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The Influence of Professional Development on Teacher Self-Efficacy in Gifted Education

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THE INFLUENCE OF PROFESSIONAL DEVELOPMENT ON TEACHER SELF-EFFICACY IN GIFTED EDUCATION

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THE INFLUENCE OF PROFESSIONAL DEVELOPMENT ON
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I dedicate this to those who have been a constant and unwavering source of support and encouragement throughout this tremendous academic endeavor.

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The purpose of this research is to study the impact of effective professional development training provided to both preservice and inservice teachers about gifted education and gifted students. This research also seeks to discover whether a notable difference exists between preservice and inservice teachers in regard to the increase in their knowledge and self-efficacy upon completion of the professional development training. A quantitative approach using a survey and a required training was used for all participants. Study participants included preservice teachers attending a southern Kentucky public university who were taking education classes as well as inservice teachers from 11 school districts in Kentucky and one school district in Tennessee. Data were collected from the survey both before and after participants completed the training and then analyzed to ascertain participant gains for each of the research questions.

The results from this study indicated the positive impact of the focused professional development training on all educators who participated. Both preservice and inservice teachers experienced gains in their knowledge of gifted education and gifted students, as well as in their confidence in the ability to meet the needs of these students in the classroom. The results further indicated gifted education professional development training should be provided to all preservice and inservice teachers to provide them with effective materials and strategies they can incorporate into their instruction.

CHAPTER I: INTRODUCTION

Gifted education continues to be one of the most neglected and underfunded areas of the U.S. public education system. According to statistics reported by Gentry et al. (2019), between 39% and 52% of gifted students are not identified and do not receive appropriate gifted services. Furthermore, research conducted by Peters et al. (2019) found approximately 42% of schools in the United States have zero students identified as gifted and talented, which suggests the gifted students at those schools are not being provided with the necessary educational services.

Significance of the Problem

Gifted and talented students have a multitude of needs that must be met in order to successfully reach their highest level of academic potential. Meeting the needs of gifted and talented students in the classroom setting and effectively identifying these students for gifted enrichment programs is extremely important because they can then learn at an advanced level and pace that challenges them and provides additional opportunities to reach their academic potential. However, as Schroth and Helfer (2008) acknowledged, identifying high-ability students "for participation in gifted and talented education programs is one of the most contentious issues facing teachers and administrators today" (p. 158). Gifted students in the classroom are commonly overlooked while teachers focus on students who have more pressing needs and are not mastering the grade-level content being taught.

Teachers often spend a majority of their classroom instructional time working to meet the academic needs of students who require additional assistance and practice before they fully understand and apply the information being taught. While this occurs,

the gifted students, who frequently already know and have mastered the information, are provided with alternative learning options in the classroom that do not positively impact their acquisition of advanced or challenging academic content. Some of the alternative learning options provided for gifted students include but are not limited to being given additional work, the opportunity to read or work on their own, to be used as a peer tutor for their classmates to help them master content, or given advanced work to learn and complete on their own. When these students are provided with additional or advanced content to master, often they are required to teach themselves while the classroom teacher is preoccupied with reteaching the content to other students which the gifted students have already mastered. Although these alternative options are used by classroom teachers with gifted students, they are far from the best practices to meet the academic needs of this student population.

Providing independent learning options as the primary instructional method for gifted students is a great disservice and does not provide an equitable opportunity to learn with the same benefit of their mainstream counterparts who are given daily instruction on content already mastered by the gifted students. Tomlinson (2003) advocated for differentiated instruction, which she referred to as responsive instruction, to meet the academic needs of gifted students, as well as the rest of the students in the classroom in order that each student can learn at a pace that best fits their level of mastery and understanding of the content. When teaching both gifted students and those who need additional instruction to master the same content, Tomlinson (2003) noted:

> If a student learns faster than a prescribed pace or is ready for greater depth or breadth of knowledge than is planned for a learning sequence, those things matter

> and there should be plans for adapting the pace and scope of learning for that student. If a student has great difficulty learning, for whatever reason, there should be provisions made to ensure that the student masters essential knowledge and has an active support system both to fill in gaps in knowledge and to move ahead. (p. 1)

Differentiating instruction is one strategy teachers may use to meet the academic needs of gifted students while also providing the instructional scaffolding, repetition, and other academic supports needed by the rest of the class in order for all students to experience continuous academic progress to reach their full potential. Research by Roberts and Inman (2015) supports the need and expectation for classroom teachers to provide differentiated instruction which "allows ongoing continuous progress for all students" (p. 5). It is important to note progress does not look the same for all students simply because all individuals are different. Growing and mastering academic content occurs at a variety of paces, and the teacher is responsible for preparing and encouraging students in their unique rate of progress. Tomlinson (2001) confirmed the overall purpose of differentiation is to provide students with various opportunities to learn and master the content, in addition to access to different mediums and options for product creation and development that can illustrate their understanding and mastery of the content.

Preservice teachers possess a character trait of striving to absorb everything possible during their undergraduate classes to ensure their competency during their first year of teaching and beyond. However, becoming a clinically competent teacher requires repeated practice with and exposure to effective instructional strategies and methods. In addition to exposure to these strategies and methods, teachers must have adequate time to

apply this training and to receive constructive feedback from more experienced educators to improve and modify their skill set. Marzano et al. (2001) noted he supports preservice teachers being given time to learn and develop their teaching methods and strategies that align with authentic and beneficial research-based best practices, as research has shown a single effective teacher can have a profoundly positive influence and impact on student learning and achievement. The ability to successfully implement effective differentiated instruction enables preservice teachers to efficiently meet the needs of all students in their classroom, particularly gifted students. Johnsen (2018) asserted gifted students must be given the chance to perform and show what they know. Integrating differentiation as an instructional strategy is one way to ensure these students are afforded this opportunity. Roberts and Inman (2015) acknowledged the importance of mastering differentiation by stating:

> Students who are the least likely to make continuous progress when one plan is used are those who need more time to learn and modifications of the content, as well as the ones who already know the content (or know most of it) and those who benefit from learning it in greater depth or complexity. (p. 3)

However, with all the expectations preservice teachers should have learned and mastered when they graduate, frequently insufficient time is allotted to be taught the instructional techniques they can implement to best meet the needs of gifted students in their classrooms (Chamberlin & Chamberlin, 2010).

Identification Issues

In addition to providing gifted students with high-quality instruction in the classroom to support their continuous academic progress and to encourage them to reach

the highest level of their potential, importance must be placed on the way in which preservice and inservice teachers learn to effectively and accurately identify gifted students who need to be challenged and presented with content at a higher and more in-depth level. Teachers must be able to properly identify gifted students and provide them with challenging instruction, as all individuals have the right to a quality education, including gifted students. Say (2018) further explained the value of effective teachers for gifted students because the teacher can identify their strengths, assist with developing and expanding upon their weaker areas, and provide appropriate instruction to experience continuous challenge and productive struggle in their learning environment. These opportunities help to establish the classroom and school as positive experiences for gifted students, which further encourages them to return and participate in more complex and advanced learning. Teachers must identify gifted students in order to provide them with the appropriate level of instruction and challenge, in addition to formally establishing their area of giftedness to be appropriately placed for receiving additional academic services. Karnes and Bean (2005) asserted while the overall population of gifted students is composed of children who are quite varied and diverse, they possess a multitude of characteristics in common with many other student populations. Johnsen (2018) acknowledged the importance of teacher awareness that gifted students may exhibit many of the same characteristics or advanced ability and potential in a particular area.

