Ibata-Arens, 2012; NAGC, 2017). Funding for gifted education research, not programming, remained under the Javits Gifted and Talented Students Education Act of 1988, which continued until the No Child Left Behind Act (NCLB) of 2002 was enacted. Bégin and Gagné (1994) credited NCLB for changing attitudes and support of GATE and its programmatic resources. Consequently, GATE resources were no longer mandated, effectively reducing gifted resources for all students and teachers throughout the country.

Although funding and resources apportioned for GATE within the last 20 years changed, services continued to be provided for students at the elementary level in most districts in the United States. However, this did not include GATE resources and supports for middle and high school grade levels. Ibata-Arens (2012) suggested the educational system in the United States advance by establishing a "healthy national innovative system [that nurtures] all learners to reach their highest potential, and thereby maximize domestic human capital development" (p. 6). Therefore, researching personalized learning methodologies that support the accelerated needs of gifted learners, while also focusing on the learning and achievement of gifted high school students to understand necessary supports for both gifted students and their teachers, was the objective of this literature review.

Defining the gifted learner. Since the beginning of gifted education in the early

1900s, experts in the field advocated for a consistent definition of giftedness. The

Marland Report to Congress of 1972, which became law, provided the first nationally

recognized definition of giftedness and concluded gifted education must be funded

(Borland, 2009; NACG, 2017). Although Marland's (1972) definition provided an

inclusive core, fundamental aspects of giftedness relevant today, contemporary

researchers within the last 20 years offered new traits to add to the definition for GATE

students. The original definition focused on intellectual, creative, artistic, leadership, and

academic high achievement (NAGC, 2017). In 2002, NCLB legislation changed the

federal definition to,

> Students, children, or youth who give evidence of high achievement
>
> capability in areas such as intellectual, creative, artistic, or leadership
>
> capacity, or in specific academic fields, and who need services and
>
> activities not ordinarily provided by the school in order to fully develop
>
> those capabilities. (NAGC, 2017, para. 1)

Gifted learners are recognized globally in every culture and creed. However

different the gifted learner, accelerated educational requisites for learning and

achievement of gifted learners remains individualized, but similar in scope (Plucker &

Barab, 2005). The many facets of the gifted learner as well as federally unrecognized

iterations of giftedness may be contributing reasons there remains no systematic gifted

designation process or standardized gifted curriculum established throughout the United

States. Moreover, philosophical issues concerning exclusive programs offered for gifted

learners persist among community members, educators, and parents (Brown & Wishney, 2017; Finn & Hocket, 2012).

Educational Philosophical Issues Regarding Gifted Programs

Historical and modern research findings continue to recognize GATE programs as a necessity to provide appropriately rigorous and relevant curriculum, establish educational equity, and cultivate the intellectual human capital of the nation (Dai & Chen, 2014; Gagné, 1999; Gallagher, 1997; NAGC, 2017; Renzulli, 2012). Conversely, philosophical issues emerged regarding "public perception, mandates, and value systems about cultivating and sustaining programs for the brightest learners (Brown & Wishney, 2017, p. 31). These issues were divisive and became barriers to the continued development of gifted program in the United States. In the nation, concerns regarding GATE and identified gifted learners are deeply rooted in beliefs and perceptions associated with equity, elitism, and the mindset that gifted learners will achieve without special attention or programs and differentiated instructional strategies successfully serve all students (Brown & Wishney, 2017; Finn & Hockett, 2012; Gallagher, 2005).

Gifted education and equity. According to Gallagher (2005), equity is a fundamental social value in the United States. With a population estimated at 324 million people in the country, the education system strives to provide an equitable education for a multitude of culturally and ethnically diverse people (National Center for Education Statistics, 2017). Respectively, in 2015 "Americans identified themselves 62.6% White, 15% Hispanic, 13% Black, 4.4% Asian, with the remainder being American and Alaska native, Hawaiian or Pacific islander or two or more races" (Brown & Wishney, 2017, p. 23). Although education is a social value in the United States, there

remains an achievement gap between the diverse, cultural subgroups for gifted students (Brown & Wishney, 2017).

Equity and excellence are the expectations of education in the United States. The Javits Act resources funded projects that concentrated on bridging the achievement gap between under-represented sub-groups and gifted students (Brown & Wishney, 2017; Gallagher, 2005; Plucker, Burroughs, & Song, 2010). Although information from these funded research efforts provided data showing the lack of parity between gifted and standard education, educational reforms did little to change this inequity (Finn & Hockett, 2012).

Unlike in other countries such Finland, South Korea, and Singapore, the United States is behind in recognizing gifted students as valuable human capital for the nation (Brown & Wishney, 2017; Tirri & Kuusisto, 2013). Experts in GATE recognized the failure to designate ethnically diverse and low socio-economic students due largely to underfunded program and resources and state and national efforts focusing on students who do not meet annual progress standards set forth by government initiatives (Saccuzzo, Johnson, & Guertin, 1994; Theaker, Xiang, Dahin, Cronin, & Durrant, 2011). This diminished the recognition of exceptional students of all backgrounds who already meet expected educational standards and require a more systematic educational program that provides experiences that meet their accelerated capabilities (Colangelo, Assouline, & Gross, 2004). In addition, there is a belief funding gifted programs is elitist and serves to provide superior education for gifted students while excluding most other learners (Gallagher, 2005; NAGC, 2016).

Gifted education and perceptions of elitism. Philosophical disparities about the purpose of GATE as a component of educational equity and excellence continues to be a major barrier in developing programs for GATE learners. Although student excellence refers to the commitment of educators and the educational system to provide students an education so they can achieve at their highest levels of capability, strong opinions against exclusive programs and financial resources for students with academic success beyond the standard exist (Gallagher, 2005; NAGC, 2016). Furthermore, government programs, initiatives, and laws are complicit in perpetuating the idea of elitism by excluding GATE program and funding, which prevented nationally recognized systematic efforts to serve exceptionally capable learners (Brown & Wishney, 2017). Given this educational bias, GATE programs continue to be under-funded, and therefore lack services for students who learn at accelerated rates beyond the approved, standardized course pacing relied on heavily in traditional educational settings (NAGC, 2016).

The idea of elitism stems from opinions that exclusive programs are unwarranted as gifted learners already excel; therefore, they should not receive educational resources as they will be successful regardless of funding or select programs. This perspective supports using limited school resources to subsidize programs restricted for learners who struggle to meet defined educational standards (Finn & Hocket, 2012). Often, advocates for gifted learners are considered elitist for recognizing student giftedness and their unique learning needs, which opponents identify as a means to separate, excel, and provide private opportunities for those with high intellect while many students not recognized as gifted are academically and socially left behind (Brown & Wishney, 2017; Finn & Hocket, 2012; Gallagher, 2005; Theaker et al., 2011). On the other hand,

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research conducted by Finn and Wright (2015) indicated a need for equity that includes

federal and state funding for GATE education as the intellectual capacity of gifted

learners should be viewed as indispensable human capital in support of the United States

and its position in the global community.

The philosophical issue of elitism became an educational and political barrier in

terms of advancing GATE efforts. These opposing viewpoints were succinctly

summarized in Brown and Wishney's (2017) journal article concluding,

> Leveraging educational reforms for a specific population of students, such
>
> as gifted students, in order to provide parity with reform efforts,
>
> perceptions, or government initiatives for other groups of students…at the
>
> minimum, a challenge; and at the maximum something that may never be
>
> achieved in the United States because providing resources or services for
>
> gifted students is perceived as elitist. (p. 25)

Despite efforts to change perspectives regarding gifted education, the idea of

elitism and concerns about equity are not the only barriers preventing gifted

programmatic growth in the United States. The supposition that differentiation in

instruction within the classroom meets the learning needs of every student, including

gifted learners, is a theory fortified by educators, community members, and political

leaders.

Differentiated strategies meeting the needs of all learners. Differentiation in

theory serves all students; however, in practice philosophical issues relate to how the

methodology relies heavily on teachers to meet the unique learning needs of 30 or more

students simultaneously, with each class potentially including a large variance between

student ability levels and educational requirements (Hertzberg-David, 2009). Moreover, research clearly showed teachers in the classroom focus their strategic efforts on struggling students and do not include gifted learners when differentiated activities are employed due to the belief GATE students do not need any specialized curriculum to perform at successful levels (Tomlinson, Brighton, Hertzberg, Callahan, Tomlinson, & Moon, 2005). Not unlike the whole of gifted education, a contributing factor is the necessity for differentiation strategies to be utilized consistently in a heterogeneous classroom setting to support the educational learning objectives of all students, which does not exist as an articulated, structured framework. This lack of programmatic coordination continues to raise concerns about the authenticity of differentiated instruction as the sole educational approach for all learners within a single classroom.

Positive and Negative Associations with Gifted Education

GATE in the United States met with conflicting opinions, priorities, and values. In addition, researchers proposed the term giftedness is value-laden due to the focus on a select group of students and providing them with academic advancements beyond what is provided for non-gifted students (Dai, 2010; Sternberg, 2007). Given the historically unstructured nature of gifted education, concerns such as elitism, equity, and culturally inclusive gifted identification tools and processes affecting GATE remain. Moreover, these unaddressed issues perpetuate the suppression of efforts to acknowledge the researched needs of gifted learners, funding, and the development of a nationally recognized and supported systematic GATE model that would potentially restructure gifted education for today's learners.

A multitude of experts in the field of education and giftedness generated data recognizing the unique educational needs of gifted learners, which gives credence to distinguishing these learners as intellectual assets for the nation (Theaker et al, 2011). In consideration of these factors, researchers identify the potential to develop and design a federal and state recognized gifted education framework that includes modernized culturally inclusive GATE designation tools, a more contemporary definition of giftedness, and structured instructional strategies inclusive of differentiation, individualization, and personalization models (Brown & Garland, 2015; Dai & Chen 2014; Gagné, 1999; Gallagher, 2005; Terman, 1925; Tomlinson & Strickland, 2015). With continued research-based and data-rich information conducted by experts in the field of education and giftedness, the progressive evolution of GATE may be actualized, which would help connect effective, longstanding practices with contemporary methods for gifted learners today.

Gifted Learners and Gifted and Talented Education Today

Current research addressing gifted learning indicated the need for accelerated methods and instructional strategies that provide appropriately challenging, meaningful, and relevant learning experiences for GATE students (Page, 2010). Moreover, this research also suggests embedding the concepts of challenge, rigor, and relevance into GATE curriculum and programs to adequately address the accelerated demands of gifted learners' intellectual ability levels (Kaplan, 2016). Therefore, researching the three empirical theoretical foundations of gifted education, the three-ring conception of giftedness, the enrichment triad model, and the multiple intelligences theory, is essential

for clarity and understanding of gifted education. Further, these theoretical foundations remain the basis of gifted education today.

Theoretical Foundations of Gifted Education

　　Enrichment triad model. Gifted education in America became an amalgamation of several central theoretical foundations serving as the backbone of GATE. One such approach introduced by Renzulli in 1977, the enrichment triad model (also known as the three-ring model), was developed to change educational practice by incorporating a systematized "high-end instruction and creative productivity" (Caridad-Garcia-Cepero, 2008, p. 296). As illustrated in Figure 1, this approach was designed to address the "development of gifted behavior as defined as above average ability, creativity, and task commitment" (Giger, 2006, para. 1).

Figure 1. Renzulli's Three-Ring Conception of Giftedness.

　　The triad model served to blend and unify instructional strategies to include critical thinking through problem-solving, real-world experiences, and personal interest incorporated into traditional school experiences to foster academic excellence and creative learning outcomes for all learners while meeting the distinctive needs gifted

students within the same educational environment (National Research Center for the Gifted and Talented, n.d.).

Renzulli's (1977) enrichment triad model included four defining principles as central components of the theoretical concept: (1) each learner is different, (2) learning is more effective when students enjoy it, (3) learning is made relevant when personal interests are incorporated into curriculum and practices, and (4) a balance of formal and informal instruction to support students as active learning participants and innovative thinkers. These four guiding principles became the core elements of Renzulli's vision for educational change and were configured to be integrated into the three types of traditional school practices, regular curriculum, enrichment clusters, and special services (National Research Center for the Gifted and Talented, n.d.). The three practices are demarcated as Type 1: General Exploratory Activities, Type II: Group Training Activities, and Type III: Individual and Small Group Investigation of Real Problems (Renzulli, 1977).

The three types of instructional enrichment strategies were initially characterized as overarching themes (Figure 2). However, the three types of instruction describe, classify, and identify high-end learning activities and strategies within the semi-structured and flexible educational enrichment model (Caridad-Garcia-Cepero, 2008).

Figure 2. Renzulli's Enrichment Triad Model. Source: Renzulli (1977).

Additionally, the instructional enrichment included in the enrichment triad model serves to categorize and clarify the recommended instructional practices (Table 1).

Table 1

Three Types of Enrichment within Renzulli's Enrichment Triad Model

Type	Category	Description
Type I	General Exploratory Activities	Experiences to expose students to content not present in the regular curriculum (e.g., field trips, internships, job shadowing, technology infused projects)
Type II	General Training Activities	"Training in thinking and feeling processes, learning-how-to-learn skills, research and reference skills, and written, oral and visual communication skills" (Caridad-Garcia-Cepero, 2008, p. 209).
Type III	Individual and Small Group Investigation of Real Problems	Hands-on projects to solve real-world problems (Renzulli, 1999).

Each element of the enrichment triad model is a scaffolded educational progression that offers an inclusive concept of giftedness that strives to support excellence, task commitment, and creativity, providing four guiding principles of effective learning and culminating in the three types of instructional practices aimed to develop excellence in all learners (Renzulli, 1977, 1999). As one of the primary theoretical philosophies of gifted education, many of the characteristics of the enrichment triad model continue to be used in GATE today, either in its entirety as a guiding institutional philosophy or in a more common, symbiotic approach inclusive of other theoretical methodologies such as Gagné's Differentiated Model of Giftedness and Talent and Gardner's Theory of Multiple Intelligences.

Differentiated model of giftedness and talent. Gagné's (2004) differentiated model of giftedness and talent differs from Marland's (1972) federally recognized definition by distinguishing the concepts of giftedness and talent as two separate entities

connected in a progressive process that initially emerges in children as innate exceptional abilities (giftedness) and later develops into expertise within utilitarian skillsets (talent). As two distinctive classifications, Gagné (2004) reasoned the concepts of giftedness and talent required different definitions to function as the foundation for understanding the catalysts involved in the employment of the model. Gagné (2004) helped initiate the 5-level metric-based system of recognition and advancement of GATE. In effect, Gagné's (2004) philosophical approach was based on the definitions of giftedness and talent, and the theory that giftedness and talent were developmental in nature and giftedness, if nurtured, evolved into exceptional ability levels in adulthood. The three inter-connected paradigms, making a distinction between the terms giftedness and talent, understanding the catalysts in the model's implementation, and applying the 5-level metric-based system, are the cornerstones of Gagné's model.

Within the differentiated model of giftedness and talent, Gagné (2004) offered two new definitions for describing the terms giftedness and talented. He proposed the definitions as both disconnected and connected concepts representative of their own meanings, while also relating the two as factors in a progressive process of giftedness and talent from childhood to adulthood. Therefore, the term giftedness refers to natural abilities or aptitudes a person possesses that constitutes their capacity to be among the top 10% of same age peers, whereas the term talent denotes developed abilities or skills at the expert level that places their advanced skillsets within the top 10% of their age group peers (Gagné, 2004). Through the course of giftedness developing into talent, the model contends three catalysts act as either supports or impediments to the talent development process (Gagné, 2000).