Areas of Giftedness

Students who are formally identified as gifted and talented may present different characteristics based upon their area(s) of identification. According to the National Association for Gifted Children (NAGC, n.d.a), the five areas in which students can be

identified as gifted and talented include the following: General Intellect, Specific Academic Area, Creativity, Visual and Performing Arts, and Leadership (Domains of Giftedness section). Those identified in general intellect are inclined to exhibit ability or potential in several areas and often display a quick mastery of new content through advanced memorization skills and techniques. Oftentimes, general intellect students need only to be shown content once or twice before they fully grasp it and are ready to move on to the next topic. Students identified as gifted in a specific academic area usually have an intense focus, curiosity, and passion for that subject area. Academically gifted students generally have a particular subject within a content area in which they are interested and have completed a great deal of their own research. Students also may be identified as gifted in more than one academic area by exhibiting an advanced aptitude and performance ability in multiple content areas.

Gifted students identified in the area of creativity think and view things quite differently from that of other typical students. According to Johnsen (2018), "The key characteristic that is often associated with creativity is divergent thinking" (p. 10). Divergent thinking is much different than convergent thinking because students who are capable of thinking divergently can develop several different ideas at once rather than a single idea, and many of these ideas are quite different from those formulated by their conventional classmates. The divergent thinking quality of creatively gifted students also can set them apart as being excellent problem solvers because they are able to generate multiple unique solutions to a problem, whereas other students might produce only one or two basic solutions. Students identified as being gifted in the area of visual and performing arts demonstrate potential or advanced ability in the areas of music, art, or

drama. Students formally identified in this area exhibit creative strength in more than one of these artistic fields. These students often gravitate toward producing some form of artistic medium when completing their assignments and projects, showing much confidence in their abilities within their artistic field. Gifted students identified as having advanced potential in the area of leadership may exhibit different leadership qualities in various situations. Leadership gifted students are able to successfully lead a team and adapt their thinking and strategy formulation based on needed changes in order to successfully complete a task or project.

Chamberlin and Chamberlin (2010) noted, "Perhaps one of the principal reasons why beginning and preservice teachers have little to no awareness of gifted education is due to their lack of exposure in training" (p. 382). In addition to the characteristics exhibited by gifted students within these five formal areas of gifted identification, preservice teachers must be able to identify the gifted characteristics of students in the general student population who consistently have not been identified for gifted and talented services because they exhibit their giftedness in unique or unconventional manners. Minority students, English language learners, and special education students are exceedingly underrepresented in the gifted and talented student population. Luria et al. (2016) argued, "Traditional screening tools and methods often fail to identify minority students as being gifted" (p. 44). The screening tools and testing methods regularly used do not accurately represent minority students. Therefore, these students are not given an equal opportunity to qualify for acceptance into gifted and talented programs, which is an immense contributing factor as to the reason this group is continually being misrepresented and under-identified as being gifted. Harris et al. (2009) suggested

English language learners likely have fewer opportunities to be included in the gifted and talented programs provided by the school due to the language and cultural barriers that often exist between this group of students and their teachers and other administrators at the school. These known obstacles likely result in their placement in a program in which they receive special education services rather than gifted and talented services. Thus, this misidentification is an underrepresentation of their abilities and a significant disservice for them to receive the resources needed to achieve the highest level of their overall academic potential.

Gifted students who also receive special education services constitute a category of gifted students who are identified as being twice exceptional (2E). Neihart et al. (2002) described the difficulties experienced by teachers relative to identifying this subgroup of the gifted population because their disabilities often mask their abilities and other areas in which they exhibit distinct potential. Preservice teachers are provided with some training regarding meeting the needs of special education students and others who may struggle in their classroom, but they are rarely given the opportunity to learn about meeting the needs of students who fit into more than one category, such as 2E students. This lack of teacher training is a contributing factor to the existing underrepresentation of special education students in gifted and talented programs.

Professional Development Training

In order to best address the under-identification of certain student groups, accurately and effectively identifying students for gifted and talented programming, and successfully meeting the needs of gifted students as well as all students, it is vitally important for preservice teachers to be provided with the needed training and professional

development related to gifted education and gifted and talented students. Due to little to no exposure on best meeting the needs of gifted students in the classroom, preservice teachers are unable to ensure these students are experiencing the crucial continuous academic progress required by all students. The passage of the 2001 No Child Left Behind Act (NCLB) resulted in education being focused primarily on improving and increasing the competency of low-performing students and requiring teachers to assist all students, especially those who are struggling in mastering the content being taught. Due to the emphasis of NCLB, the main instructional supports have been provided to struggling students who need additional assistance with mastering the content, rather than gifted students who already know the content and are ready to move on. This consistent academic disservice to gifted students has been further encouraged by schools and districts being forced to focus on student scores on yearly state-mandated tests. Plucker et al. (2010) emphasized the reduction of support for high-achieving and high-ability students as a result of NCLB as its passage directed the focus of increased student performance and achievement solely on low-performing students rather than those at all academic levels. Many gifted students already know the content and perform well on the state tests; therefore, their learning during the school year frequently is overlooked because the classroom teacher is more focused on students who must improve their test scores so the school or district receives a desirable rating.

All preservice teachers must receive training in gifted education and instruction on meeting the needs of gifted students in the classroom setting because many may be solely responsible for providing advanced and challenging instruction to these students due to the lack of adequate funding to staff gifted programs. Most teachers who have

received training on gifted students and gifted education have done so during a professional development workshop, an inservice training, or through a self-selected webinar focused on gifted education. Arguably, receiving any training in gifted education is better than no training, but it is difficult if not impossible to determine the consistency of implementing new learning in the classroom instructional strategies of teachers who attend professional development workshops, inservice trainings, and webinars. Darling-Hammond et al. (2017) strongly asserted effective teacher professional development must be for a sustained duration and must allow teachers "adequate time to learn, practice, implement, and reflect upon new strategies that facilitate changes in their practice" (p. vi). Providing preservice teachers with focused training in gifted education and furnishing examples of the types of experiences they may encounter with gifted students assists these future teachers with being better prepared to successfully meet the needs of gifted students in their classrooms and to be more confident in their abilities to do so (Chamberlin & Chamberlin, 2010).

The perceptions and personal beliefs possessed by teachers relative to their students and education have an impact on the way in which they direct their classroom, the types of instructional decisions they make, and how they decide to meet the needs of every student (Schroth & Helfer, 2008). Teachers who have not received gifted training or have received very little are likely to make instructional decisions based on inaccurate information, which may prevent all students, especially those who are gifted, from experiencing continuous academic progress. Training in gifted education allows preservice teachers the opportunity to recognize, and alter if necessary, their preconceived perceptions and biases of gifted students prior to entering the classroom

setting, also allowing them to possess a more authentic and comprehensive knowledge base about the gifted students they will teach and serve in the future. In addition, it may assist them in making informed instructional and academically focused decisions aligned with best practices on meeting the needs of present and future students while providing both gifted and general education students with the instruction needed to achieve their highest level of academic potential.

Purpose of the Study

The purpose of this study is to examine and evaluate the overall effectiveness of providing preservice and inservice teachers with professional development focused on gifted education and gifted students as a method to enhance their knowledge and understanding of both gifted education and gifted students. This study investigates whether providing preservice and inservice teachers with the opportunity to experience the implementation of gifted education professional development training as part of their undergraduate coursework allows them to further develop their awareness of the characteristics, methods of identification, and needs of gifted students. This study also determines whether the preservice and inservice teachers who participated in the professional development training experienced an increase in their confidence regarding applying what they learned in a manner to successfully and effectively meet the needs of gifted students so they can experience continuous academic progress and reach their highest level of potential.

CHAPTER II: LITERATURE REVIEW

The overall goal of all classroom teachers is to successfully meet the academic, social, and emotional needs of every student. However, the overwhelming demands on teachers regarding all expectations that must be met unfortunately often leave this outcome unattainable. In addition to time constraints, teachers must become experts in adjusting and modifying their teaching style to best meet the needs of all students. Kumar (2017) stated teachers must "be both educated in their content area and extremely skillful in an extensive variety of teaching ways to deal with the different learning needs of each student" (p. 817).

Becirovic and Akbarov (2015) described the various societal and social changes that have occurred in education over the past few decades as being key contributors to the changes experienced by teachers in the classroom setting and within the educational system. Many teachers are responsible for providing instruction in inclusive classrooms, which requires them to meet the academic, social, emotional, and cultural needs of all students. Teachers are expected to meet the academic needs of the students in their classrooms, which are very diverse in regard to learning disabilities, advanced academic abilities and content mastery, primary languages spoken, IEP requirements, and other necessary content modifications. Additionally, they are expected to teach many other concepts including but not limited to character education, problem-solving and critical-thinking skills that can be applied to various real-world situations, and ways to become productive and contributing members of society. Cooper (2012) affirmed teachers do as much as possible to provide the instruction and guidance their students need while also creating lifelong learners in the process.

In addition to the various changes to the classroom environment, the field of gifted education has experienced many changes. Some of the most notable changes and shifts in gifted education include defining giftedness, identifying gifted students, meeting the academic needs of gifted students both in the regular classroom and in specialized programs, and differentiating and implementing instruction and other strategies to provide challenging content for gifted students (Gallagher, 2002). Providing effective and purposeful differentiated instruction for gifted students to assist in meeting their academic needs often is one of the most challenging tasks for teachers due to confronting multiple factors. Research by VanTassel-Baska and Stambaugh (2005) found the following:

> Differentiation for the gifted learner may still prove to be more challenging due to the factors of the (a) degree of differentiation required, (b) need to provide advanced learning opportunities beyond grade level, (c) philosophical barriers and antipathy of many teachers toward the gifted learner and their needs, (d) lack of understood services for the gifted population, and (e) lack of service mandates in many states to support services for gifted learners leading to greater neglect. (p. 212)

Due to these challenges, preservice teachers must be given the opportunity to learn from those who have worked with gifted students in order to incorporate various methods and strategies into their instruction to effectively meet the needs of the gifted students in their classrooms. Preservice teachers knowledgeable about giftedness, ways to identify students from different backgrounds and experiences as gifted, characteristics to look for

in gifted students, and meeting the needs of different types of gifted students are able to provide an engaging and exciting classroom environment for present and future students.

Definition of Gifted

Before preservice teachers and those currently in the classroom can learn to accurately identify students as gifted, they must first understand the meaning of gifted. Just as the field of gifted education has undergone multiple changes and adaptations over the years, the formal definition of giftedness has evolved as well. Past definitions have focused on a student's IQ score, their level and type of creative thinking, and their experience and knowledge of specific content areas (Oppong et al., 2019). However, recent definitions account for additional theories that expand upon previous definitions and are more encompassing of the various qualities and traits possessed by these students. Carman (2013) argued while some gifted definitions focus on one central aspect of giftedness, others consider three or more facets when defining a student's overall giftedness.

Stephens and Karnes (2000) completed a study in which they reviewed the many modifications of the definition of gifted at the federal level and that of the various states. As expected, both state and federal definitions of giftedness have been changed and amended through the years. Gifted definitions developed by the states often are modeled after the federal definition. With numerous adjustments having been made to the federal definition over time, a common definition of giftedness is nonexistent at the state level. However, a primary federal definition of giftedness is provided by Johnsen (2018):

> The term "gifted and talented," when used with respect to students, children or youth, means students, children or youth who give evidence of high achievement

> capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services or activities not ordinarily provided by the school in order to fully develop those capabilities. (pp. 2-3)

Using the federal definition of giftedness as a foundation, states are given the freedom to make adjustments and adaptations to best fit their population of students. It is important to note the federal government's definition provides multiple areas in which students can be identified as gifted or as showing advanced abilities, which in turn determines various areas in which students can exhibit characteristics of giftedness or gifted behaviors and mannerisms. Preservice teachers must be able to recognize the characteristics expressed and demonstrated by gifted students in order to properly identify those to receive advanced academic services, as well as appropriate instruction and placement in gifted programs.

Characteristics of Gifted Students

Gifted students may possess a wide variety of characteristics for which teachers should look when identifying those to receive gifted services. Students can exhibit few or multiple characteristics; therefore, educators responsible for identifying these students must be knowledgeable about the attributes and qualities representative of gifted students in one or more areas. Johnsen (2018) further asserted students may possibly exhibit specific characteristics in only one area and should have the opportunity to demonstrate these characteristics "over a period of time and in a variety of situations" (p. 7).

General Intellect

Students identified as gifted in the area of general intellectual ability show high cognitive function in several areas. These individuals are capable of advanced problem

solving on a higher level than their peers. Logical reasoning is used by these students to solve both common-sense and abstract problems. They possess a large capacity for information on a wide variety of subjects and are capable of memorizing and applying newly learned information quickly and easily. Students who are gifted in general intellect typically enjoy learning and often ask very intelligent and specific questions to obtain information. These individuals tend to have a very advanced vocabulary for their age and can articulate their thinking and reasoning at a very high level.