The differentiated model of giftedness and talent presents three catalysts, intrapersonal, environmental, and chance elements, that reflect either positive or negative impacts on the evolution of the model (Gagné, 2004). The qualities of each catalyst, and how each potentially helps or hinders developmental talent progression, aid in the talent progression. The positive and negative ways talent development can be influenced directly relates to each gifted person's experiences with each catalyst. Given the positive or negative affect the catalyst may have on the progress of talent development, the 5-level metric system was designed to work in relation within the approach to substantiate the subjective quality of the model (Gagné, 2004).

The creation of a measurement scale for giftedness and talent recognition was embedded within Gagné's (2004) model to acknowledge the degrees of giftedness and talent development, although he realized there were subjective areas within the system. He also found researchers in gifted education would eventually agree on a basic model to advance GATE (Gagné, 2004). The 5-level metric-based system serves to clarify the prevalence of GATE by developing a standard for categorizing the gradient levels of giftedness and talent given the many hypothesized ranges. Table 2 illustrates Gagné's (2004) proposed 5-level baseline of giftedness and talent based on the metric system that included 10% demarcations between each proposed level of giftedness and talent.

Table 2

Gagné's Levels within the GATE Population

Level	Label	Ratio in Population	IQ Equivalent	Standard Deviation
5	Extreme	1:1,000,000	165	4.3
4	Exceptionally	1:10,000	155	3.7
3	Highly	1:1,000	145	3.0
2	Moderately	1:100	135	2.3
1	Mildly	1:10	120	1.3

The three components, two definitions for giftedness and talent, three catalysts, and 5-level metric-based system of Gagné's (2004) model were meant to work together concurrently to develop a comprehensive gifted and talented model that could be generalized for GATE. In the same way Renzulli and Gagné produced theories and models to support the improvement and progression of GATE in the United States, Howard Gardner offered his theory on multiple intelligences.

Theory of multiple intelligences. Gardner's research related to cognitive abilities and human capacity for intellect led him to move beyond Piaget's commonly recognized theory of sign and signal detection regarding how the human mind works. Empirical evidence indicated the mind appears to compartmentalize a variety of ways to process linguistic, numerical, pictorial, gestural, and additional types of systems (Gardner, Howard, & Perkins, 1974; Gardner & Wolf, 1983). These separate intellectual processing elements were developed into seven intelligences (Table 3), each denoting modules of intelligence, abilities, interests, and/or sensitivities exhibited as evidence of the certain intelligence and examples of strengths exhibited in areas that may be reflected in career choices (Gardner & Hatch, 1989).

Table 3

The Seven Original Multiple Intelligences

Intelligence	End-States	Core Components
Logical-mathematical	Scientist Mathematician	Sensitive to and capacity to discern logical or numerical patterns; ability to handle long chains of reasoning
Linguistic	Poet/Writer	Sensitive to the sounds, rhythms, and meanings of words and different functions of language
Musical	Composer Musician	Able to produce and appreciate rhythm, pitch, and timbre; appreciation of the forms of musical expression
Spatial	Navigator Sculptor	Able to perceive the visual-spatial world accurately and perform transformations on one's initial perceptions
Body-kinesthetic	Dancer Athlete	Able to control one's body movements and handle objects skillfully
Interpersonal	Therapist Salesman	Capacity to discern and respond appropriately to moods, temperaments, motivations, and desires of others
Intrapersonal	Self-aware	Access to one's own feelings and able to discriminate among them and draw upon them to guide behavior; knowledge of one's own strengths, desires, and intelligences

Although the theory of multiple intelligences does not emphasize GATE or the learning of gifted and talented learners, this theory produced similar results in recognizing how gifted learners think and learn and providing implications regarding delineations of how levels of academic excellence may be more readily identified. The commonalities connecting the theories and models developed by Renzulli, Gagné, and Gardner were influential in the development of current GATE programs.

The Meaning of Learning and Achievement in Gifted Education

In GATE, the meanings of learning and achievement of gifted learners in kindergarten to 12th (K-12) grades are conveyed in Marland's (1972) original definition of gifted and talented, NCLB, and the 2010 Pre-K-Grade 12 Gifted Programming

Standards (NAGC, 2010). The gifted program standards define and describe six

standards, the purpose of each standard, expected student outcomes, and evidence-based

practices to appropriately address the learning needs of gifted learners. Table 4 provides

an overview of the gifted programming standards that address the meaning of learning

and achievement through coordinated and organized criteria set forth in the specifications

of the standards.

Table 4

2010 Pre-K-Grade 12 Gifted Programming Standards

Standard and Description	Overview of Key Points
Standard 1: Learning and Development **Description**: Recognize gifted students learning differences, promote understanding, be aware of their needs at school and beyond.	**Learning**: - Differentiation in groups and services - Self-understanding and self-awareness through affective development **Achievement**: - Cognitive growth through differentiation
Standard 2: Assessment **Description**: Measures to identify progress and outcomes.	**Learning**: - Evaluate students' progress - Establish appropriate levels of challenge **Achievement**: - Demonstrate advanced and complex learning
Standard 3: Curriculum Planning and Instruction **Description**: Apply theory and instruction to respond to their needs by offering culturally relevant curriculum and evidenced-based instructional	**Learning**: - Determine instructional strategies, content, and use of resources - Differentiated curriculum aligned with local, state, and national standards - Emphasize advanced, in-depth, and complex content **Achievement**: - Provide knowledge and skills to be independent learners
Standard 4: Learning Environments **Description**: Classroom conditions that foster responsibility, competence, content, communication, and leadership	**Learning**: - Socio-emotional understanding, social skills, leadership skills, and cultural understanding **Achievement**: - Strategies and resources help expand oral, written, and artistic communications

Standard 5: Programming **Description**: Educators develop gifts and talents through programming that meets student needs.	**Learning**: - Opportunities to engage in high-level programming and distance learning options to provide access to resources **Achievement**: - Provide appropriate resources and suitable educational services
Standard 6: Professional Development **Description**: Educators must hone their knowledge and skills through professional development related to content, identifying needs, and standards to accurately assess student outcomes	**Learning**: - Ensure teachers understand unique needs, differentiate instruction, and use research-based instructional practices **Achievement**: - The needs of gifted learners are met in the classroom setting to provide an environment for students accelerate to meet their full potential in academics and the arts

Note. Adapted from NAGC, 2018.

The gifted programming standards were influential in defining the learning and achievement of GATE students, which includes responsibilities of educators, benchmarks set forth for K-12 gifted and talented learners, and expected learning outcomes of gifted and talented learners in relationship to their accelerated capabilities.

Pedagogies in Gifted Education

Contemporary research addressing gifted learning indicated a need for accelerated methods and instructional strategies that provide appropriately challenging, meaningful, and relevant learning experiences for GATE students (Kaplan, 2016; Page, 2010). Moreover, the research supported embedding the concepts of challenge, rigor, and relevance into GATE curriculum and programs to adequately address the accelerated demands of gifted learners' intellectual ability levels (Kaplan, 2016). Therefore, researching the most effective educational methodologies such as differentiation and personalized learning, and various frameworks that support these methods in relation to gifted learners, was an objective for this literature review.

Differentiation. The purpose of differentiated instruction is to structure and scaffold curriculum to meet the individualized needs of each learner within a single classroom setting by providing students with appropriately paced and challenging coursework (Hertzberg-David, 2009; Tomlinson et al., 2003). Differentiated instruction was touted as an exemplary strategy for both gifted and non-gifted learners by educators and experts in gifted education. Furthermore, experts believe differentiation is critical in addressing the needs of all learners including gifted learners, under-achieving learners, and students from under-served populations (Hertzberg-David, 2009; Tomlinson, 1996). Kaplan (2016) added that differentiation for all learners must include a structure and measurable process for ensuring appropriate levels of challenge for each student, which is imperative for addressing the needs of gifted learners within a differentiated framework.

Regarding differentiation, concern exists regarding the objective to meet the needs of all learners in a single classroom without focusing specifically on the needs of gifted learners. This concern relates to how the practice of differentiation relies heavily on teachers to meet the unique learning needs of 20 or more students, simultaneously, with each class potentially including a large variance between student ability levels and educational needs (Gagné, 2000; Hertzberg-David, 2009). Moreover, research showed teachers in the classroom focus their strategic efforts on struggling students and exclude gifted learners when differentiated activities are employed due to the belief GATE students do not need any specialized curriculum to perform at successful levels (Brighton et al., 2005). Empirical research indicated personalized learning includes differentiated practices that may more effectively meet the needs of all learners, including gifted students, within a student-centered approach (deFreitas & Yapp, 2005).

Individualization. Individualized learning centers on the needs of singular students in a classroom setting based on assessments, evaluations, and teacher input that determines the resources necessary to address and support student deficiencies in cognitive or physical abilities (Bray & McClaskey, n.d.). According to the summary of individualization by ED (2010), individualization paces curriculum in accordance to student needs based on assessments and evaluative reviews conducted, which allows learners to progress at their own rate. Additionally, individualized learning is used primarily for special needs students with individualized education plans (IEPs) that structure benchmarks to meet their individual goals (Bray & McClaskey, n.d.). Although meeting the academic and social needs of every student remains the objective of formalized education, research indicated individualized instructional practices could be enriched through a personalized approach to learning.

Personalization. Personalized learning focuses on the gradual release from teacher-centered classroom practices to student-centered approaches that incorporate meeting the needs of each individual student while providing students with a voice and choice regarding what and how they learn and how they show mastery (Bray & McClaskey, 2015, Clark, 2013; Netcoh, 2017). Recent studies indicated personalized learning infused the most effective strategies from differentiation, individualization, and personalization of curriculum (Bray & McClaskey, 2015). ED (2010) defined all three pedagogies and outlined how each method was interwoven and dependent on the other to include personalization of curriculum (Table 5).

Table 5

Individualization, Differentiation, and Personalization

Pedagogy:	Individualization	Differentiation	Personalization
Similarities	-Goals are the same for all students -Pacing based on student needs -Teacher instructs and determines acceptable pacing	-Goals are the same for all students -Pacing based on student needs -Teacher instructs and determines acceptable instructional approaches	-Pace is based on student learning needs -Instruction is determined by student need and learning preferences
Differences		-Instructional approaches are based on individual student learning preferences	-Instruction adapted to student personal interests -Objectives, content, and/or methods are student-centered and differ for each student

Differentiation is a key component within personalized learning, but the

fundamental difference between the two pedagogies is the level of control students have

regarding what they learn, how they demonstrate knowledge, and how their personal

interests are embedded into the curriculum (Bray & McClaskey 2015; Clark, 2013;

Netcoh, 2017). This significant difference is what sets personalized learning apart from

differentiation. Additionally, experts in the field of education and gifted education

concur there is a need to develop a consistent framework that specifically includes the

elements of student control and choice in current curriculum to ensure appropriately

challenging curriculum for today's learners (Waldrip et al., 2016).

Gifted Learners and Personalized Learning

Overview of Personalized Learning

Personalized learning is a scaffolded process of gradual release from a teacher-

centered learning environment to a student-centered learning environment that supports

curriculum pacing to fit student needs and is inclusive of each student's personal interests

(Bray & McClaskey, n.d.). Personalized learning requires students to be active

participants in their own learning by using learning modalities in which they learn best,

incorporating their personal interests into coursework, and determining how they show

mastery in creative ways to meet and exceed established learning objectives (Bray &

McClaskey, 2015). In these ways, instruction in a personalized classroom environment is

student-centered and the teacher serves as facilitator for student learning, which was

necessary for today's gifted learners to meet their full academic potential.

　　　　Personalized learning and traditional methods. Research within the last

decade connected the educational and social-emotional needs and supports for GATE

learners with strategies and practices from several pedagogies both traditionally used

such as individualization and differentiation, as well as a modern method of

personalization of curriculum (Dai & Chen, 2014; Kaplan, 2016; Tomlinson &

Strickland, 2005). Studies related to gifted education noted there was no formalized

GATE framework that experts agreed upon; however, researchers tended to concur

GATE learners had unique learning needs and strategies successful in meeting their needs

in a classroom environment could be met through diverse practices and strategies rooted

within three methodologies: differentiation, individualization, and personalized

curriculum (Bray & McClaskey, 2015; Dai & Chen, 2014; Gagné, 2000). ED (2010)

defined and outlined each of these methodologies showing how personalization

encompassed aspects of each methodology, while also providing students with more

creative opportunities to incorporate their personal interests, innovate their own

assignment/projects to show mastery, and take an active role in their educational pacing

and processes (Bray & McClusky, 2015). Use of strategies from these methodologies are

vital to the academic success of all students. Moreover, the use of personalized

curriculum strategies, which include practices from several methodologies, may support

GATE learners within the standard comprehensive 21st century learning models currently

used in education today.

Theoretical Foundations

      21st century learning models and gifted learners. Currently, there is an

educational movement to transition from focusing on 20th century labor market skills to a

21st century framework emphasizing the use of information and communication

networks, problem-solving, and critical thinking necessary for today's global job markets

(Barell et al., 2010; Levy & Murnane, 2004). The objective for applying the edifying

practices and strategies of a 21st century learning framework in the education system is to

provide students with a student-centered instructional process that provides learners with

the opportunity to acquire deeper levels of learning and intellectual development (Ravitz,

Hixson, English, & Megendoller, 2012). The 21st century learning framework

concentrates on integrating teaching and development of critical thinking, collaboration,

communication, creativity and innovation, self-direction, global and local connections,

and using technology as a tool for learning (Ravitz et al., 2010). Furthermore, Lombardi

(2007) referred to these cultivated skills in relationship to authentic learning, and how

these abilities are pragmatic and applicable in the real-world in terms of current and

future vocations, including proficient collaborations, exceptional decision-making, and

dynamic problem-solving with innovative solutions. Respectively, the 21st century

learning model resembles the purpose, student-led instructional practices, and advanced

options of researched best practices for gifted and talented learners.

The authentic instructional strategies and practices utilized in a 21st century learning framework are also conceptualized within the research and recommended GATE models designed to meet the needs of gifted and talented students. Respectively, the 21st century framework and distinctive educational requirements for GATE learners are emulated within a personalized learning framework.

> Models of teaching and learning that are project-based, collaborative,
> foster knowledge building, require self-regulation and assessment, and are
> both personalized (allowing for student choice and relevance to the
> individual student) and individualized (allowing students to work at their
> own pace and according to their particular learning needs). Each of these
> elements has a strong base of prior research linking it to positive outcomes
> for students in terms of development of 21st century skills. (Shear, Novais,
> Means, Gallagher, & Langworthy, 2010, p. 3)

These personalized framework characteristics support learners in accordance with individualized academic pacing, student-centered instruction, and appropriate levels of intellectual challenge.

Personalized learning, rigor, relevance, and the gifted and talented. An effective personalized learning framework necessitates current curriculum to include appropriate levels of challenge and significance to meet the needs of today's students. Dagget (2008) developed a rigor/relevance framework to help teachers develop inclusive curriculum, instruction, and assessments (Figure 3).
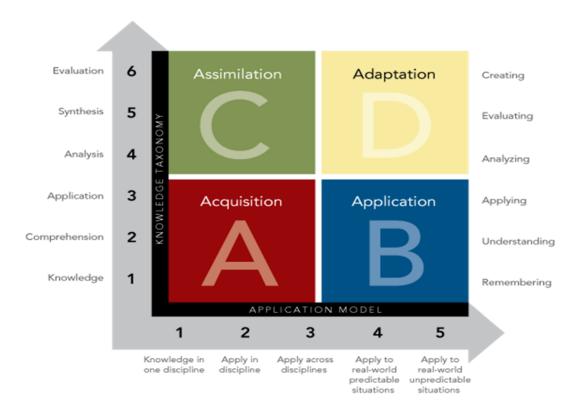
Figure 3. Dagget's rigor and relevance framework.