Specific Academic Ability

Gifted students who excel in specific academic areas can be gifted in one or multiple academic areas. Based on their identified academic area of giftedness, students may exhibit specific characteristics based upon their identified area of giftedness. For example, students who are gifted in the areas of math and science likely have advanced analytical skills and the capacity to view and solve problems from various perspectives. Those identified as gifted in the areas of language arts and social studies may possess exceptional communication skills and the capacity to consider and evaluate multiple arguments before taking decisive action. Johnsen (2018) claimed students who are gifted in specific academic areas share some common characteristics including the following: having hobbies related to the field of their gifted area, participating in thorough and comprehensive research regarding specific topics within their field of interest, and identifying specific relationships and connections in their field of interest, along with the ability to apply those connections to other related topics within the same or other content areas.

Creativity

Creatively gifted students are very abstract thinkers and usually excel at developing numerous plausible solutions to the same problem, as well as viewing a problem from multiple perspectives. When defining creativity, Plucker et al. (2004) stated, “Creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context” (p. 90). Szabos (1989) distinguished creatively gifted students as being idea generators, innovative thinkers, excellent brainstormers, injectors of new possibilities, and creators of new projects. The difference between the solutions generated by creatively gifted students and those of typical students is that the solutions drafted by the creatively gifted students are much more advanced and complex than those of typical students. Luria et al. (2016) credited this notable problem-solving ability to the capacity of these students to engage in divergent thinking, which consists of the fluency, originality, elaboration, and flexibility in the cultivation of thoughts and ideas. Creatively gifted students often qualify in this area of giftedness based on scores on creativity assessments that focus on these four areas of divergent thinking. These students typically are reflective in their thinking and decision-making, accepting of open-endedness, very detail oriented and observant of their surroundings, and enjoy developing unique solutions to problems (Johnsen, 2018). As noted by Robinson et al. (2007), it is equally important for educators to support and encourage both the academic and creative talents of students by providing a supportive and nurturing environment in which they can expand upon and further develop their abilities.

Visual and Performing Arts

Leon et al. (1997) explained the importance and value of artistically gifted students by expressing that art education "has the potential to produce collective and individual civility by provoking a curiosity that legitimizes, extends, and illuminates existence" (p. 17). Recognizing the characteristics and qualities of these students and providing them with the needed advanced programming helps them feel seen for who they are while also allowing them to reach their fullest potential as artists. Artistically identified gifted students are classified in the categories of art, drama, or music. These students may excel in their performances within each category and often seek out the opportunity to perform in their identified gifted area. Creativity is a common characteristic shared by these students, as they utilize their creative interpretations to enhance the development and formulation of their performances. Some of the general characteristics that are usually demonstrated by students identified in the visual and performing arts include concentrating and devoting considerable time to artistic projects, working hard to improve upon and master artistic skills within their artistic field, enjoying experimentation in various artistic areas, and expressing themselves through artistic mediums (Johnsen, 2018).

Leadership

The notion of being gifted in leadership can be defined and characterized by a multitude of variables depending upon those currently of value to the individual providing the definition. The definition of gifted leadership has been changed and modified conceptually throughout the years. During his extensive research, Matthews

(2004) identified some common attributes of leadership that are included in a majority of the explanations regarding leadership characteristics of gifted students:

> These include (a) its social nature, particularly as expressed through relationships and the exertion of interpersonal influence; (b) its developmental aspects, which appear to be even more central among young leaders than among adults and which involve building general, as well as task-specific, skills; and (c) its particular context, including the organizational setting surrounding individuals, and other external structural features that influence the ways in which particular individuals express their leadership abilities. (p. 79)

Karnes and Bean (2005) identified several characteristics shared by students who are gifted in leadership, including the ability to adapt to new situations and adjust their plans, being responsible and dependable, holding themselves and others accountable to certain expectations, being well organized, possessing the ability to view a problem from different perspectives, being willing to take risks, and being able to influence the behavior of others. Gifted students identified in the area of leadership typically are able to work effectively with others in order to persuade them to adopt their shared vision and to adapt their thinking so they can work together toward a common goal. These students usually are well liked and respected by their peers and often are recognized, through both formal and informal measures, as being a leader others will look to and follow.

Gifted vs. High-Achieving

Although many gifted students also are high achievers because they work hard to excel in academic areas, especially those in which they are passionate or identified as being gifted, many teachers tend to view high achievers as being gifted. This is a

common misconception and often leads to the misidentification of students as being gifted who instead are simply hard workers who perform well in school. High-achieving students often are misidentified as being gifted, as several of the characteristics of high-achieving students frequently can be masked and misinterpreted as gifted because teachers observe qualities they associate with high intellectual ability such as high performance, high academic scores on assignments and projects, a strong work ethic, and a passion for learning. This does not intimate high-achieving students cannot also be gifted in one or more areas; however, distinct differences exist between these two groups. Barger (2009) expressed the importance of providing challenging content to both gifted and high-achieving students, as all students should be given the opportunity to grow in their knowledge of the content being taught. A student not formally identified as gifted does not mean they cannot perform at a similar level in various academic areas. It is crucial their learning is also seen as a priority to the classroom teacher.

Szabos (1989) developed a helpful reference chart (Appendix A) that identifies the characteristics of high achievers, gifted students, and creative thinkers. Both educators and parents can easily review and interpret Szabos' chart when observing the listed traits and attributes. In her research, Szabo noted several specific differences between high-achieving and gifted students, including that high-achieving students work hard to achieve, perform at the top of their group, prefer the company of students similar to their own age, complete assignments and projects on time, need content repeated six to eight times before they master it, are receptive, and learn with ease. On the contrary, gifted students already know the information without working hard, performing beyond the rest of the group, preferring the company of their intellectual peers as opposed to

peers of the same age, creating and developing extensions of completed assignments, requiring content be repeated once or twice before they master it, are intense in their learning and other areas, and already know the content being presented without having to learn it. Preservice teachers must know and understand these differences when determining whether students are truly gifted or simply perform well in academic areas and are hard workers who enjoy learning. However, Peters (2016) further advocated the characteristics presented by Szabos to distinguish students as gifted or high-achieving should not be used to purposely and intentionally deny a student who is not appropriately challenged with the opportunity to receive more challenging assignments and projects that more accurately align with their individual academic level and current academic progress.

Gifted Underachievers

While many gifted students exhibit characteristics that allow them to be easily identified in one or more areas, some factions of the gifted population exist such as gifted underachievers who are easily overlooked by educators because they do not exhibit the specific characteristics most often associated with giftedness. In fact, these students frequently may demonstrate behaviors seen as troublesome or undesirable. Reis and McCoach (2000) indicated common characteristics of gifted underachievers include possessing a negative perception of school and teachers, low motivation, lacking goal-oriented behaviors, being socially immature, having poor coping strategies, experiencing difficulty with focusing in class and on assignments in which they are not invested, perfectionistic behaviors, and fear of succeeding or failing in an academic setting.