This framework utilized Bloom's taxonomy to denote the levels of learning from lowest to highest, while at the same time includes four quadrants that designate the levels of applied learning regarding curriculum and instruction (Dagget, 2008). Moreover, empirical research pertaining to the subject of gifted learners strongly advocated for a unique framework that includes both personalized learning and curriculum with significant levels of rigor and relevance to appropriately challenge students with academic abilities beyond standard grade level expectations (Daggett, 2008; Dai & Chen, 2014; Kaplan, 2016).

GATE experts agreed on several aspects regarding the needs of gifted learners. These fundamental elements include the requirement for curriculum and instruction to be flexible according to each individual student's needs, inclusive of student personal interests, and comprised of a scaffolded approach to engage students with high levels of

intellectual ability (Bray & McClaskey, 2015); Dagget, 2008); Dai & Chen, 2014);

Gallagher, 1997; Tomlinson, 1996). Although no dedicated framework for GATE exists,

the research clearly indicated several facets within personalized and rigor/relevance

support effective learning for gifted and talented learners.

Gifted Learners and Rigor and Relevance Model

The rigor and relevance framework was designed to merge concurrent pedagogies

specifically to connect Bloom's Knowledge Taxonomy with the rigor/relevance

framework that measures the acquisition of knowledge and application of concepts

(Daggett, 2008). The purpose of this framework is to support educators to align

instruction and learning by utilizing guiding, critical questions directly associated with

the rigor/relevance framework. Table 6 represents the overarching tenets of the

rigor/relevance framework to afford students opportunities to engage in appropriate levels

of challenge and demonstrate intellectual growth through authentic assessments.

Table 6

Rigor and Relevance Quadrants

Quadrant	Description	Example
A: Acquisition	Simple recall and basic understanding	$2 + 2 = 4$
B: Application	Use of knowledge to solve problems and complete work	Using math to count change
C: Assimilation	Extend use of knowledge to routinely analyze problems and create solutions	Knowing how the currency system works
D: Adaptation	Competence in complex thinking and applying knowledge in new ways	Gathering information from multiple sources to solve a complex problem

Note. Adapted from Daggett (2008).

Research clearly showed by combining these philosophical models, learners benefit from a scaffolded process where knowledge is acquired from the lowest level of learning (knowledge/awareness) to the highest level (evaluation) and apply this intelligence to think critically and solve complex problems with innovative solutions.

Personalized Learning Framework

Personalized learning frameworks focus on individualized academic needs by using differentiation strategies such as instructional pacing, personal interests, and development of goals related to curriculum for students to go in-depth in their learning of a concept beyond the expected standard (ED, 2010). Figure 4 shows the progression of personalized learning within the education system inclusive of all ages and grade levels.
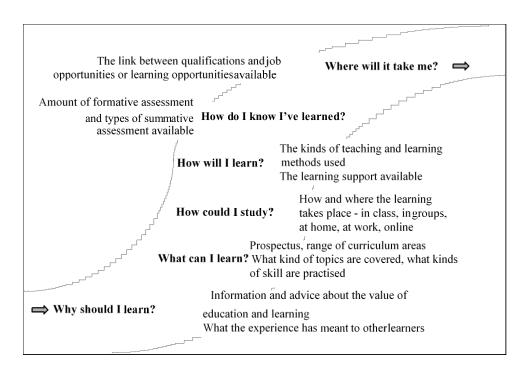
The link between qualifications and job opportunities or learning opportunities available

Where will it take me?

Amount of formative assessment and types of summative assessment available

How do I know I've learned?

How will I learn?

The kinds of teaching and learning methods used
The learning support available

How could I study?

How and where the learning takes place - in class, in groups, at home, at work, online

Prospectus, range of curriculum areas

What can I learn? What kind of topics are covered, what kinds of skill are practised

Information and advice about the value of education and learning
What the experience has meant to other learners

Why should I learn?

Figure 4. Contribution of personalization to the learner's journey. Source: Laurullard (2005).

Bray and McClusky (2015) contended the use of a personalized learning structure is a multi-leveled approach that moves from a teacher-centered and teacher-led learning approach to a student-centered approach focused on students playing an active role in their own learning and development. Although this framework encompasses both differentiation and individualization pedagogies, these learning traits are indicative of best practices for GATE learners.

Learning and Achievement with Personalized Learning

According Beetham (2005), learning by nature is personal and dependent on people's ability to make meaning of their experiences by connecting them with their own interests and/personal understanding. Vygotsky (1978) concluded learners developed through shared social knowledge and internalizing their learning as they matured and developed. How individuals learned firmly correlated with student achievement in that

students engaged in the learning process by cultivating areas of strength and interest, engaging in critical thought processes, and participating in challenging opportunities retain information and stay motivated to explore deeper levels of learning (Clark, 2013). In a structured personalized learning approach, students are involved in their educational process, develop learning aligned with personal interests, make real-world connections meaningful to them and achieve to their highest potential (Bray & McClaskey, 2015; Clark, 2013).

Gaps in the Literature

Gifted Education

There is an evident gap in literature related to gifted education. To date, no universal framework or educational model exists to support the consistent use of effective strategies and curriculum for gifted learners (Brown & Garland, 2015; Dai & Chen, 2014; Gallagher, 2005). A multitude of resources explain the absence of an accepted framework directly relates to the lack of governmental policy that could mandate gifted education standards. Moreover, research suggested the need for gifted education to include aspects of differentiation, individualism, and personalization, but a gap in literature exists related to all three conceptual components as they pertain to a defined educational framework for GATE.

Differentiation

There is a gap in literature relating to differentiation pedagogy. Current research indicated the necessity for differentiation strategies to be utilized consistently for all students, especially gifted learners in a heterogeneous classroom setting (Hertzberg-David, 2009; Kaplan, 2016; Tomlinson, 1996). Studies that combine differentiation with

contemporary research specified the essential inclusion of personalized learning elements necessary for today's learners, including gifted learners. However, pedagogies are still not recognized as practices essential to one another (Bray & McClaskey, 2015; ED, 2010; Tomlinson, 1996). Although several theories and examples explain how to use differentiated practices in the classroom, there is a gap in literature concerning a systematic model for differentiation in the classroom setting.

Personalization

Personalized learning is not a new idea. It held many names with parts conceptualized in other pedagogical structures attributable to this idea. Currently, there is a gap in literature addressing key concepts within personalized learning methodology related to a step-by-step approach for implementing this framework. Personalized learning requires a scaffolded process to develop student voice and choice in their learning (Bray & McClaskey, 2015); however, current literature does not offer models of how to implement this approach in all grade levels.

Rigor and Relevance Framework

There is gap in literature regarding Dagget's (2008) rigor and relevance framework. To date, this systematized approach to teaching focuses on professional development for teachers to learn how to develop curriculum that incorporates appropriate levels of rigor and relevance (Dagget, 2008). However, a student version of the rigor and relevance framework that supports their academic endeavors and would help them to be innovative in their projects and assignments is lacking. The current framework is a teacher-centered model to develop structured learning processes that

affect curriculum and in-class strategies. At present, there is a gap in literature and research related to a student-centered rigor and relevance framework.

Summary

A body of literature supports the use of differentiation in relation to effectively teaching gifted and talented learners. Experts in education and gifted learning confirmed differentiation in the classroom setting was essential for learners irrespective of age, grade level, or academic ability. Additionally, studies indicated personalized learning and the rigor and relevance framework were effective methods for learners and specifically gifted learners. However, research did not produce a unified methodology incorporating differentiation, personalized learning, and the rigor and relevance framework. Implications suggested a need to develop a concise framework incorporating these theories to implement student-centered curricula, effective in-class strategies, and a defined approach for students becoming active participants in their own learning.

CHAPTER III: METHODOLOGY

Chapter III describes the methodology of this qualitative study. This chapter also delineates the research design employed, population, sample, and procedures utilized for data collection and analysis. Through this study, the researcher aspired to expand the body of knowledge regarding how high school teachers perceive the impact of rigor, relevance, and personalized learning on the learning experiences and achievement of gifted and talented education (GATE) students. By collecting and analyzing data from one-on-one interviews with high school teachers and in-class observations, the study examined teacher perceptions about the impact of rigor, relevance, and personalized learning on GATE students who receive no other educational assistance. This chapter culminates with the limitations of the study and a summary.

Purpose Statement

The purpose of this phenomenological qualitative study was to describe how teachers at the high school level perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of gifted and talented (GATE) students.

Research Questions

The following overarching research question guided this study: *How do high school teachers perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of GATE students?* The research sub-questions were:

1. How do high school teachers perceive the impact of rigor on the learning experience and achievement of GATE students?

2. How do high school teachers perceive the impact of curriculum relevance on the learning experience and achievement of GATE students?

3. How do high school teachers perceive the impact of personalized learning on the learning experience and achievement of GATE students?

Research Design

This study utilized a qualitative phenomenological research design to describe how teachers at the high school level perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of GATE students. Data collected for this study included classroom observations and interviews.

McMillan and Schumacher (2010) noted the difference between qualitative and quantitative research was the focus in which the data were collected. For instance, qualitative research design methods concentrate on natural phenomena and data collected using instruments such as interviews and observations with results in narrative form. In contrast, quantitative research focuses on "objectivity in measuring and describing phenomena" and outcomes relayed in numbers and statistics (McMillan & Schumacher, 2010, p. 22). For this study, a qualitative method was used to investigate perceptions and occurrences without preconceived expectations of data outcomes.

The phenomenological approach focuses on garnering data that describe the first-hand, lived experiences of participants engaged in a study (Patton, 2015). For this study, data were generated from semi-structured interviews with teachers to understand the day-to-day experiences of the gifted learners and the impact personalized learning and appropriate rigor had on their learning and achievement. This data assisted the researcher in understanding the teacher perspective, thoughts, and experiences related to the

implementation of personalized curriculum in their courses. The results of this study added to the body of knowledge regarding personalization and appropriate levels of rigor/relevance for GATE high school learners.

Population

McMillan and Schumacher (2010) described a population as a group of components or people who share similar criteria and can represent a broad, overall populace. The population of this study comprised of high school teachers who taught gifted learners with an emphasis on personalized learning within California. According to the National Association for Gifted Children (2017), there are 3-5 million gifted learners in the United States, approximately 6% of the student population, and 100,000 teachers of gifted learners.

Target Population

In 2013, 528,554 students were identified as gifted learners in the state of California (Davidson Institute, n.d.). The target population consisted of public high school teachers of gifted learners in grades 9-12, which represented approximately 13,400 such teachers in California (Davidson Institute, n.d.).

Sample

The teacher participants in this study were chosen using both purposeful and emergent sampling procedures. With the purposeful sampling method, the researcher selects participants who understand the factors or share common characteristics pertaining to the study's topic (McMillan & Schumacher, 2010; Patton, 2015). This sampling method was employed to ensure participants met the following criteria: (1) taught at the public high school level, (2) taught gifted learners for at least five years, (3)

used personalized learning strategies in their courses, and (4) were recognized as experts in GATE learning by their principals or colleagues.

In tandem with purposeful sampling, the emergent sample procedure was also employed to add participants during the study. Emergent sampling allows a researcher to obtain recommendations from participants regarding colleagues who fit the sampling criteria as potential study participants (Patton, 2015). Both these sampling methods served to provide a level of depth in understanding participant perceptions about the impact personalized learning and rigor had on the learning and achievement of their gifted students.

Sample Selection Process

In phenomenological research, the purpose of collecting data is to understand the relevance, processes, and day-to-day lived experiences of the people studied (Patton, 2015). Furthermore, qualitative inquiry relies on in-depth knowledge garnered from participants that results in the researcher understanding the purpose and usefulness, while also maintaining the credibility of the study within a structured timeframe instead of concentrating on the amount of data retrieved (Patton, 2015). The fundamental purpose of the research study was to determine the perceived the impact of rigor, relevance, and personalized learning activities on the learning experiences and academic achievement of GATE students. Hence, a small sample of 15 teacher participants was used to conduct meaningful, one-on-one interviews and observe to gain insight into the participants' lived experiences as educators.

Acknowledging the need for reliability and validity for the research, the researcher chose participants who met the pre-determined criteria. Additionally, all

teacher participants served in ABC Unified School District, with several already known

to the researcher and at least two participants were recommended by the principal at each

school site in accordance with the pre-determined criteria. Due to the use of this sample

selection approach, the researcher realized the potential for personal bias. Therefore, the

instruments and strict protocols adhered to by the researcher were developed to mitigate

this possibility and maintain the study's reliability and validity. Furthermore, Table 7

shows the protocols, purpose, and methods used to choose the sample participants for the

study.

Table 7

Process for Selecting Participants

Purpose	Methods
To ask current and credentialed high school teachers with GATE students about personalized learning curriculum/activities in the classroom	Share the study's purpose with the high school principals and ask for recommendations regarding teachers who meet the study criteria. Additionally, the researcher acquired permission to ask the teachers to participate.
To secure teacher participants for the study	The researcher called and emailed a request to meet to talk about the study. During the meetings, the researcher asked if the teachers would like to participate in the study.
To invite participants to be a part the study	The researcher sent an email to the teachers requesting participation in the study. This email included the purpose, selection criteria, and processes for the study (Appendix B).
To establish the sample for the study	The researcher invited all teachers who agreed to participate; the first 15 to schedule interviews were selected for the study.
To be compliant with study requirements	The researcher provided, and collected the necessary, an informed consent form (Appendix C), audio release form (Appendix D), and Participant Bill of Rights (Appendix E).
To begin the study	The researcher scheduled an initial interview and observation time with each participant.
To conduct the study	The researcher conducted the interviews and observations

Note. Adapted from Ruddel (2017).

Instrumentation

The gathering of qualitative data is a personal endeavor that requires the researcher to develop a close relationship with participants to understand their perspectives, feelings, and experiences (Patton, 2015). As the instrument for this phenomenological study, the researcher conducted both classroom observations and one-on-one teacher interviews related to the impact of rigor, relevance, and personalized learning on the learning experience and achievement of GATE students. Additionally, the researcher employed semi-structured interviews with participants to understand the classroom experiences of gifted learners and the impact personalized learning and appropriate rigor had on their learning and achievement. These data collection methods supported the researcher's comprehension of participant experiences and perspectives in relationship to rigor, relevance, and personalized learning in the classrooms.

Reliability

In qualitative research, reliability of a study refers to the consistency of practices and procedures employed by the researcher (Noble & Smith, 2015; Patton, 2015). For this study, the researcher was actively engaged in two aspects of fieldwork, one-on-one interviews and classroom observations. The reliability of a study is reflected by the standardized methods utilized by the researcher (Noble & Smith, 2015). For this study, the researcher developed strategies to safeguard the trustworthiness of the data. These safety measures included structured and purposeful efforts by the researcher to address personal and professional bias, establish clear and precise processes that convey the researcher's decision-making process to support replication of the study, maintain neutrality, and determine how the data can be applied.

The researcher was actively engaged in the fieldwork, one-on-one interviews, and classroom observations. The researcher conducted all one-on-one interviews and classroom observations for consistency in practice and protocols. Moreover, the researcher applied Noble and Smith's (2015) criteria to support the reliability of this qualitative study, specifically, truth value, consistency, neutrality, and applicability. Additionally, the researcher was mindful of using strategies to meet the study's intended purpose. Table 8 shows the strategies used by the researcher to support and uphold the reliability of the study during the data collection process.

Table 8

Fieldwork Strategies Utilized to Maintain Reliability of Study

Reliability Criteria	Intended Purpose	Strategy Employed (1)	Strategy Employed (2-3)
Truth Value	Help researcher avoid personal and professional bias	Documentation of processes and decisions	Audio-recorded interviews transcribed verbatim
Consistency	Create a detailed account of methods used and findings to support the dependability of the study	Discuss data methods and findings with colleagues	
Neutrality	Honestly document and record data findings	Maintain documentation for each step of the study's progression	
Applicability	Ascertain how study and results can be applied to relevant programs, organizations, situations	Pilot testing	Reflexivity journal; NVivo software analysis tool

Note. Adapted from Noble and Smith (2015).

One-on-One Interviews. To establish and maintain the reliability of the study, the researcher conducted all one-on-one interviews. To fortify the reliability of the study, three methods were employed during the organization and administration of the interviews. A pilot test of the interview questions, reflexivity, and qualitative analysis software (NVivo) were used to increase the reliability of the study.

Pilot test. The process for developing and assessing the interview questions began with the researcher creating semi-structured interview questions (Appendix F). These focused, open-ended questions allowed for interviewees to provide individual, original responses. Pilot tests are used to check for "bias in the procedures, the interviewer, and the questions" (McMillan & Schumacher, 2010, p. 206). The pilot test for this study included three educators who provided input and feedback after the interviewer completed three mock interviews; each simulated interview mirrored the location and protocols to be used in the actual data collection. Changes were made to the questions based on the input and feedback of the participants in the pilot test.

Reflexivity. Reflexivity is how a researcher is analytical about knowledge received, how it applies to the study, and the effect the researcher may have on the study (Lincoln & Guba, 1985; McMillan & Schumacher, 2010). It is with this understanding the researcher utilized a reflexive journal throughout the research process. This journal included the thoughts, reflections, procedures, and reasons for decisions pertinent to the study. Additionally, journal entries depicted a meticulous step-by-step account of the processes and procedures used in the study and the reasons for these actions. The reflexivity journal and reflections were another method used to mitigate bias.

Qualitative analysis software. The researcher chose to utilize NVivo as the analysis software to support the accuracy of calculations, data coding, and organization of data. NVivo software expedited the organizing, sorting, and analyzing processes. NVivo software aided the researcher in discovering data patterns, interpreting findings, and applying data within the analytical framework model.

Observations. For this study, the researcher acted as a non-participant observer who witnessed, listened, and systematically documented all activities in the classroom. The purpose for the observations was for the researcher to develop a first-hand understanding of the participants' environment and students. The researcher observed the participants in the study to develop a true understanding of the varied experiences that shaped their perspectives about high school students and the learning effects rigor, relevance, and personalized learning. The observations were naturalistic in that they were conducted in each participants' educational institution, which provided participants and students an environment where they were comfortable and safe.

Formal observations were conducted twice with each participant at the same location, time, and within a two-month period. The observations resulted in accruing data by using a researcher-developed observation protocol (Appendix G), which reflected the questions asked during the one-on-one interviews to maintain the focus of the study. The reliability of the observation tool was consistently used throughout the study without change or manipulation to yield more consistent results. The data gathered from the observations were collated using NVivo software and analyzed to determine the study's findings.

Validity

The validity of qualitative research necessitates the findings of a study truthfully represent the results of the data collected (McMillan & Schumacher, 2010; Noble & Smith, 2015). Qualitative research evolves, and findings may be affected by researcher perspectives regarding reality (Merriam, 1995). To maintain the study's legitimacy, strategies were employed to address the internal and external validity of the study:

peer/colleague examinations, recorded and transcribed interviews, participant checks, and practice observations. Additionally, the data were triangulated across sources and data collection methods to improve validity of the findings.

Prior to conducting interviews with study participants, a peer/colleague examination was performed. Three experts in the field of education, each having served as an educator for more than five years, reviewed the interview questions and provided feedback to ensure the interview questions reflected the purpose of the study. Through the colleague examination process, the researcher received valuable feedback for revisions that increased understanding and avoided unintended bias. This strategy strengthened the study's internal validity.

Moreover, the formal classroom observations were conducted with the intent to maintain the validity of the study by providing rational explanations regarding the similar experiences of the study's participants as reflected in the data collected on the classroom observation instrument (Appendix G). For this reason, preceding the formal observations the researcher completed two practice observations with a colleague to monitor the observation process. Through this process, the feedback of the colleague helped the researcher adjust the observation tool to further ensure the study's validity. By using this approach, the study's validity was reinforced.

As a secondary precaution to foster validity of the study, each interview was digitally recorded using two devices, the researcher's cellular telephone and a handheld recording device. Every interview was transcribed and participants were asked to conduct checks by reading the transcription to verify its accuracy; no participants requested changes to the transcript. Additionally, after each participant's confirmation of

the exactness of the interview's transcription, the data were examined through the colleague examination process to verify its alignment with the purpose of the study. This process was implemented to further substantiate the study's internal validity.

As a tertiary provision to uphold the validity of the study, data triangulation was implemented. The triangulation of data across multiple sources and methods is recommended for qualitative studies to address the accuracy, potential subjectivity, and rigorous techniques related to the inception and implementation of the study (McMillan & Schumacher, 2010; Merriam, 1995; Patton, 2015). Data triangulation across interviews and observations was used to support the validity of the study.

Data Collection

Qualitative research relies on three "kinds of data: (1) in-depth, open-ended interviews; (2) direct observations; and (3) written communications" (Patton, 2015, p. 14). The purpose of this qualitative, phenomenological study was to understand and provide detailed descriptions of the perceptions of high school teachers regarding the impact rigor, relevance, and personalized learning had on the learning experience and achievement of high school GATE students. With this purpose in mind, the data collected were from one-on-one interviews, observations, and review of artifacts.

No data were collected until Brandman University's Institutional Review Board (BUIRB) approved the study to ensure it complied with ethical considerations. To begin the data collection process, the researcher met with ABC Unified School District's Director of Secondary Schools to acquire permission to conduct the study, which was granted. In line with the use of both purposeful and emergent sampling techniques, the researcher met with the principal from all four high schools to obtain approval to conduct

the study at their school site, which was given, and ask their opinion regarding teachers who met the study requirements.

The data collection process was initiated when the researcher e-mailed a formal invitation to the principal-recommended teachers, which included the purpose of the study, data collections protocols, and the dedicated time needed from potential participants of the study (Appendix B). Once each participant gave consent to be a part of the study, the researcher provided them a copy of Brandman University's *Research Participant's Bill of Rights* (Appendix E), the informed consent form (Appendix C), an audio release form (Appendix D), an assurance of confidentiality, the offer to review their interview transcriptions, a copy of the interview protocol (Appendix F), and the researcher's contact information. The researcher collected the necessary completed forms and kept them in a locked, protected safe.

Data collection began by the researcher conducting one-on-one interviews with each participant. The semi-structured interviews took place in a participant-determined location within a period of two months, September-October 2018. All interviews were recorded on two electronic devices and were transcribed, verbatim, by Rev Transcription Services. The interview transcriptions were then e-mailed to each participant for their review to confirm accuracy and offer corrections as needed; no changes were requested. Following the approved transcription of each interview participant, the researcher entered the information into NVivo qualitative analysis software to facilitate the coding process and calculate frequencies of predominant themes related to the overarching research questions. As part of the process, the researcher read each transcript to familiarize herself with the content and begin identifying potential codes.

Observations were another data collection method utilized for this study. To develop a deeper level of understanding regarding each study participant's perspective, two first-hand field observations were conducted in the classroom of each participant. Observations dates and times were mutually agreed upon with the teacher, and observations were scheduled at least two weeks in advance and within a two-month timeframe. The researcher utilized an observation protocol (Appendix G) to record data. Observation data were entered into NVivo for coding in relation to the research questions.

The researcher also gathered artifacts in accordance with the informed consent form (Appendix C). All information from the artifacts collected were entered into NVivo and coded similarly to the interviews and observations. This combination of interviews, observations, and artifacts allowed for triangulation, a process of "cross-validation among data sources, data collection strategies, time periods and theoretical schemes" (McMillan & Schumacher, 2010, p. 379).

Data Analysis

Qualitative inductive data analysis relies on "the identification, examination, and interpretation of patterns and themes in textual data and determines how these patterns and themes help answer the research questions at hand" (Pell Institute for the Study of Opportunity in Higher Education, 2018, para. 1). In qualitative analysis, this is a methodical process of coding, categorizing, and interpreting data to develop an understanding of the phenomenon under investigation (McMillan & Schumacher, 2010). The purpose of this qualitative study was to describe how teachers at the high school level perceive the impact of rigor, relevance, and personalized learning on the learning

experience and achievement of GATE students. In this study, the data accumulated were analyzed to develop a meaningful understanding of the participants' perspectives related to the research questions.

Data Coding

Once data were collected and transcribed, the researcher coded the information based on the study's research questions and conceptual framework of the 2010 Pre-K-Grade 12 Gifted Programming Standards. The researcher reviewed the data and began the process of identifying and subdividing data commonalities. Each identified data subdivision was then assigned a code. To maintain reliability of the study, the researcher used NVivo to code interview transcription and observation data. Moreover, a colleague reviewed the data coding to ensure accuracy and check for unintended researcher bias.

Categorizing and Identifying Themes

The coding process identified common codes that were then categorized as themes. The goal of qualitative analysis is to recognize data patterns and connect them to ascertain a relationship (McMillan & Schumacher, 2010; Patton, 2015). Once patterns were distinguished, data were triangulated through the comparison of codes and themes across transcription and observation data to confirm data relationships and findings. Also, the researcher implemented the reflexivity method of self-reflection and evaluation to mitigate inadvertent bias that could influence data.

Depiction of Findings

Qualitative research is a rigorous, organized, and methodical process of data collection and analysis derived from interviews, observations, and the collection of artifacts (McMillan & Schumacher, 2010). For this phenomenological study, to develop

a valid understanding of natural occurrences related to the research questions, the researcher employed the used of thick descriptions. Lincoln and Guba (1985) noted thick descriptions as another method of advancing external validity in that the researcher describes the data with details that show cultural and social relationships. The researcher also included charts, graphs, and illustrations throughout the study to support data clarification and understanding.

Limitations

Qualitative research limitations are characterized by the design or methodology that affect the interpretation research findings (Price & Murnan, 2004). The research design for this study reflected a small sample size that utilized the emergent sample procedure in which participants recommended other potential participants who met the study criteria to obtain a sample of 15. The sample was not randomly selected, which makes the findings ungeneralizable to a wider population, limiting the connection between the study and other educational institutions.

Other study limitations included the use of semi-structured interviews and self-reported data. Although questions were pre-determined and asked sequentially for each participant, there were limiting factors such as developing a rapport between the interviewer and interviewee, conducting the study with participants from one school district, the potential variance of participants' working definition of GATE, philosophical bias, and human factors with the potential to influence the interview outcomes. Another limiting factor includes the use of self-reported data. For this study, the researcher took at face-value the words expressed in interviews and during observations were honest and truthful without independent authentication. Although methods were employed to

diminish the impact of these limitations on the study, they are important to disclose to reinforce the internal and external validity of the study presented.

Summary

Chapter III provided a synopsis of the research study methodology. The research's purpose and research questions were presented as the foundation of the study. Additionally, the research design, population, sample, data collection, and analysis processes were described in detail in this chapter. Further, the chapter presented the study's limitations. Chapter IV presents the findings derived from the data analysis. Chapter V provides conclusions, implications for action, recommendations for further research, and concluding remarks from the researcher.

CHAPTER IV: RESEARCH, DATA COLLECTION, AND FINDINGS

A review of the literature pertaining to the academic needs of gifted learners indicated varied strategies inclusive of appropriate levels of rigor, relevance, and personalization are essential for teachers to utilize in their instruction to facilitate the highest levels of student learning (Bray & McClaskey, 2015, Dai & Chen, 2014, Dagget, 2008). Hence, this study focused on describing how expert teachers at the high school level perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of gifted and talented (GATE) students. To develop a deep level of understanding of the topic, the researcher interviewed 15 expert teachers at the high school level, observed each participant twice within a two-month period, and collected relevant documents from participants. This chapter serves to review the purpose of this study, research questions, methodology, population, and sample, and concludes with a presentation of the collected data.

Purpose

The purpose of this phenomenological qualitative study was to describe how expert teachers at the high school level perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of GATE students.

Research Questions

The following overarching research question guided this study: *How do high school teachers perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of GATE students?* The research sub-questions were:

4. How do high school teachers perceive the impact of rigor on the learning experience and achievement of GATE students?

5. How do high school teachers perceive the impact of curriculum relevance on the learning experience and achievement of GATE students?

6. How do high school teachers perceive the impact of personalized learning on the learning experience and achievement of GATE students?

Methodology

A phenomenological approach was employed for this study to develop a first-hand understanding regarding how expert teachers at the high school level perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of GATE students. The researcher engaged an in-depth, semi-structured, one-on-one interview and two field observations with 15 expert teachers from Los Angeles County. The interviews and observations served to support the researcher in exploring the lived experiences of study participants to garner a comprehensive understanding of their experiences. Moreover, data were triangulated by using related artifacts collected during the interviews and observations.

Interviews were conducted in October and November 2018. All interview dates, locations, and times were determined by the participants. Each participant was provided with the questions prior to the interview and signed a statement of consent and confidentiality. Additionally, every interview was recorded to ensure verbatim accounts and transcribed by the Rev IOS transcription application. Once interviews were transcribed, transcriptions were provided to each participant to review and edit as deemed necessary for accuracy of the content; no changes were requested.

To develop a broad understanding of participant perspectives, two observations were conducted in each study participant's classroom. Observation dates were scheduled in mutual agreement with each participant and occurred within a two-month timeframe. To avoid potential researcher bias, a standardized observation protocol was used, the researcher worked with a university-approved statistician to ensure coding reliability, and an educational expert accompanied the researcher for each observation.

To further strengthen the reliability and validity of the study, artifacts were gathered within a two-month timeframe from the study participants. Collected artifacts were coded in the same manner as the interviews and observations. With the inclusion of data from interviews, observations, and related artifacts, the data were triangulated to delineate emergent themes and patterns within the information. For this study, the triangulation of data provided the researcher with a comprehensive understanding related to the perceptions of expert teachers at the high school level regarding the impact of rigor, relevance, and personalized learning on the learning experience and achievement of GATE students in their classrooms.

Population and Sample

The study population comprised of the approximately 100,000 public school teachers who taught gifted learners with an emphasis on personalized learning within California. This was narrowed to a target population of 13,400 public high school teachers. The study sample consisted of 15 expert high school teachers of gifted learners from Los Angeles County, California. Study participants met the following criteria: (1) taught at the public high school level, (2) taught gifted learners for at least five years, (3)

used personalized learning strategies in their courses, and (4) were recognized as experts in GATE learning by their principals or colleagues.

The researcher utilized both purposeful and emergent sampling to conduct the study. The purposeful sampling allowed the researcher to select participants who were identified as experts in personalized learning. The researcher used emergent sampling to increase the number of participants by asking participants to recommend their colleagues, who fit the sampling criteria. These sampling methods helped provide a level of depth in understanding participant perceptions about the impact personalized learning, rigor, and relevance had on the learning and achievement of GATE students.

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Presentation of Data

</div>

To answer the core research question, the researcher coded emergent themes in the data from the interviews, observations, and artifacts. The data were organized using corresponding themes from all three data sources to accurately respond to the sub-questions posed in the study. Moreover, the data from the 15 participants were collated in tables to indicate the frequency of identified themes in alignment with the study's purpose. The data are presented by each research sub-question, followed by a chapter summary.

Research Sub-Question 1

The first sub-question was, "*How do expert high school teachers perceive the impact of rigor on the learning experience and achievement of GATE students*?" Among the 15 participants, four themes emerged highlighting the rigorous instructional concepts believed to be integral for the learning experience and achievement of GATE high school student. Table 9 elucidates the identified themes within the rigor, relevance, and

personalized learning frameworks from the interviews, observations, and artifacts data.

The researcher included the most frequently documented themes, with a frequency

minimum of 13 from the 15 participants, and a minimum frequency of one from the

artifacts acquired.