Additionally, Reis and McCoach provide a thorough definition of gifted underachieving students in the following statement:

> Underachievers are students who exhibit a severe discrepancy between expected achievement (as measured by standardized achievement test scores or cognitive or intellectual ability assessments) and actual achievement (as measured by class grades and teacher evaluations). To be classified as an underachiever, the discrepancy between expected and actual achievement must not be the direct result of a diagnosed learning disability and must persist over an extended period of time. Gifted underachievers are underachievers who exhibit superior scores on measures of expected achievement (i.e., standardized achievement test scores or cognitive or intellectual ability assessments). (p. 157)

It is crucial teachers can recognize the characteristics and personality traits of gifted underachieving students, as McCoach and Siegle (2003) conveyed academic underachievement "can sometimes be indicative of a more serious physical, mental, or emotional issue" (p. 145).

Johnsen (2018) asserted the undesirable behaviors commonly demonstrated by gifted underachieving students "tend to limit services for some gifted and talented students because teachers and other educators may have particular stereotypical expectations of how gifted students should perform" (p. 17). Many of these unsatisfactory behaviors often are used by gifted underachievers as defense mechanisms related to being afraid to fail, not feeling safe to take academic risks, and fulfilling the lower expectations they believe teachers expect from them based on their behavior or past performances. Kolb and Lee (1994) explained teachers sometimes lower their expectations for gifted

students when they fail to perform at a level expected by the teachers or demonstrate unwanted behaviors. These lowered expectations can result in teachers offering assignments that are less challenging or providing little feedback, which in turn causes gifted students to perform at a reduced level of academic expectation and leads them to fulfill the role of a gifted underachieving student. Gifted students of color commonly are not recommended for gifted programs because they may display some of the characteristics associated with gifted underachievers, such as being disinterested and showing a lack of motivation (Moore et al., 2005).

As indicated by Morisano and Shore (2010), once labeled as gifted, which includes the possibility of disappointing themselves and others should they perform at a level that does not meet the expectations of that label, some students may experience sufficient stress to choose to remain undetected and unidentified throughout their academic careers because they purposely avoid success and recognition by not performing at the level at which they are capable. Shaughnessy and Seevers (2003) conducted an interview with Dr. Sylvia Rimm on the overall cause of underachievement in gifted students. She explained gifted underachieving students are not purposely performing poorly; rather, they have an unbalanced set of skills and are incapable of performing at their highest level due to lack in one or more areas. Gifted underachievers therefore frequently experience other issues in their lives not related to their academics. Thus, teachers and administrators must work with these students to provide them with the support and resources needed to be successful.

English Language Learners

Students whose first language is not English, referred to as English language learners, often are under-identified in gifted education programs and over-identified in special education programs due to multiple barriers between these students and the educators responsible for gifted identification (Harris et al., 2009). The lack of providing these students with the gifted services they deserve could contribute to these individuals experiencing and demonstrating several characteristics common in gifted underachievers due to the lack of academic challenge experienced in the classroom setting. Language barriers are the most common obstacles encountered by English language learners when denied gifted education services because they are not provided with assignments and projects in their native language, preventing them from demonstrating their knowledge in the various content areas. Harris et al. (2007) identified an additional barrier for English language learners. As various cultures place a distinctive emphasis on specific talents in the academic and intellectual capabilities of their students, those talents may be valued differently in the schools these students attend.

Testing bias is another cause for the underrepresentation of English language learners and culturally diverse students in gifted education programs (Bernal, 2002). The diagnostic tests that determine whether these students qualify for gifted program services typically are provided in English, which necessitates a proficient mastery of the English language. Assessments must be provided to English language learners in their native language. Otherwise, these students are not given an equitable opportunity to perform at their highest level on these academic evaluations. Plucker (1996) identified specific recommendations educators must follow when identifying gifted students who are

English language learners and those from minority groups, which include "the use of multiple criteria and multiple data gathering techniques, awareness of cultural influences upon the identification process, and language concerns" (p. 323). It is evident educators and school systems must make several systematic changes to ensure all students have an equal opportunity to qualify for and receive gifted services.

Culturally Diverse Gifted Students

Johnsen (2018) identified culturally diverse gifted students as "students from specific ethnic groups, including, but not limited to, Hispanics, African Americans, Native Americans, and Asian Americans" (p. 19). In order for educators to be able to recognize the gifted and talented characteristics exhibited by these groups of students, it is imperative they make learning about the cultural backgrounds, histories, languages, and values of their students a priority, as these components of a student's identity assist in revealing the qualities and attributes of their giftedness. Robinson et al. (2007) indicated, "It is important for educators of culturally and linguistically diverse students to understand the ways parents approach the education of their children and the cultural distinctions they may bring to the educational process" (p. 248). Knowledge of this information is imperative because various cultures value different aspects of giftedness and may place contrasting significance on specific skill sets possessed by students.

Common characteristics displayed by culturally diverse gifted students include the enjoyment of participating in small group activities, using expressive speech, creativity in both movement and problem-solving abilities, improvising and adapting their thinking, possessing a sense of humor, and quickly understanding new concepts. Lewis et al. (2018) acknowledged when considering these characteristics it is quite

possible culturally diverse learners need different and varying assistance and support from an educator who "acknowledges and respects the hidden rules of culture" (p. 52). These hidden rules often are unspoken or not explained to educators by students or their families, which is the reason preservice teachers must be provided with the training and resources needed to effectively meet the diverse needs of these students.

Twice-Exceptional (2E) Students

One category of gifted students with whom many educators struggle relative to recognizing and identifying characteristics of giftedness is that of 2E students. Difficulty in observing gifted and talented characteristics in 2E students occurs because educators are accustomed to viewing success in school and other forms of academic achievement as identifiable qualities of giftedness (Robinson et al., 2007). Lee and Ritchotte (2018) proclaimed educators must be trained and possess experience working with 2E students in order to better recognize their gifted attributes, as well as to be provided with the educational services they require. Barber and Mueller (2011) defined 2E students as "students who simultaneously meet the definition for giftedness and for a learning difficulty" (p. 109). These students often exhibit many of the same characteristics of typical gifted students, while at times also expressing some distinct characteristics usually associated with a 2E identification. Through extensive research conducted by Ruban and Reis (2005), the researchers found many of the characteristics demonstrated by 2E students include but are not limited to the following: an advanced vocabulary, advanced performance in creativity, exceptional memory skills, strong problem-solving and critical-thinking skills, a wide variety of interests, a sense of humor, development of

learned helplessness, low self-esteem, lack of motivation, perfectionism, and difficulty in mastering social skills and social awareness.

Twice-exceptional students also can become easily frustrated with their inability to master specific content or skills, demonstrate a considerable lack of organization, and display disruptive classroom behaviors, which can sometimes lead to negative interactions and experiences with their teachers and other classmates (Gallagher, 2002). Johnsen (2018) further clarified the giftedness of 2E students frequently is masked by their disability, which can contribute to the difficulties experienced by some educators in the identification process. Reis et al. (2014) explained the obligation of educators and school districts to provide comprehensive services for 2E students by stating:

> Consensus among scholars confirms that 2E students need access to enrichment activities in their area(s) of interest and strength. Research also suggests that these students also require special education services for their difficulties, including instruction in compensation strategies. These strategies will enable 2E youngsters to manage their disabilities better thus enabling them to thrive in an academically challenging environment. (p. 225)

It is essential educators provide 2E students with all of the services they need, including gifted education services for their academic needs and special education services for their social, emotional, and behavioral needs in order for them to be successful.