Table 9

Frequency of Themes Within Research Sub-Question 1

Themes	Interviews	Observations	Artifacts
Students need to engage in real-world learning experiences	14	23	3
Students need to collaborate	15	23	2
Students need academic choice	10	14	1
Students need curriculum of personal interest	12	13	4

Note. Interview n = 15, observation n = 30, artifact n = 7.

Students need to engage in real-world learning experiences. Student

engagement in real-world learning experiences was the most frequently identified

concept from participants regarding the educational needs of GATE students. The need

for GATE learners to engage in real-world learning activities obtained a frequency count

of 49 and was mentioned by 14 of 15 participants during interviews, observed 23 times,

identified in 3 of the 7 artifacts. Giving GATE learners real-world experiences as a part

of the curriculum helps "facilitate students connecting the dots and how the concept they

are learning is related to past experiences and the real-world" (Bray, 2011). Study

participants also expressed the significance of providing real-world experiences,

embedded in the curriculum, for GATE learners.

When engaging students in real-world experiences, the Participant G stated the

star performers in the class were those who built projects, noting, "They're actually

building things with their hands. I've had a couple of students put together drones. I've

had students make potato canons. I've had students make a Faraday motor, various

things along those lines." Participant H described a shift in instructional learning to

provide more real-world experiences, sharing,

> In math, we don't do tons of projects. We do some, but it's more about
>
> just everyday encountering math and being able to deal with it. Like
>
> straight lecture doesn't happen here anymore. Some of the instructional
>
> strategies I use are activity-based learning. Obviously, it's authentic
>
> learning because they're doing it by themselves and they're learning by
>
> doing.

Participant K revealed a different perspective regarding real-world experiences,

which instead focused on applying knowledge to relevant circumstances. Participant K

asserted, "In my 12th grade class we are preparing for AP English Literature, and we're

working on analysis, critical theory, but also real-world application." Whether the

methods employed afforded students real-world experiences emphasizing hands-on

learning activities or focused on application of concepts taught, participants concurred

experiencing curriculum through a real-world perspective is an essential component in

educating GATE learners.

Students need to collaborate. The need for GATE learners to collaborate with

their peers was the second instructional strategy most frequently recognized by

participants as a vital approach to ensure appropriate rigor in curriculum to support

learning and achievement. Collaboration was mentioned by all 15 participants and

referenced 43 times during interviews and observations, and found in two of seven

artifacts. Willard Daggett (2008) noted small learning communities were indispensable

for high-achieving students. The awareness that student collaboration is pivotal to providing rigorous curriculum to benefit GATE learners was reiterated by study participants. For example, Participant E discussed teaching collaboration skills, sharing, "I also teach them how to consult with each other, you know like in professional presentations. Usually the peers or partners are consulting with each other." Participant F agreed about the importance of collaboration as an essential skill to be taught and fostered as a part of effective classroom practices. Participant F stated,

> Most of my projects have a certain aspect of dealing with collaboration. I find it very important for kids to transmit whatever they bring to the table to others. So, when we create groups, we do a group contract…and they create their own norms.

Likewise, Participant H conveyed,

> Collaborative learning. The students are working and relying on each other. They just can't come and ask me if they haven't spoken to their group. When I come to answer questions at the table, I'm talking to the group, not the individual.

Every study participant shared during their interview and/or demonstrated during their classroom observations their commitment to providing students with collaborative opportunities to support GATE students' learning and achievement.

Students' need academic choice. Ten of 15 participants specified that by personalizing curricula for GATE students in terms of providing them a choice in deciding the topics to cover and projects to undertake to demonstrate learning also aligned with providing appropriate levels of rigor. Of note, one of the seven artifacts

collected indicated student choice in the lesson plan. Barbara Bray (2018) emphasized

giving students choice helped them advocate for their passions and find their purpose in

life. This was highlighted by participants F, N, and O who affirmed student choice

provided levels of rigor central to the learning and achievement of gifted students.

Participant F recalled how student choice was implemented throughout the curriculum,

saying,

> They always get the option to bring in an outside element, right?
>
> Something outside of the four walls whether it be a sport, or it be a book,
>
> or a movie, or a friendship relationship, or whatever, or even cross
>
> curricular, whether it's math or if your get down is history, bring it.

Participant N described the use of student choice in a year-long project, sharing,

> The 20 Time Lesson, where they get to spend 20% of their time working
>
> on a project of their choice. They work on it individually, in a pair, or
>
> with a group of three or four. This 20 Time Project, there's two
>
> requirements. They have to create something, whether it's a community
>
> or an event or an Instagram account, or it could be a beach clave, it could
>
> be a physical item, it could be something virtual, it could be a fundraiser.
>
> The other is it has to benefit someone, somehow, in some way.
>
> Similarly, Participant O shared the consistent process used to provide students a

choice in classroom assignments and projects, describing,

> To choose their selections, I divided the kids into groups and they have to
>
> pick a theme. And then that theme is what we will do they're Reader's
>
> Theater project on. Each group of three or four students is going to come

up with a theme and some ideas of what could be read. Let's say the theme

is love, so you could choose a part from *Romeo and Juliet* and then you

could choose a poem about love, you could choose an article in *Time*

Magazine about statistics of divorce.

The value and significance of providing student choice to give them appropriate levels of curricular rigor and to support the learning and achievement of GATE students was evident in throughout the interviews and observations conducted for this study.

Students need curriculum of personal interest. The fourth most frequently identified strategy regarding perceptions on the impact of rigor on the learning experience and achievement of GATE students was the need for students to have personal interest in the curriculum. When students are provided appropriate levels of rigor and challenge related to their interests, they begin to develop their own ideas about the purpose of learning (Clarke, 2013). The concept of student interest was reflected by participants during interviews 10 of the interviews. During observations, student interests were detected 13 times as a foundational component in the curriculum. Furthermore, four of seven artifacts included aspects of personal interest. Participant E advocated for including personal interest in lessons and projects, stating,

I say pick the topic that you like and then from there I ask them to choose

context. Something that interests. They connect it to their experience.

So, see what in that country was going on in terms of that because there's

also a country included that they are researching about. I have them look

at how it is in this country. And I tell them their experience not

necessarily has to be the United States experience, or the California

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experience, but it could be their family experience, or their school

experience, or their own experience.

Participant M presented an opposing viewpoint,

They're smart, but they're not interested in almost any subject. They are

indifferent because they have no interest in writing a lot of essays. They

don't see a lot of connection. What interests them the most in my classes,

and that's the rigor kind of going out the door, are relationships, boys and

girls, and if you talk about marriages and families, and things of that

nature.

Although integrating students' personal interests into the curriculum of advanced

learners was shown as important, there were differences in perception in terms of

providing students the opportunity to incorporate their personal interests and the impact

this strategy had on the learning and achievement of GATE students.

Research Sub-Question 2

The second sub-question was: *How do expert high school teachers perceive the*

impact relevance has on the learning experience and achievement of GATE students? To

address this question, four themes were identified among the 15 participants showing the

impact relevance has on the learning and achievement of gifted students. Table 10

presents the themes associated with both the rigor and relevance framework and the

personalized learning framework. Table 10 delineates the most frequently recognized

themes, with a frequency minimum of seven from the interviews and observations, and a

frequency minimum of one from the artifacts.

Table 10

Frequency of Themes Within Research Sub-Question 2

Themes	Interviews	Observations	Artifacts
Students need to apply their knowledge to real-world circumstances	15	14	3
Students need to be motivated to ensure and maintain academic engagement	11	10	6
Students need curricula to connect with personal interests	9	13	2
Students need choices in their work to show what they know	7	11	1

Note. Interview n = 15, observation n = 30, artifact n = 7.

Students need to apply their knowledge to real-world circumstances. The most frequently acknowledged instructional concept, the need for students to apply their knowledge to real-world circumstances, was perceived by participants as having the most impact on the learning and achievement of GATE students. Application of knowledge was mentioned by all 15 study participants, seen 14 times during observations, and shown in 3 of 7 artifacts provided by the participants. The application of student knowledge, and connecting this intellectual asset to real-world experiences, are the qualities necessary for students to become global citizens, face global challenges, and prepare adequately for their college and career goals (Bray & McClaskey, 2015).

To ensure the curriculum allowed students to apply concepts and skills learned in class, Participant O stated,

I have lots of kids who have no intention of becoming actors, so I think in terms of what are they going to learn from this that will help them in their lives. And that could just be getting up in front of people and having confidence. Doing observations where they have to learn to think on their feet and they think, "We're just playing, we're having fun. We're playing

games." I said, "Wait a minute, this is something that's going to teach you, like you're in a business situation…and you have to come up with an idea for that client and they don't like your idea. And you have to think on your feet and say what if we change it to this? How about that? And learning how to think on your feet without falling apart is crucial so some of the things that we work.

Participant I concurred the curriculum must provide students the chance to apply their learning to real-world events, sharing,

As far as making the curriculum relevant and meaningful in this type of course, it's relevant and meaningful because they know that I am preparing them for the AP exam. I'm not trying to teach to the test, but if I cover all the material I need for my calculus class, I am teaching to the test and I tend to teach a little beyond what the test is. For them, that's the biggest source of relevance. I also try to tie into other subjects, physics most often.

Participant H confirmed the need for students to apply their learning to current situations, explaining,

I'm coming to the situation I've never seen before, but I need to be able to do it. I give them the example of an attorney. You go to law school, you look at all the different cases, but you get your first case, it's not going to be the exactly same as any of those. But I have to be able to say, "What can I take from what I know and apply it to the future?" And that's what I

think I am giving them. And it's this pattern of success that I'm building

their confidence that I think is definitely helping them.

Every participant in the study shared the belief that GATE students at the high

school level need to apply their knowledge to real-world circumstances to support their

learning and achievement.

Students need to be motivated to ensure and maintain academic engagement.

The need for GATE learners to be motivated and engaged in the curriculum was

referenced by 11 participants, seen during 11 observations, and reflected in 6 of 7

artifacts. Student motivation and engagement at the high school level were considered

core educational qualities for GATE students in connection with their learning and

achievement. Engaged students "make a psychological investment in learning. They try

hard to learn what school offers. They take pride not simply in earning the formal

indicators of success, but in understanding the material and incorporating or internalizing

in their lives" (Newmann, 1992, p. 2-3). Participant E stated the need to support her

students' motivation levels for them to maintain interest and engage in her class, saying,

I tell them the opportunities that we have, this gives you a chance to see,

"am I taking advantage of this opportunity?" Why it's important that you

take advantage of these opportunities, so that you can become the best that

you can be, be in a position of power, be in a position of political power,

and then you can bring change about, into your community. I said, "you

can imagine if you're just struggling every month to pay for your rent, but

what if you're a lawyer? What if you're a teacher? What if you are a

computer scientist? Now you're going have this possible income, and you

can come back and create tutoring programs and help back in your

community." That's how I make it for them.

Similarly, Participant K affirmed her role as a motivator in support of student

engagement and success, sharing,

That is kind of who we are as human beings. We are on fire for something

and what I have found is that I've had to keep feeding them not just

motivation but support. And it's almost like if you think about it in the

sense of an athletic team. You're going to have your wins and losses, and

those emotions are going to go up and down, and I think what the coach's

job is to just keep you motivated, because you already love the sport. But

sometimes you fall out of love with it, and so in these projects with high

achieving kids, I think when they get the autonomy to pick their own topic

just because they love it, they sometimes tend to not love it because it's

associated with a grade. And they are really working hard to make it

perfect… the most successful kids see me as a cheerleader.

Whereas participants E and K described extrinsic motivators to support student

engagement, Participant O illustrated her experience in supporting intrinsically motivated

students to help them maintain intellectual engagement, describing,

I had a student who was a phenomenal writer and he was not really

motivated. He was brilliant, and he was talking about graduating a

semester early because he was kind of bored here. And I said, "Wait a

minute, what if I have you write all the plays for our final production?

You can write, you know, a series of one act plays." He said, "Yeah, that

might be fun." He came back with the first play the next day. He wrote

seven plays for me. He actually submitted some of these plays to a play

writing competitions and had them performed. It was something of a

challenge for this one kid.

The participants in this study perceived both extrinsic and intrinsic motivation

strategies as essential factors for student engagement, and subsequently, the learning and

achievement of GATE learners.

Students need curricula to connect with personal interests. The need for

GATE students to be able to connect curriculum to their personal interests was the second

most frequently discussed instructional construct. This was references 24 times across

the interviews and observations, with two artifacts also exhibiting this characteristic.

Bray and McClaskey (2015) explained students engage more deeply with curricula that

supports their pursuit of an area of personal interest; in return, they want to learn more

and share their new-found knowledge with teachers and peers. This viewpoint was also

expressed by study participants who varied in their approaches to include student

personal interests in instruction, activities, and projects. For example, Participant A said,

We look at types of relevant things in their daily life, stuff that they know

about, stuff they are interested in. Every AP teacher told me the same

thing. They said, "If you start with psych, start with social psychology

because that is the most interesting. Kids are able to talk to their

neighbors and look at their classmates, their family members, their friends,

their communities in a different way and it really grabs the kids.

Participant B agreed having students relate to the curriculum in terms of their own

experiences and interests helped them to make connections with the content,

> I tell the kids, "maybe you don't want to be a doctor, maybe you don't
>
> want to be a nurse, but maybe you want to save your mom." If I can apply
>
> it to something that interests them, they're wanting to do it.

Participant H expressed the desire to have students make connections with the

curriculum, but explained the goal was establish the skillsets learned and how they can

relate to their personal lives, saying,

> Once you get into higher math, I can't always relate it to something that's
>
> relevant to you right this second. Like triangle congruence proofs. I can't
>
> make that something other than what it is. But I can relate the pattern that
>
> I'm teaching you to be able to see something and construct your viable
>
> argument to be able to say, "Yes, this is valid or not" or, "This is how I got
>
> to this point." And that's the part that's relevant.

Study participants considered students making connections with curricula through

their personal interests important and took varying approaches to do so. Participants

believed personal connection helped make the curriculum more relevant for students,

especially GATE students.

Students need choices in their work to show what they know. Eleven

participants described the need for student choice, especially to demonstrate their

learning. This theme was also found during 10 observations and evident in one artifact.

Teachers expressed the need for students to choose topics in an authentic effort to provide

students the forum through assignments, activities, and/or projects to demonstrate their

level of comprehension. Students taking responsibility for their learning need teachers who provide choices in learning by using a scaffolded approach and abdicating the role of direct instructor (Bray, 2018). To this point, Participant I asserted students self-select assignments and projects at their choice of difficulty level to demonstrate their comprehension of the topic, which provided students with academic choice. Participant I explained,

As far as the level for the students, I'm going to base it on my understanding of my students. I assign specific topics that match the students' level of ability appropriately. Some students will get easier lessons to present, some will get harder lessons. I also had them make models depicting some of the calculus concepts, and I give then a choice of what they can do and some of them are easier and some of them harder, and they are more or less self-selecting because I am not assigning [it].

Participant G stated student choice is the goal once learning the standardized content was met, commenting,

At a certain point, you need to stop trying to optimize for the standardized tests and you need to start just giving them the opportunity to go off in a direction of their choosing, and in general, it doesn't even matter. You have to help them, but once they have experienced really going deep and answering their own questions, coming up with more questions, iterating through that. Once they've experienced that once with something, they can do it in other places. And to me, that's how we take the ceiling off education.

All participants agreed providing GATE learners with the ability to choose what they want to develop a deeper level of learning about, and determine how they will express this learning to indicate comprehension of concepts, was necessary for their learning and achievement.

Research Sub-Question 3

The third sub-question was, "*How do expert high school teachers perceive the impact of personalized learning on the learning experience and achievement of GATE students*?" Personalized learning practices support learners to fully engage in content and help students express their understanding and proficiency in subject matter. This provides learners a "voice in how they prefer or need to acquire information, a choice in how they express what they know, and how they prefer to engage with the content" (Bray & McClaskey, 2015, p. 14-15). Five themes related to personalized learning emerged from the data. Table 11 exhibits the personalized, instructional practices expert high school teachers perceived as impactful to the learning and achievement of gifted students.

Table 11

Frequency of Themes Within Research Sub-Questions 3

Themes	Interviews	Observations	Artifacts
Students need to collaborate	15	30	3
Students need curricula related to current events that provide opportunities for students to apply their learning to the real world	11	13	4
Students need curricula inclusive of their personal interests	10	13	2
Students need appropriately challenging curricula	9	27	3
Students need a choice in what they learn	8	13	2

Note. Interview n = 15, observation n = 30, artifact n = 7

Students need to collaborate. The most consistently recognized personalized instructional method to support GATE students was the need for students to collaborate with others. This was described during all 15 interviews, found during all 30 observations, and noted in three artifacts. The National Association of Gifted Learners (2017) included the expectation that educators include ample opportunities for GATE learners to interact with their intellectual, artistic, and creative peers. This instructional approach was demonstrated by study participants who designed lessons that incorporated a variety of collaborative options in their class activities, assignments, and projects. Participant A spoke to the nature of social studies in terms of collaboration and student need for social interactions, saying,

> AP Psychology is a social science and my US History [course] is a social science. Every single day is a personalized learning activity. Every single day is something that is activating their need to talk to others, activating their desire to learn about the outside world, their family history, their life outside, and their civic duties.

Participant G pointed out the necessity for gifted learners to collaborate beyond their peers when there were obstructions preventing moving forward, explaining,

> You get to the point where you can't go any further with that subject. Then you have two choices, either you're out of inspiration and you want to do something else; that's fine, recognize that and go to something else. Or, if you're really into something, and you can't go further, somebody can help you go further. The idea is that, eventually, they're getting to the point where they can go and seek out true experts.

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Participant K spoke about students working collaboratively within their peer group to understand and succeed beyond their individual learning, noting,

> We sit in collaborative learning groupings. I group them through ability
>
> tracking of sorts, and that could not just mean academic tracking, it could
>
> also be social tracking, it could be through written tracking. I don't like
>
> the world tracking per se, because that almost implies being in a box and
>
> also being labeled, so it's more based on teacher observation. In seeing
>
> where the strengths and the weakness of students are, not just
>
> academically but socially, I see they've developed academic relationships.

Students need curricula related to current events that provide opportunities to apply their learning to the real world. The need for GATE students to be afforded opportunities to apply their learning to real-world situations was mentioned by 11 participants during interviews, observed in practice 13 times, and interwoven into four lesson artifacts. The application of knowledge is an actionable trait in that students think critically to solve new problems, innovate solutions to unpredictable occurrences, and complete tasks within a dedicated timeframe (Daggett, 2008). This application of knowledge is perceived by participants as imperative to the learning and achievement of gifted high school students. Participant D explained the knowledge acquired in class must prove important to students by providing them with the skills necessary to solve dynamic problems in a multitude of situations and conditions. Participant D said,

> It's important that students learn the formulas and the topics we cover, and
>
> very high achieving students really grip onto that and use that, but 10
>
> years down the line, they don't need to know very many of those specifics.

With this idea of covering rigor and relevance, I want to make sure that

means that they do what sticks for them. It's going through using an

unfamiliar formula, but doing it anyway because that might show up on

their taxes one day or something like that. Emphasizing that skill, the

reproducibility of some of the things they're doing, can really give these

students who want to go off with it and find other opportunities to

practice.

Similarly, Participant H echoed the perception of Participant D, specifically in

ensuring students can think critically and apply their skills to work through challenging

problems. Participant H described,

[Students] have a deeper understanding, with the ability to apply their

knowledge to new situations. I tell them it's kind of like your muscles;

you have to work out your muscles and you have to go through that

process with your math skills, too.

Participant J provided project assignments that advocated for students to apply the

knowledge earned to experiences beyond the classroom, with a focus on the surrounding

community. Participant J shared,

It is a civic project. By having our students go out and be more engaged,

and by engagement we're talking about they could organize and attend a

non-profit organization. Whatever clubs are out there, they could

participate in their historic society. It's no longer just enough to

participate their part in the civic engagement project, their project is to do

something more. Something more would be to create a website or create

some tweets or put together a blog and post it on their local newspaper.

This is what you learned, now go do it.

In this study, strategies for student application of concepts learned were unique to each participant's content area, with a focus on relating education to real experiences beyond the classroom setting.

Students need curricula inclusive of their personal interests. The requisite to include curriculum that reflects the personal interests of GATE learners was acknowledged by 10 participants during interviews. Additionally, this was seen during 13 observations and two artifacts. Moreover, assignments and projects that allowed gifted learners to explore their personal hobbies, research questions, and favorite subject, or inquire and probe beyond the standard expectation, encouraged students to attain a broad-range of knowledge through actively participating in their learning (Bray & McClaskey, 2015). The inclusion of student personal interests had the third highest theme ranking regarding personalizing curricula, which signified the perceived importance participants had related to the learning and achievement of high school GATE students. For example, Participant M reflected on the importance of allowing gifted students the opportunity to build relationships through expressing themselves and sharing their own personal interests in their assigned work, stating,

It's difficult to always address all of those kinds of personal leading,

learning needs. In fact, I noticed that [it] had to do with student

[interests], not just their needs, but their interests, which again can really

boil down to relationships.

Participant N verbalized that by having students incorporate their interests into assignments and projects, the work became personally relevant and drove them to make connections and relationships with their learning. Participant N shared,

> The big, main project I have that would reflect personal relevance and also
> connects to the classroom is the 20 Time thing. I feel the most important
> things we can do for our students is make connections that show
> relevance, and additionally, give them skills to know how to research
> properly and skills also like resilience and creativity. Not just creative
> thinking, but critical thinking. It teaches them many things like being
> resourceful, learning how to pivot, and what happens if you come against
> a barrier or a challenge, as well as the whole benefiting others, it helps
> develop community.

Students need appropriately challenging curricula. Nine of 15 participants shared gifted learners need challenging curricula that provides an opportunity for them to go beyond the set academic standards. Producing appropriately challenging curricula for GATE high school learners was referenced 36 times across interviews and observations, and was reflected in three artifacts. Willard Daggett (2008) introduced the idea an appropriately rigorous instructional plan relies on student perceptions of curricular relevance, and without rigor and relevance, student mastery and retention is impeded. Participants I and J held similar views of curricular rigor, noting students need exposure to challenging curriculum that provides critical thinking skills. Further, Participant K suggested GATE learners desire personal challenge, explaining,

What I find is that if you don't offer something for everyone, and I

know… it's kind of hard to impact everyone, but when you kind of

differentiate instruction, that allows that type of learner to tap into that.

And I think at his age, even at my age, we have short attention spans, and I

think the high achiever is really looking to be challenged and stimulated.

Participants noted offering challenging curricula that provides gifted learners with

appropriate levels of rigor by offering differentiated instruction to meet the levels of all

learners, ensuring students think critically to apply their learning to solve problems, and

encouraging academic growth through intellectually and personally stimulating

challenges was necessary to support the learning and achievement of gifted learners.

Students need a choice in what they learn. Eight of 15 participants shared

giving gifted high school students the authority to implement personal choice in their

assignments, and the capacity to design assessments that show their comprehension level

is important to their learning and achievement. The need for student choice was reflected

21 times during interviews and observations, and in two artifacts. Bray and McClaskey

(2015) emphasized the connection between student voice and choice, writing "In a

personalized learning environment, learners actively participant in their learning. They

have a voice in what they are learning based on how they learn best. Learners have a

choice in how they demonstrate what they know" (p. 14). Participant F affirmed the need

for student choice to be a part of assignments and projects, and choice to select their own

learning groups, sharing,

Normally I like to give them voice and choice. I like to make sure they

create strong group norms. Let's just say that by the time we get to the

second, third, or fourth project, their norms are so much more specific as

to what they want, what their learning outcomes are going to be.

Participant G asserted gifted students must learn to become independent thinkers

and be given choices in relationship to what they want to learn. Participant G maintained

that a gradual release process, focused on moving from teacher-centered to student-led

learning, provided gifted learners with the choices necessary to reach their full academic

potential. Participant G explained,

What I believe with regards to gifted education, is that there needs to be

independence in some aspect of the class. Not necessarily on every task

because with some tasks, you're giving them a set of problems and they

have to solve them. You could assign harder problems, but it's still just

doing bookwork. But with all my classes, I like to do things where I am

having them work independently on a project of their own choice.

Depending on the class, I put different scaffolding and rules in place. I

spend the year gradually giving them more control over what they do.

Participant K agreed student choice was a necessary component for educating

gifted high school learners. Participant K focused on choices within the curriculum,

allowing students to decide their own topics within an assigned lesson, saying,

[Students] being able to choose their project, I sometimes call it a passion

project, because they get to decide what it is. They can very well add a

partner. They can add a partner [whose project] may be a little bit

different, but try to bridge the gap. They really get to not just own the

rigor of it and the expectation of it, the project itself.

Eight study participants identified the need for students to implement personal choice in their assignments. Different methods were applied to curriculum and class activities in accordance with each expert teacher's perceptions regarding the learning and achievement needs of their gifted students.

Additional Findings

Additional findings from the study were accumulated from 30 50-minute classroom observations conducted by the researcher. The observation protocol connected Daggett's (2008) rigor and relevance framework and Bray and McClaskey's (2015) personalized learning framework in relation to the highest and lowest levels of conceptual structures. The observations tallied the number of occurrences of each level of the rigor and relevance framework (acquisition, application, assimilation, adaptation) by each level of the personalized learning framework (teacher-centered, student-centered, student-led).

Teachers were observed leading activities at the lowest levels of rigor, relevance, and personalized learning nearly twice as much as the highest levels. The highest frequency count, 64, showed students were most often taught at the primary level of the rigor and relevance framework (acquisition) and the lowest level of the personalized learning framework (teacher-centered). In contrast, the frequency count for the greatest level of personalization (student-led) and the highest level of rigor and relevance (adaptation) was 35 (Table 12).

Looking across the levels of rigor and relevance, the highest total frequency count of 140 indicated gifted learners were most often taught at Level 2 (application). In contrast, activities at Level 4 (adaptation) were observed the least often, with a total frequency count of 83. Looking across the columns, slightly more activities were

student-centered (165) compared to teacher-centered (155), but the fewest activities were student-led (119). The research showed the need to appropriately challenge learners by organizing curriculum to include relevance and gradual levels of continuous rigor was essential to stimulate student-led learning practices that guide them to be active participants in their intellectual growth (Bray & McClusky, 2015; Daggett, 2008). Although the study participants indicated rigor, relevance, and personalization were exercised in the learning and achievement of their gifted high school students during the interviews, the observations showed room for improvement in these areas.

Table 12

Application of Rigor, Relevance, and Personalized Learning Frameworks

Levels of Rigor & Relevance	Teacher-Centered	Student-Centered	Student-Led	Total
Level 1 - Acquisition	64	39	23	126
Level 2 - Application	54	52	34	140
Level 3 - Assimilation	21	42	27	90
Level 4 - Adaptation	16	32	35	83
Total	155	165	119	439

Summary

Chapter IV presented the data and findings of this qualitative study. The study sought to develop a first-hand understanding of the perceptions of expert high school teachers regarding the impact rigor, relevance, and personalized learning have on the learning experiences and achievement of GATE students. The findings from this study showed how 15 expert high school teachers perceived the impact rigor, relevance, and personalized learning had on the learning experiences and achievement of GATE students in their classes. Chapter V presents conclusions based on the findings and offers implications for future action and recommendations for future research.

CHAPTER V: FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Chapter V provides a reiteration of the purpose of this study, the research

questions, the methodology, and the population and sample. The chapter then presents a

summary of the major findings and includes unexpected findings discovered during the

study. The researcher then provides conclusions based on these research findings.

Finally, the researcher offers implications for action and recommendations for further

research based on these findings.

Purpose

The purpose of this phenomenological qualitative study was to describe how

expert teachers at the high school level perceive the impact of rigor, relevance, and

personalized learning on the learning experience and achievement of gifted and talented

education (GATE) students.

Research Questions

The following overarching research question guided this study: *How do high*

school teachers perceive the impact of rigor, relevance, and personalized learning on the

learning experience and achievement of GATE students? The research sub-questions

were:

1. How do high school teachers perceive the impact of rigor on the learning
    experience and achievement of GATE students?

2. How do high school teachers perceive the impact of curriculum relevance on
    the learning experience and achievement of GATE students?

3. How do high school teachers perceive the impact of personalized learning on
    the learning experience and achievement of GATE students?

Research Methods

A qualitative methodology was employed to develop a first-hand understanding regarding how expert teachers at the high school level perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of GATE students. The researcher engaged in in-depth, semi-structured, one-on-one interviews with 15 expert teachers; conducted two observations of each teacher for a total of 30; and collected seven artifacts. The data served to support the researcher in exploring the lived experiences of participants to garner a comprehensive understanding of their experiences.

Population and Sample

The study population comprised of the approximately 100,000 public school teachers who taught gifted learners in California. This was narrowed to a target population of 13,400 public high school teachers. The study sample consisted of 15 expert high school teachers of gifted learners from Los Angeles County. Study participants met the following criteria: (1) taught at the public high school level, (2) taught gifted learners, (3) used personalized learning strategies in their courses, and (4) were recognized as experts in GATE learning by their principals.

Major Findings

The major findings of this qualitative study are presented by research sub-question.

Research Sub-Question 1

Research sub-question 1 asked: *How do expert high school teachers perceive the impact of rigor on the learning experience and achievement of GATE students?* The

major findings for this sub-question generated four themes perceived as crucial to the learning experiences and achievement of gifted high school students, the most frequent of which was the need to ensure gifted learners were given opportunities to engage in real-world learning experiences. Fourteen of 15 participants believed this was an essential component for gifted learners in terms of their core curriculum. Participants provided opportunities for their students to engage in real-world experiences through hand-on activities or creating simulations corresponding to global events. The consistency of the practice relied heavily on students finding the relationship between their assigned work and real-world applications. Additionally, participants often described real-world working procedures and environments as collaborative practices. Therefore, the findings also indicated a connection between the two educational conceptions.

The perceived need for GATE high school students to actively collaborate with each other was the second most frequently recognized requirement to provide appropriate levels of rigor. Collaboration was noted 45 times across the three types of data. All 15 participants espoused the same sentiments as Daggett (2008), in that they believed providing students with a variety of collaborative opportunities was imperative for GATE students' academic and social growth. Further, these collaborative practices emulated college and career environments beyond the high school setting.

The participants in this study identified gifted high school students having a choice in topics, project activities, and assignment outcomes was essential to their learning and achievement. Ten of 15 teachers indicated the need for student choice in the curriculum. This viewpoint was reflected in Daggett's (2008) rigor and relevance framework in that students provided a choice in their learning think creatively and

beyond conventional standards. Also, study participants often connected student choice with GATE students' need to make learning meaningful and personal.

Participants in this study shared the curriculum must include resources and be of personal interest to gifted high school students. Personal interest was found 29 times across the data sources. The concept of students relating to their learning by merging their personal interests with the course content aligned with the personalized learning structure that recommends embedding instructional approaches that move from a teacher-centered learning environment to a student-led learning environment (Bray & McClaskey, 2015). Study participants believed this was of great importance in the learning and achievement of gifted high school learners.

Research Sub-Question 2

Research sub-question 2 was: How do expert high school teachers perceive the impact relevance has on the learning experience and achievement of GATE students? The data for this sub-question generated four perceived needs teachers considered imperative to the learning experiences and achievement of gifted high school students. The most frequently distinguished student academic need was to ensure gifted learners were provided opportunities to apply their knowledge to real-world circumstances. Study participants deemed it necessary for gifted learners at the high school level to apply their knowledge to real-world experiences such as innovating new technological protocols and engaging with university professors and experts in the field to work through dynamic problems related to current situations. This practice called on students to be active participants in their learning and take academic and personal responsibility regarding

opportunities afforded them. This idea also tied in closely with the perception that students need to connect curricula with their personal interests.