Identifying Gifted Students

The process for formally identifying students as gifted and talented has changed multiple times since the establishment of the field because the concept of giftedness has evolved due to various modifications and adjustments to the foundational definition of

giftedness. The original identification method used to identify students for gifted and talented programs was the Intelligence Quotient (IQ) test; however, as noted by Sternberg (2017), giftedness involves more than simply intelligence, which is the reason the use of various identification measures coincides with best practices strategies in the field of gifted education. Using multiple criteria and assessments to identify students for gifted and talented services is highly recommended in order to provide equitable opportunities for all students to be identified and receive the services for the best opportunity to reach their highest level of academic potential. According to Johnsen (2009), in addition to using multiple assessment measures when identifying students as gifted, it is important to provide the opportunity to demonstrate their giftedness by collecting samples of their work over an extended period because giftedness is a dynamic concept and "no single test can capture a gifted student's dynamic abilities" (p. 9). Robinson et al. (2007) further advocated for the use of multiple identification measures by explaining the implementation of these methods is "especially useful to overcome the underrepresentation of minority students in gifted and talented programs" (p. 235). Educators who advocate for the use of multiple assessment measures to identify students for gifted programs and services, according to Schroth and Helfer (2008), clearly seem to have a "strong interest in serving students who have potential for high performance but additionally emphasize the importance of serving more students, including those who may be missed using only traditional tools" (p. 159).

Recognizing and addressing the discrepancy regarding the lack of representation of ethnic and minority students in gifted programs, when compared to their numbers in the regular classroom, is crucial when working to provide these students with the equal

representation and gifted services they need (Awaya, 2001). Callahan (2005) indicated a central reason minority students and those from culturally diverse backgrounds are under-identified for gifted and talented programs is because they are provided with inadequate opportunities for talent development prior to undergoing the identification process. She further explained:

> The more common belief is that there are few students who come from ethnic minority groups or from families in poverty who are capable of developing into gifted children and adults or of exhibiting gifted behaviors. As a consequence, the focus of instruction for these children becomes mired in low-level, drill-and-kill practice of mundae, uninteresting, and unmotivating learning tasks. The children in these classrooms are never exposed to and are not given the opportunity to explore their ability to be creative, critical, analytic, and high-level thinkers and problem solvers in the school environment. Without the opportunity to experience the kinds of tasks associated with the development of these abilities, the likelihood that children will exhibit such skills in classrooms or on tests are severely diminished. (p. 99)

Siegle et al. (2016) affirmed, "A comprehensive, inclusive system for identifying gifted students from all populations requires a holistic approach of broadened identification" (p. 122). Aside from using multiple identification criteria, considerations should be given to students who show potential and promise when provided with opportunities to receive advanced instruction. In addition to providing a more equitable opportunity for minority students to qualify and be represented in gifted programs, the use of multiple identification assessments gives all students numerous chances to qualify for gifted

services while being able to qualify in more than one area of giftedness. Incorporating the use of various assessments when identifying students for gifted programs encourages the use of both quantitative and qualitative assessments (Johnsen, 2018). Quantitative assessments can include norm-referenced rating scales, achievement tests, aptitude tests, and intelligence tests, while qualitative assessments can include performance-based assessments and observations.

Callahan (2005) encouraged the use of authentic assessments when identifying students for gifted programs, as these assessments emphasize performance tasks with which children are familiar and that serve a purpose in their world. The validity of these assessments is much stronger than the paper-and-pencil assessments containing questions and content to which they have no relationship or connection. Gifted students with learning disabilities often appear average to their teachers because their disabilities mask their giftedness; at the same time, their giftedness also can mask their disabilities. McCoach et al. (2001) indicated these issues frequently result in individuals not being identified for gifted or special education services because they "have patterns of strengths and weaknesses that make them appear to have average abilities and achievement (p. 405)," which causes them to not receive the various academic services they need. Willard-Holt et al. (2013) concurred with McCoach et al. Regarding the gifted identification of 2E students, Willard-Holt et al. added the "true academic potential of these learners may be overshadowed by their disabilities, or on the other hand, the students' limitations may not be recognized as a consequence of their high achievement" (p. 248).

Jarosewich et al. (2002) advocated for the use of teacher gifted rating scales that could be used in the regular classroom because using intelligence tests as the primary measure of giftedness excludes nonintellectual areas of giftedness such as creativity, leadership, and artistic areas from the identification process. McGee and Hughes (2011) noted the importance of teachers and families collaborating to identify gifted children, so as to create and provide a supportive academic environment so they can benefit from being challenged during their academic experience.

On the federal level, limited legislation exists to provide guidance for the implementation of gifted services and to hold schools and districts accountable for effectively meeting the needs of gifted students. The only piece of federal legislation supportive of gifted education and gifted students is the Javits Act which, according to the NAGC (n.d.b), can be summarized as the following:

> The Jacob Javits Gifted and Talented Students Education Act (Javits) was first passed by Congress in 1988 as part of the Elementary and Secondary Education Act and was most recently reauthorized through the Every Student Succeeds Act to support the development of talent in U. S. schools. The Javits Act, which is the only federal program dedicated specifically to gifted and talented students does not fund local gifted education programs. (Federal Legislative Update section, para. 2)

Furthermore, the NAGC (n.d.c) declared although gifted and talented students are recognized by federal law as having specific and unique needs that may not be met in typical school settings, the law "offers no specific provisions, mandates, or requirements for serving these children" (NAGC, n.d.c, para. 1). As a result of the reserved and limited

support for gifted education and gifted students in federal legislation, it is crucial for educators to recognize, especially for students in primary grades, the initial identification of a student as gifted, showing characteristics of giftedness, or demonstrating the potential of being gifted becomes the duty of the classroom teacher, as typically they have the most experience with these students and develop a unique relationship with each student in their classroom. Classroom teachers possessing this type of in-depth and comprehensive knowledge of their students and their abilities designates them as the ideal candidate to both nominate and refer students to receive gifted education services. Therefore, providing preservice teachers with gifted training is important in order to acquire the necessary knowledge to look for specific characteristics when observing students who need additional challenges in the classroom and when recommending these students to receive services in gifted programs (Schroth & Helfer, 2008). It is essential gifted students are identified to enable them to receive the academic services that best align with their academic and performance levels in order to benefit from challenging and advanced content to reach their full academic potential.

Common Misconceptions About Gifted Students

Myriad misconceptions, myths, and stereotypes exist associated with gifted students that have contributed to inadequate academic services being provided, improperly being identified for gifted and talented services and programs, and being misunderstood by their peers and their teachers. Carman (2013) acknowledged teachers with stereotypical thoughts, beliefs, biases, or expectations of gifted students may make biased recommendations based on those beliefs, which can impact the educational and academic services these students receive. These teachers determine those to be included

or excluded from receiving advanced academic services in gifted programs. One of the most common myths believed by teachers regarding gifted students is that due to their giftedness they need no extra help in the classroom and do fine on their own. Moon (2009) argued this myth most likely is the result of NCLB from 2001, in which the primary emphasis of classroom instruction was shifted to meet the needs of struggling learners having difficulty mastering the content being taught. Additionally, as many gifted students appear to enjoy school and have few problems outperforming their peers on grade-level tasks, educators likely view them as not requiring instructional support as much as their struggling peers. However, it is important for gifted students to receive advanced instruction and challenging content within their zone of proximal development in order to reach their highest level of potential and to continue to experience academic progress. Niehart et al. (2002) noted if gifted students are not challenged in the classroom or are placed in academic environments meant to meet the needs of lower ability students, it is very possible they will become frustrated, bored, and develop a lack of motivation associated with school and learning.

Many teachers receive no gifted training during their undergraduate programs and are poorly equipped and experienced in providing consistent challenges to gifted students, as they are unfamiliar with their needs. Cooper (2009) clarified teaching all students the same is inequitable for any individual, especially gifted students, because everyone learns in a different manner and experiences learning in unique ways. Cooper added the way in which gifted students are taught "requires instructional and assessment strategies geared specifically to advanced learners" (p. 284). Providing gifted students with challenging instruction that meets their specific needs should be required so they

have an equal opportunity to advance their knowledge and learning as a means of enhancing and improving their intellectual skills.

A common misconception regarding instructional needs of gifted students is that teachers should provide only differentiated instruction in the regular classroom, and it will be enough to meet the needs of gifted students. Differentiation of instruction is an educational best practice, although it should not be the only method of instructional focus when attempting to meet the academic needs of gifted students. Hertberg-Davis (2009) reported "many school districts across the country have decided to eliminate or cut back on more traditional gifted programs in favor of differentiation of curriculum and instruction in the regular classroom" (p. 251). Misconceptions exist regarding the concept of successful differentiation, which may be detrimental to gifted students. Methods inconsistent with best practices in differentiation include assigning gifted students to lead groups to ensure the required work is completed or having them serve as peer tutors to teach or help struggling students, both of which are the management function of the classroom teacher. Sisk (2009) asserted high-quality differentiation can be implemented to meet the needs of all students in the regular classroom, including gifted students, by incorporating instructional strategies such as inquiry-based learning, providing students with choice and options, allowing students to select topics and content they wish to learn, using tiered assignments and parallel tasks, and implementing enrichment clusters. Preservice teachers must be given the opportunity to receive professional development and specific training related to gifted students to effectively and consistently include these instructional strategies and methods in the classroom to meet the academic needs of gifted students. Also, they should be allowed to practice implementation of the strategies

they learned in a clinical setting under the direction of an educator who is accomplished and excels in the application of these techniques. This practice enables teachers to receive appropriate and constructive feedback to improve upon their instructional methods.

A common misconception about gifted students is related to the identification process. Gifted students are comprised of a similar group of students, and giftedness is a characteristic inherited at birth. Reis and Renzulli (2009), both avid researchers and contributors to the field of gifted education, strongly disagreed with both sentiments and claimed, "There is no single homogeneous group of gifted children and adults, and giftedness is developmental, not fixed at birth" (p. 233). Niehart et al. (2002) agreed with this statement and claimed the following regarding gifted students:

> There is no more varied group of young people than the diverse group known as gifted children and adolescents. Not only do they come from every walk of life, every ethnic and socioeconomic group, and every nation, but they also exhibit an almost unlimited range of personal characteristics in temperament, risk taking and conservatism, introversion and extroversion, reticence and assertiveness, and degree of effort invested in reaching goals. Furthermore, no standard pattern of talent exists among gifted individuals. (p. 1)

Gifted students come from a multitude of diverse cultural and ethnic backgrounds and exhibit giftedness in a variety of areas. Sheffield (2017) noted the misconception that giftedness is not a concept has developed over time, which can be especially detrimental to advanced mathematics students. She found when these students encounter new ideas for the first time and struggle with understanding them, often they convince themselves they are not actually gifted in math because they do not automatically understand

something they have never been taught. Being provided with challenging content, especially for students with high potential and increased abilities, allows students to develop their giftedness over time as they are exposed to lessons and activities that pique their curiosity and are focused on academic areas about which they are passionate and have intense interest. Similar to the misconception that gifted students are comprised of a homogeneous group, the gifted population consists of between 3-5% of the overall student population (Borland, 2009). This statistic is included and frequently cited in the *Education of the Gifted and Talented - Volume 1: Report to the Congress of the United States by the U. S. Commissioner of Education*, commonly referred to as the *Marland Report* (Marland, 1971). The report paired it with a very influential definition of giftedness for its time. As the figure was believable at the time and stated often, it has been repeatedly quoted despite having no relationship to the actual number of gifted students within the overall student population. When these two misconceptions are combined, often gifted students remain unidentified because they do not fall within the unrealistic and inaccurate parameters of these misconceptions.

Kaplan (2009) discussed another misconception about gifted education, which is the concept that a single curriculum exists for gifted students. Specific guidelines are available for educators to follow when working to meet the needs of gifted students, although a standard curriculum is nonexistent mainly because gifted students have varying needs. Creating one specific curriculum would not successfully meet the needs of all gifted students. Several organizations and foundations are available, such as the National Association for Gifted Children (NAGC), that provide standards for educators to use when designing curriculum and assessment, such as teaching students critical-

thinking and problem-solving skills, as well as creating ideal learning environments for gifted students. Gentry (2009) maintained the importance of these standards in developing high-quality programs for gifted students that also provide a continuum for them with regard to having access to the services they need to continually and fully develop their gifts and talents. Gentry further clarified, "Implementing a variety of comprehensive services on the continuum can offer quality services to students with gifts and talents, help more students achieve at higher levels, and help educators recognize talent that, in the absence of deliberate enrichment services, may have gone unrecognized" (p. 264).

According to VanTassel-Baska (2009), gifted programs being considered elitist and separate from programs implemented in the regular classroom is a misconception that often leads to negative feelings and adverse associations with gifted students and gifted programming. The author further explained the development of gifted programs originally was based on special education programs in which students were pulled from the classroom to be taught by resource teachers who could meet their academic and social needs. Being pulled from the regular classroom environment and participating in learning activities that are unavailable for the rest of the students can cause those who remain in the regular classroom to develop unfavorable attitudes toward gifted students as a result of their disappointment about not receiving the same opportunities. However, gifted programs are designed to best meet the needs of all high-ability students, and it is important for gifted students to receive the advanced instruction provided by these programs in order to reach their highest level of potential.