The second most frequently recognized educational requirement according to study participants was need for students to be motivated to ensure and maintain academic engagement. Student motivation was identified 27 across the data sources. Participants shared the desire to support student intrinsic motivation by providing them an education that was personally rewarding and encouraged learning at deeper levels, instead of being motivated by earning a high grade. Student motivation was also associated personal interest.

Although application to real-work circumstances and student motivation linked to personal interests, the need for curricula to connect to personal interests was the third most frequently cited response for Research Sub-Question 2. Giving students the ability to include their personal interests in assignments, activities, and projects was noted 24 times across the data sources. The need for students to personalize their learning to make curriculum relevant was demonstrated by participants who allowed students to choose topics related to their personal lives, including hobbies, favorite content areas, and personal experiences. Moreover, students engaging with curricula infused with their personal interests closely associated with the fourth theme, student choice.

The realized need for GATE high school students to be have a choice in projects and assignments to demonstrate comprehension and proficiency was found 19 times across the data sources. Study participants provided students with varied levels of choice during class activities and assigned tasks, such as selecting collaborative groupings, topic choices, and project outcomes in accordance with rubric guidelines. Expert high school

teachers perceived student choice as necessary to impact the learning experience and achievement of GATE students.

Research Sub-Question 3

Research Sub-Question 3 asked: *How do expert high school teachers perceive the impact personalized learning on the learning experience and achievement of GATE students*? Five perceived needs emerged as important to the learning experiences and achievement of GATE high school students. The most frequently identified student need was for students to collaborate, with a total frequency count of 51 across all data sources. Most participants thought student collaboration had a profound impact on the learning experience and achievement of gifted high school students. Expert teachers engaged GATE students in collaborative efforts by having them in small collaborative learning groups, consistently having peer-to-peer learning structures within lesson plans, and having them work with experts in the field.

The second highest frequency count within personalized learning, 39 across all data sources, was the need for students to be exposed to appropriately challenging curricula. Participants spoke about differentiating instruction to help meet the needs of GATE learners in a heterogeneous high school classroom, and providing challenging curricula to students by providing additional assignments, giving them the opportunity to go ahead in the curriculum, and generating alternative activities to support their academic advancement. The idea of personalizing the curriculum of gifted high school learners to provide appropriate levels of academic challenge also aligned with the third most frequently acknowledged strategy, providing student choice.

Study participants determined GATE students need choice in what they learn, which was the third most cited theme with a frequency count of 33 across all data sources. Among study participants who integrated student choice in curricula and activities, they focused on students allowing students to choose their research topics, choose a project from a list of teacher-offered assignments, and choose how they work (e.g., collaboratively or individually).

Participants believed GATE students need to be exposed to curriculum that relates to current events and provides opportunities for them to apply their learning to real-world circumstances. This was noted 28 times across all data sources. Expert teachers noted personalized learning strategies, and specifically student application of knowledge and experience to real-world situations, had an impact on the learning experiences and achievement of gifted high school students. Participants planned lessons that included plausible scenarios students would experience during high school, application of the concepts learned to develop creative solutions to a problem, and the opportunity to engage with experts in the field to facilitate academic and social growth.

The fifth recognized student need regarding personalized learning was for students to be provided curriculum inclusive of their own personal interests. This was found 25 times across the data sources. Expert teachers who purposefully allowed students to feature their personal interests employed a variety of methods, such as having students relate their own experiences to reading and writing assignments, give oral presentations that included personal connections, and collaborate on projects that highlight each person's individual interests. Through these embedded opportunities in

the curriculum, students brought to light their personal interests within a personalized learning environment.

Unexpected Finding

One unexpected finding emerged from the data, which was the realization that study participant understood the importance of rigor, relevance, and personalized learning, but there was a general discrepancy between reported during interviews and their application of these concepts within the classroom. The data showed the use of rigor, relevance, and personalized learning components to be inconsistently implemented, which limited the impact of these methods on the learning and achievement of gifted students and their academic ability to go beyond the expected learning standards. This finding indicated a need for additional research to determine the best methods for teachers to systematically integrate a scaffolded approach to personalized learning for GATE students at the high school level.

Conclusions

Grounded in the findings of this study and reinforced by the literature review, several conclusions were drawn. The literature review, in conjunction with the data collected from interviews, observations, and artifacts, provided conclusive evidence of methods essential for expert teachers to employ to impact the learning experiences and achievement of gifted high school students. The three conclusions emphasized the need for curriculum to provide students with the opportunity to: include personal interests in their learning; have a choice in terms of the topics, assignments, and learning outcomes; work in a collaborative learning environment; engage and apply learned concepts to real-world situations; and be exposed to appropriate levels of challenge in curriculum.

Conclusion 1

The implementation of rigor, relevance, and personalized learning practices, as acknowledged by expert high school teacher participants, were utilized inconsistently.

The data collected showed that although expert high school teachers used many personalized learning strategies and incorporated them in their curriculum, there was a difference between their verbalized implementation of the strategies during interviews and their demonstration of these strategies in the both the classroom environment and coursework. The concept most consistently utilized was collaboration, in that students regularly discussed information and worked together to garner a deeper understanding of the content, solve problems, and develop several innovative solutions to situations posed. The need for gifted high school students to actively engage with age-appropriate peers and build academic relationships with teachers and outside experts in their field of study was supported by the research; however, the data from the study showed rigor, relevance, and personalized learning methods to be under-utilized and unreliable components of gifted students' educational processes.

Conclusion 2

Although study participants shared their perceptions about the curricular needs and classroom practices for gifted high school students, there was a discrepancy between the what was said and what was observed.

Students designated as GATE have unique educational needs that warrant personalized learning structures such as collaboration, relevant instruction through incorporating personal interests, appropriate levels of academic rigor, and personalization that affords them a choice in how they garner knowledge and showcase their

comprehensive intellectual outcomes (Diezmann & Watters, 2006; National Association of the Gifted, 2010). Although 14 of 15 study participants showed evidence of using several of the strategies in their courses, the data indicated students were consistently taught at the basic levels of both the rigor and relevance framework and the personalized learning indicators. Therefore, the data showed a discrepancy in the levels of appropriately rigorous and challenging curriculum taught and gifted students' intellectual capability levels.

Conclusion 3

Most study participants said rigor, relevance, and personalized learning have an impact on the learning experiences and achievement of GATE high school students and characterized these strategies as having an essential role in their teaching.

Although the study findings clearly indicated how each of these concepts were reflected in the teaching of study participants, the findings also identified an absence of the use of rigor, relevance, and personalized learning as a cohesive structure with all three processes being used in connection with each other. Therefore, expert teachers in the study offered several aspects of the rigor, relevance, and personalized learning frameworks, but the concepts were compartmentalized in their use instead of working together as a conceptualized teaching approach as was shared during interviews. Likewise, the data showed this divergence in the total frequency counts of interviews, observations, and artifacts.

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Implications for Action

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The extensive research required for the literature review, 15 one-on-one interviews, 30 hours of field observations, and review of artifacts revealed major findings

pertaining to the perceived impact rigor, relevance, and personalized learning have on the learning experiences and achievement of gifted high school students. Moreover, these substantial findings contribute to the literature on effective instructional methods and practices expert teachers perceive as impactful and vital in terms of the learning experiences and achievement of gifted high school students. Based on the major findings of this study, three implications for action directly connect with the conclusions drawn.

1. Through interviews, observations, and collected artifacts, it was shown that expert teachers provided gifted learners with relevant, real-world learning experiences; collaborative opportunities; hands-on activities; and simulations corresponding to global situations/events. However, these practices were not part of a scaffolded process and used inconsistently. Given the responsibility for enhancing instructional approaches within a learning environment to support gifted high school students, the following are calls to action:

   a. Teachers and administrators serving at the middle and high school levels should be provided annual, district-wide professional development based on the Pre-K to Grade 12 Gifted Programming Standards (2010), which outlines common definitions, scaffolded instructional processes, and best practices to meet the needs of GATE students.

   b. Annual district funding for gifted programs at the high school level should be provided for supplemental materials, field trip experiences, and partnerships beyond the classroom setting like those provided to special education high school programs.

2. A major finding in this study revealed expert teacher participants viewed providing gifted high school learners with real-world experiences, motivating them to achieve at their highest potential, making curriculum relevant by having students include their personal, and providing students with a choice impact their learning experiences and achievement. To provide high school students these learning opportunities, the following actions must occur:

   a. District and site material adoptions, including textbooks, supplementary materials, and computer programs and software, to meet the unique needs of gifted learners at the high school levels.

   b. Annual district professional development trainings for middle and high school teachers and administrators.

   c. Quarterly grade-level collaboration time to design scaffolded personalized learning structures, sharing of strategies and lessons used to make curriculum relevant for students, and lesson development that includes appropriate levels of rigor in accordance with curriculum differentiation.

3. A major finding of this study indicated participants believed incorporating student interests into curriculum, ensuring students had the opportunity to engage and apply what they learned to real-life situations, provide consistent collaborative activities, a choice in what they learn and how they demonstrate this acquired knowledge, and appropriately challenging curriculum were all elements of an appropriately rigorous academic program suited for gifted high school learners. The following are calls to action:

a. The school board, district leadership, and teachers and administrators must recognize gifted learners as an underrepresented student population and adopt the recognized Pre-K to Grade 12 Gifted Programming Standards (2010) for all grade levels to provide a foundational understanding of educational expectations for teachers, students, parents, and community

b. Annual professional development opportunities for teachers and administrators at the middle and high school levels must be developed, inclusive of programmatic academic and social standards for gifted learners at each grade level, a process for scaffolding personalized learning structures into curriculum and educational environments, appropriate levels of rigor, and strategies to support students incorporating personal interests and experiences in the curriculum.

c. Provide gifted education nights at school sites, like those presented for special education, to inform parents of the standards, strategies, and tools used at the high school level to meet the unique needs of gifted learners within heterogeneous classrooms.

Recommendations for Further Research

The following recommendations for further research stemmed from the findings and conclusions of this study.

- Determine and examine barriers to developing a gifted program at the high school level, and compare barriers experienced in other districts that managed to implement such a program

- Explore the lived experiences and learning outcomes of high school students within district-supported high school GATE programs

- Explore the lived experiences of teachers who serve in districts that utilize a district-wide rigor and relevance framework at the high school level

- Explore the lived experiences of teachers who serve in districts that utilize a district-wide personal learning framework at the high school level

- Examine and compare the United States with other countries regarding their utilization of GATE services and implementation of GATE curriculum at the high school level

- Determine, through a quantitative study, perceptions of students, teachers, and the community regarding the implementation of a gifted program at the high school level

- What are the methods, techniques, and practices that are appropriate for secondary GATE students in a personalized learning experience environment?

- What personal and professional characteristics do teachers of secondary GATE students in a personalized learning experience environment need to possess to successfully facilitate GATE learning?

- What policies need to be in place at the national, state, and district levels to facilitate the allocation of specific funding for secondary GATE programs?

Concluding Remarks and Reflections

Having had the pleasure to serve in education for 25 years as a middle school English teacher, program specialist of GATE and after-school programs, dean of students, and assistant principal at top performing high schools, the needs of students

identified as gifted and talented at the middle and high school grade levels became increasingly evident. As educators, we built a system of missed opportunities. Gifted and talented students continue to be the most under-represented student population in the United States with insufficient funds, the absence of a middle and high school gifted program in most districts, and virtual absence of teacher and administrative training to support their unique learning needs within all grade levels. We can and need do better by this marginalized student group. Conducting this study provided me the opportunity to develop a better understanding of how teachers perceive gifted learners' academic and social needs, and how despite institutionalized barriers, they continue to strive to meet these requirements.

After completing 15 interviews and 30 hours of field observations over the course of a two-month period in 2018, evident patterns emerged. Expert teachers spoke passionately about their processes, curriculum standards, and activities to meet the needs of all students, including those identified as gifted and talented, and the obstacles they faced in ensuring these were implemented. The trend that became increasingly apparent was the incongruence between how the participants expressed their understanding of gifted education and their perception of their dynamic use of personalized learning, relevance, and rigor strategies, and the evidence of the lack of actualization of these methods during their observed lessons. Collectively, teachers shared many positive experiences they had over the years with gifted high school learners, rigor through the lens of district and state assessments, their perceptions about relevant lessons, and the personalization of learning. It was evident they believed in what they were doing to support student success and did not fully understand how to apply the concepts of rigor,

relevance, and personalized learning into activities and curricula; they all expressed an eagerness to learn more in support of their students' academic and social needs. These expert teachers provided a deep-level of insight that contributes to the literature regarding their perspective in relation to the impact of rigor, relevance, and personalized learning on the learning experiences and achievement of gifted high school students.

This study is a true representation of who I am as an educational leader. Recently, I received what I believe to be the highest compliment possible. My mentor shared with me, during one of our many philosophical conversations, that I was a student advocate. It struck me that this was what my study was really about, being an advocate for those underrepresented in our education system! For me, the pervasive inequity of educational resources for gifted learners is, simply put, not good enough. It is my opinion that by providing gifted services in all grade levels epitomizes educational structures to provide equity and accessibility for all diverse cultures, given giftedness and talent traverse all ethnicities. There is work to be done, and I feel the calling; as I am wont to say, "Onward!"

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    com/publication/pdfs/Do_High_Flyers_Maintain_Their_Altitude_Final_8.pdf

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    interest, and learning profile in academically diverse classrooms: A review of

    literature. *Journal for the Education of the Gifted, 27*(2-3), 119-145.

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    differentiating curriculum. Alexandria, VA: Association of Supervision and

    Curriculum Development (ASCD).

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APPENDICES

APPENDIX A –SYNTHESIS MATRIX

	History of GATE	Rigor/Relevance	Need for GATE Framework	Active Learners	Teacher-centered	Defining Gifted	Differentiation
Anderson et al. (2001).						X	
Barell, J., et al. (2010).							
Bégin, J. and Gagné, F. (1994).							
Belkhouche, B. and Ismail, H.	X						
Beetham, H. (2005).							
Borland, J. (2009)						X	
Bray, B. and McClaskey, K. (2015).				X	X		
Bray, B. and McClaskey, K. (n.d.).							
Brown, E., Avery, L., VanTassel, J., Worley, B., and Stambaugh, T. (2006).	X						
Brown, E. and Garland, R. (2015).	X		X				
Brown, E. and Wishney, L. (2017).			X				
Buchanan, N. and Woerner, B. (2000).	X		X				
Caridad-Garcia-Cepero, M. (2008).							
Cohen, D. and Crabtree, B. (2006).							
Colangelo, N., Assouline, S., and Gross, M. (2004).			X				
Coleman, M. and Gallagher, J. (1995).	X						
Clark, J. (2013).				X			
Daggett, W. (2004).		X		X			
Daggett, W. (2008).		X		X			
Dai, D. (2010).	X	X				X	
Dai, D. and Chen, F. (2014).		X	X	X			
Davidson Institute (n.d.).							
Diezmann, C. and Watters, J. (2006).		X	X				
Elbert, E., Ebert, C., & Bentley, M. (2014).							
Finn, C. and Hockett, J. (2012).							
Finn, C. and Wright, B. (2015).	X						
Gagné, F. (1997).	X			X			
Gagné, F. (1999).	X				X		X
Gagné, F. (2000).	X					X	X
Gagné, F. (2004).	X			X		X	X

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Gagné, F., Neveu, F., Simara, L., and St. Pere, F. (1996).	X						X
Gallagher, J. (1994).		X		X			
Gallagher, J. (1997).		X					
Gallagher, J. (2005).		X	X	X			
Gardner, H., Howard, V., & Perkins, D. (1974).							
Gardner, H., & Wolf, D. (1983).							
Gardner, H. and Hatch, T. (1989).		X					
Giger, M. (2006).		X					
Gubbins, E. and Callahan, C. (2014).	X		X				
Hertberg-Davis, H. (2009).	X		X			X	X
Hollingsworth, L. (1942).	X					X	
Ibata-Arens, K. (2012).			X				
Kaplan, S. (2009).							
Kaplan, S. (2016). X	X		X	X		X	X
Kanevsky, L. (2011).			X	X			
Kitano, M. (1991)							
Levy, F., & Murnane, R. (2004).							
Lombardi, M. (2007).		X					
Marland, S. P. (1972).					X		
McCollister, K. and Saylor, M. (2012).			X				
National Association for Gifted Children (2016).		X	X	X	X	X	X
National Association for Gifted Children (2017).	X	X		X		X	
National Center for Education Statistics (2017).							
Page, J. (2010).	X						
Plucker, J. & Barab, S. (2005).							
Plucker, J., Burroughs, N., & Song, R. (2010).	X	X					
Price, J. and Murnan, J. (2004).		X					
Prior, S. (2011).	X		X				
Renzulli, J. (1999).	X						
Renzulli, J. (2012).		X					
Renzulli, J., Callahan, C., and Gubbins, E. (2014).	X						
Renzulli, J., Purcell, J., and Jeanne, H. (1996).				X			
Ritchotte, J., Matthews, M., Flowers, C. (2014).		X	X		X		
Ruddell, N. (2017).		X		X			
Saccuzzo, D., Johnson, N., and Guertin, T. (1994).							

Reference							
Shear, L., Novais, G., Means, B., Gallagher, L., & Langworthy, M. (2010).		X					
Stephens, K. (2011).	X		X	X			
Sternberg, R. (2007). -155.							
Stott, A. and Hobden, P. (2016).			X	X			
Terman, L. (1925).	X					X	
Theaker, R., Xiang, Y., Dahlin, M., Cronin, J., and Durrant, S. (2011).							
Tirri, K. and Kuusisto, E. (2013).							
Tomlinson, C. (1996).							
Tomlinson, C., et al. (2003).		X		X			X
Tomlinson, C. & Strickland, C. (2005).		X					X
Treffinger, D. (n.d.).		X		X	X		
US Department of Education. (2010).							
Waldeck, J. (2007).			X	X			
Walden, S. (2014).							
Waldrip, B., Yu J., & Prain, V. (2016).	X		X				
Walkington, C. & Bernacki, M.L. (2004).			X	X			
Watters, J., Hudson, S., Hudson, P. (2013).							
Willoughby, C. (2013). .				X			
Winner, E. (1997).							
Young, M. & Balli (2014)							

APPENDIX B –INVITATION TO PARTICIPATE

Study: The Connection between Learning and Achievement of Gifted and Talented (GATE) High School Students through the Utilization of a Personalized Learning Framework that Embeds Appropriate Levels of Rigor and Relevance from the Perspective of High School Teachers

September 2018

Dear Prospective Study Participant:

You are invited to participate in a phenomenological, qualitative study to describe how teachers at the high school level perceive the impact of rigor/relevance and personalized learning on the learning experience and achievement of Gifted and Talented (GATE) Talented and Gifted students. The main investigator of this study is RoseEllen J. Shea, Doctoral Candidate in Brandman University's Doctor of Education in Organizational Leadership program. You were chosen to participate in this study because you are a teacher of high school teacher with many students who have been designated as Gifted and Talented in your courses, you use personalized learning strategies, and you implement the use of appropriate rigor/relevance in your curriculum and instruction.

Approximately four public high schools from southern California were targeted, within Los Angeles County, totaling 16 public high school courses with personalized learning and rigor/relevance incorporated into the lessons. Participation should require about one hour of your time and is entirely voluntary. You may withdraw from the study at any time without any consequences.

PURPOSE: The purpose of this phenomenological, qualitative study is to describe how teachers at the high school level perceive the impact of rigor, relevance, and personalized learning on the learning experience and achievement of Gifted and Talented (GATE) students.

PROCEDURES: If you decide to participate in the study, the researcher will interview you. During the interview, you will be asked a series of questions designed to allow me to share my experiences as a high school teacher with GATE students who implements personalized learning and rigor/relevance in my lessons and curriculum. I also agree to provide archived assessment scores and attendance records from online databases for students referenced in the interviews and surveys.

RISKS, INCONVENIENCES, AND DISCOMFORTS: There are minimal risks to your participation in this research study. It may be inconvenient to spend up to one hour in the interview. However, the interview session will be held at my school site or at an agreed upon location, to minimize this inconvenience.

POTENTIAL BENEFITS: There are no major benefits to you for participation, however, your input and feedback could help determine high school teachers' perceptions

about the impact of rigor/relevance and personalized learning on the learning experiences and achievement of Gifted and Talented high school students. The information from this study is intended to inform researchers, policymakers, and educators. Additionally, the findings and recommendations from this study will be made available to all participants.

ANONYMITY: Records of information that you provide for the research study, and any personal information you provide, will not be linked in any way. It will not be possible to identify you as the person who provided any specific information for the study.

You are encouraged to ask questions, at any time, that will help you understand how this study will be performed and/or how it will affect you. You may contact me at ███████ ████ or by email at ███████████████ . You can also contact Dr. Phil Pendley by email at ████████████████ . If you have any further questions or concerns about this study or your rights as a study participant, you may write or call the Office of the Executive Vice Chancellor of Academic Affairs, Brandman University, 16355 Laguna Canyon Road, Irvine, CA 92618, (949) 341-7641.

Respectfully,

Rose Ellen J. Shea

RoseEllen J. Shea
Doctoral Candidate, Brandman University

BRANDMAN UNIVERSITY
16355 LAGUNA CANYON ROAD
IRVINE, CA 92618

RESEARCH STUDY TITLE: The Connection between Learning and Achievement of Gifted and Talented (GATE) High School Students Through the Utilization of a Personalized Learning Framework that Embeds Appropriate Levels of Rigor and Relevance from the Perspective of High School Teachers

RESPONSIBLE INVESTIGATOR: RoseEllen J. Shea, Doctoral Candidate

TITLE OF CONSENT FORM: Consent to Participate in Research

PURPOSE OF THE STUDY: This study is being conducted for a dissertation for the Doctor of Education in Organizational Leadership program at Brandman University. The purpose of this phenomenological, qualitative study is to describe how teachers at the high school level perceive the impact of rigor, relevance, and personalized learning have on the learning experience and achievement of Gifted and Talented (GATE) students.

PROCEDURES: In participating in this research study, I agree to partake in an audio-recorded, semi-structured interview. The interview will take place, in person, at my school site or other pre-determined location, and will last about an hour. During the interview, I will be asked a series of questions designed to allow me to share my experiences as a high school teacher with GATE students who implements personalized learning and rigor and relevance in my lessons and curriculum. I also agree to provide archived assessment scores and attendance records from online databases for students referenced in the interviews and surveys.

I understand that:
a) The possible risks or discomforts associated with this research are minimal. It may be inconvenient to spend up to one hour in the interview. However, the interview session will be held at my school site or at an agreed upon location, to minimize this inconvenience. Observations will also be conducted depending upon participants scheduling availability.

b) I will not be compensated for my participation in this study. The possible benefit of this study is to determine high school teachers' perceptions about the impact of rigor/relevance and personalized learning on the learning experiences and achievement of Gifted and Talented high school students. The findings and recommendations from this study will be made available to all participants.

c) Any questions I have concerning my participation in this study will be answered by RoseEllen J. Shea, Brandman University Doctoral Candidate. I understand

that Ms. Shea may be contacted by phone at ███████████ or email at ████████████████████. The dissertation chairperson may also answer questions: Dr. Phil Pendley at ███████████████████.

d) I may refuse to participate or withdraw from this study at any time without any negative consequences. Also, the investigator may stop the study at any time.

e) The study will be audio-recorded, and the recordings will not be used beyond the scope of this project. Audio recordings will be used to transcribe the interviews. Once the interviews are transcribed, the audio and interview transcripts will be kept for a minimum of five years by the investigator in a secure location.

f) No information that identifies me will be released without my separate consent and that all identifiable information will be protected to the limits allowed by law. If the study design or the use of the data is to be changed, I will be informed and my consent re-obtained. If I have any questions, comments, or concerns about the study or the informed consent process, I may write or call the Office of the Executive Vice Chancellor of Academic Affairs, Brandman University, 16355 Laguna Canyon Road, Irvine, CA 92618, (949) 341-7641. I acknowledge that I have received a copy of this form and the Research Participant's Bill of Rights.

I have read the above and understand it and hereby voluntarily consent to the procedure(s) set forth.

_____   _____

Signature of Participant or Responsible Party   **Date**

_____   _____

Signature of Witness (if appropriate)   **Date**

_____   _____

Signature of Principal Investigator   **Date**

Brandman University IRB 2018

APPENDIX D – AUDIO RELEASE FORM

RESEARCH STUDY TITLE: The Connection between Learning and Achievement of Gifted and Talented (GATE) High School Students through the utilization of a personalized learning framework that embeds appropriate levels of rigor and relevance

BRANDMAN UNIVERSITY
16355 LAGUNA CANYON ROAD
IRVINE, CA 92618

I authorize RoseEllen J. Shea, Brandman University Doctoral Candidate, to record my voice. I give Brandman University and all persons or entities associated with this research study permission or authority to use this recording for activities associated with this research study.

I understand that the recording will be used for transcription purposes and the information obtained during the interview may be published in a journal/dissertation or presented at meetings/presentations.

I will be consulted about the use of the audio recordings for any purpose other than those listed above. Additionally, I waive any right to royalties or other compensation arising correlated to the use of information obtained from the recording.

By signing this form, I acknowledge that I have completely read and fully understand the above release and agree to the outlined terms. I hereby release all claims against any person or organization utilizing this material.

_____   _____

Signature of Participant or Responsible Party   **Date**

APPENDIX E – PARTICIPANT BILL OF RIGHTS

Any person who is requested to consent to participate as a subject in an experiment, or who is requested to consent on behalf of another, has the following rights:

1.   To be told what the study is attempting to discover.

2.   To be told what will happen in the study and whether any of the procedures, drugs or devices are different from what would be used in standard practice.

3.   To be told about the risks, side effects or discomforts of the things that may happen to him/her.

4.   To be told if he/she can expect any benefit from participating and, if so, what the benefits might be.

5.   To be told what other choices he/she has and how they may be better or worse than being in the study.

6.   To be allowed to ask any questions concerning the study both before agreeing to be involved and during the study.

7.   To be told what sort of medical treatment is available if any complications arise.

8.   To refuse to participate at all before or after the study is started without any adverse effects.

9.   To receive a copy of the signed and dated consent form.

10.   To be free of pressures when considering whether he/she wishes to agree to be in the study.

If at any time you have questions regarding a research study, you should ask the researchers to answer them. You also may contact the Brandman University Institutional Review Board, which is concerned with the protection of volunteers in research projects. The Brandman University Institutional Review Board may be contacted either by telephoning the Office of Academic Affairs at (949) 341-9937 or by writing to the Vice Chancellor of Academic Affairs, Brandman University, 16355 Laguna Canyon Road, Irvine, CA, 92618.

Brandman University IRB, Adopted November 2013

Interviewer: RoseEllen J. Shea

Interview time planned: Approximately one hour

Interview place: Participant's school site or other convenient agreed upon location

Recording: Digital voice recorders

Written: Field and observational notes

Introductions:
Introduce ourselves to one another.

Opening Statement: [Interviewer states:] Thank you for taking time to meet with me and agreeing to participate in this interview. To review, the purpose of this study is to describe how teachers at the high school level perceive the impact of rigor/relevance and personalized learning on the learning experience and achievement of Talented and Gifted (T.A.G.) students. The questions I will ask are written to elicit this information and to provide you an opportunity to share any personal stories and experiences you have had, at your discretion, throughout this interview. Also, your identity will remain anonymous, thus, I encourage you to be open and honest for the purposes of this research study.

Interview Agenda: [Interviewer states:] I anticipate this interview will take about an hour today. As a review of the process leading up to this interview, you were invited to participate via phone call, and signed an informed consent form that outlined the interview process and the condition of complete anonymity for this study. We will begin with reviewing the Letter of Invitation, Informed Consent Form, the Participant's Bill of Rights, and the Audio Release Form. Then after reviewing all the forms, you will be asked to sign documents pertinent for this study, which include the Informed Consent and Audio Release Form. Next, I will begin the audio recorders and ask a list of questions related to the purpose of the study. I may take notes as the interview is being recorded. If you are uncomfortable with me taking notes, please let me know and I will only continue with the audio recording of the interview. Finally, I will stop the recorder and conclude our interview session. After your interview is transcribed, you will receive a copy of the complete transcripts to check for accuracy prior to the data being analyzed. Please remember that anytime during this process you have the right to stop the interview. If at any time you do not understand the questions being asked, please do not hesitate to ask for clarification. Are there any questions or concerns before we begin with the questions?

Background Question:
   1. How many students in your classes have been designated as Gifted and Talented (GATE)?

Content Questions:

2. Describe several lessons/ projects that enhanced the learning and achievement of gifted and talented (GATE) students in your classroom.
    a. What strategies were used that made the lesson/project successful?
    b. How did these lessons reflect appropriate levels of rigor to meet the needs of GATE learners?
    c. How did the lessons reflect personal relevance in the curriculum?
3. How often are you able to incorporate rigor into your lessons/projects while maintaining relevance for the students?
    a. Which rigorous, or challenging, instructional strategies do you use that you believe promote GATE students' learning and achievement?
    b. Which instructional strategies do you believe helped to make the curriculum relevance, or meaningful, for student and contributed to their learning and achievement?
    c. How are you able to determine, or access, the learning and achievement of GATE learners during lessons/projects?
4. What differences, if any, do you notice in the learning and achievement of GATE students when incorporating rigor and relevance into your lessons/ projects instead of using more traditional lessons/ projects?
5. What impact, if any, do you believe rigor and relevance have on the short and long-term learning and achievement of GATE students at the high school level?
6. Which aspects of personalized learning do you use in your classroom activities, lessons, and projects?
    a. How often, do you incorporate these personalized learning components in your teachings?
7. Which personalized learning activities do you find also incorporate appropriate levels of rigor and relevance into your curriculum?
8. Describe a lesson you use that integrates both personalized learning activities and rigor and relevance in the curriculum.
9. What differences, if any, do you notice in the learning and achievement of GATE students when incorporating personalized learning strategies into your lessons/ projects instead of using more traditional lessons/ projects?
    a. What impact, if any, do you believe personalized learning has on the short and long-learning and achievement of GATE students at the high school level?

Closing Statement: Thank you for your time. It has been very nice to talk with you. I will be sending you an email within the next two weeks of this interview for you to look over. I am looking forward to working with you.

APPENDIX G – OBSERVATION PROTOCOL

Personalized Learning Activities Observed:	**Teacher-Led** 1. 2. 3.	**Student-Centered** 1. 2. 3.	**Student-Led** 1. 2. 3.
Level A: Acquisition **Rigor:** Remembering **Relevance**: Knowledge in one discipline **Bloom's**: Knowledge			
Level B: Understanding/Application **Rigor:** Understanding **Relevance:** Apply in discipline **Bloom's:** Comprehension/Application			
Level C: Assimilation/Analyzing **Rigor:** Understanding **Relevance:** Apply Across disciplines **Bloom's:** Analysis			
Level D: Adaptation/Evaluating/Creating **Rigor:** Adaptation **Relevance**: Applying to real-world predictable and unpredictable situations **Bloom's**: Synthesis/Evaluation			