Peterson (2009) described a common misconception about gifted students that often is detrimental to their development because gifted and high performers do not possess unique social and emotional needs. Many educators assume gifted students are happy and enjoy school because they perform well; however, this assumption can be very misleading. Some gifted students have very intense emotions and are sensitive to the feelings and expectations of others, which can cause them to isolate from their peers as a way of coping with their thoughts, feelings, and emotions. Gifted students frequently feel high levels of stress when focusing on meeting the high expectations of others, which can lead to the development of perfectionism when they feel they must constantly perform at high levels in order to deserve their label of giftedness. Geddes (2011) explained some gifted students put immense pressure on themselves to meet the high expectations and sometimes resort to forms of academic dishonesty such as cheating, plagiarism, and copying assignments in order to be sure to receive high scores on assignments, projects, and exams, thus deserving their gifted label.

Another misconception that frequently is complicated for educators and district administrators to understand involves thinking advanced placement courses can serve as an effective substitute for gifted programs (Gallagher, 2009). Advanced placement courses are designed to provide access to content from college courses delivered at a rapid pace, which is thought to be perfect for gifted students. While many of these students enjoy and benefit from taking advanced placement courses, these courses are different from gifted programs and do not provide the same type of advanced instruction and training in critical thinking and problem solving as gifted programs. Gallagher clarified, “Advanced placement programs could be adequate if fast pace was combined

with advanced instruction" (p. 287). Advanced placement courses have very limited offerings, which may not be within the interest areas of gifted students. These courses are also offered only during the last two years of high school; therefore, gifted students must have their needs met through other academic opportunities and services until they are able to take these classes.

Misconceptions about gifted students related to their classroom performance include educators thinking students cannot be gifted if they have a disability or are receiving poor grades in one or more subject areas. Educators must understand gifted students may be gifted only in one specific content area and may not exhibit characteristics of giftedness in multiple content areas. Reis and McCoach (2000) affirmed gifted underachievers often are viewed by teachers as poor students who cannot be gifted due to their consistent poor performance in the classroom. However, these students often deal with multiple issues both inside and outside the classroom that take their focus away from their academics, which frequently prevents them from displaying their giftedness in a consistent manner. It is very possible gifted students perform poorly in subject areas in which they are not identified as gifted because they truly struggle with the content since it is not in their area of strength. Twice-exceptional students are gifted but also may have a disability; the teacher is responsible for providing these individuals with the services they need to be successful.

Research conducted by Megay-Nespoli (2001) found providing workshops for preservice teachers on the common misconceptions and stereotypes of gifted students was very effective and resulted in a significant positive change in their attitudes toward gifted students. Prior to attending the workshop, the preservice teachers agreed with

many stereotypical biases about gifted students. After attending the workshop, their attitudes changed significantly on more than half the items about which they were asked regarding their perceptions of gifted students. This research suggests providing preservice teachers with professional development training that addresses the needs of gifted students and gifted education is very beneficial. This type of training allows preservice teachers the opportunity to address and correct any misconceptions they may have about gifted students while also providing them with multiple strategies and methods to implement in their classrooms in order to effectively meet the needs of gifted students.

Needs of Gifted Students

Gifted students have a diverse number of needs, both social emotional and academic, that can be quite different from those of their peers and require the teacher to implement a different skill set. The needs of gifted students have been relatively ignored since the implementation of NCLB in 2001. Kemp (2006) claimed "the No Child Left Behind Act shifted funds normally targeted for gifted education to programs that make schools compliant" (p. 31). The focus of this legislation was to provide funding to schools with the purpose of improving the performance of students who were struggling to master grade-level content. The measures used to determine the success of this legislation were standardized tests taken by students at the end of each school year. Educators were expected to use the additional funding they were given to focus on the low-performing students and to work with them so test scores would improve dramatically by the end of the school year. However, these expectations were both impractical as well as unrealistic. Unfortunately, the overall impact of this legislation prioritized the needs of struggling students over those of gifted students, and this shift in

teaching focus resulted in the academic or social emotional needs of gifted students being unmet in the classroom.

Social Emotional Needs of Gifted Students

The social emotional needs of gifted students are quite different from that of their typical peers, as gifted students face many additional challenges and obstacles which they must overcome in order to experience both academic and personal success. Niehart et al. (2002) noted some of the social and emotional needs of gifted students when they are not placed with peers of similar intellect, such as a decline in their self-concept or an increase in their negative self-criticism, can be met through advanced coursework and acceleration:

> In general, then, in order to address these emotional and social issues, three educational provisions must be in place: (1) placement of others of like ability when the learning is "serious," (2) exposure to progressively more complex tasks in a prestructured continuum of learning experiences based on mastery and readiness, and (3) flexible progression at an appropriately rapid pace. (p. 4)

Gifted students are reliant on their families and teachers to provide them with a supportive environment in which they can develop their personalities and advanced abilities while also identifying and understanding their individual social emotional needs. Their development is based upon the type of environment that has been created for them (Robinson et al., 2007). Some of the most prevalent social emotional issues experienced by gifted students include asynchronous development, perfectionism, and incapability of managing other academic pressures. If the social emotional needs are not met, they likely

will encounter some expected negative consequences, which can lead to detrimental experiences in their academic performance as well as with their social relationships.

Asynchronous Development

Asynchronous development is a trait of giftedness often experienced by many gifted students because their intellectual abilities frequently surpass those of their chronological-aged peers. Gifted students who struggle with components of asynchronous development usually feel out of step with the norms and expectations of society because their thought processes, the intensity with which they feel emotions and other senses, and their awareness of the thoughts and feelings of others, can be overwhelming (Niehart et al., 2002). A group of educators, parents, and psychologists experienced in working closely with highly gifted students met as part of the Columbus Group (1991) and further clarified and defined asynchronous development in the following terms:

> Giftedness is asynchronous development in which advanced cognitive abilities and heightened intensity combine to create inner experiences and awareness that are qualitatively different from the norm. This asynchrony increases with higher intellectual capacity. The uniqueness of the gifted renders them particularly vulnerable and requires modifications in parenting, teaching and counseling in order for them to develop optimally. (p. 1)

The most common type of asynchronous development experienced by gifted students involves the differences between their mental age and their physical age and the way in which those discrepancies impact their social and emotional experiences in school. For example, students in the primary grades in elementary school who have an intellect

equivalent to students in junior high, high school, or college often feel out of place with their peers and lack the social skills to form lasting and supportive relationships with children in their own age group. This can cause these students to experience high levels of stress, fear, and anxiety because they are unable to relate to their chronological peers or fit in and be accepted by their desired peer group. They lack the coping mechanisms and effective strategies to do so successfully. Silverman (1997) indicated many 2E gifted students also struggle with components of asynchronous development and relating to their peers. Understanding and recognizing the effects of asynchronous development on gifted students can assist educators and counselors in providing these students with the resources to develop strategies to be successful academically, socially, and emotionally, which can improve their self-concept (Robinson et al., 2007). In order to help gifted students cope when experiencing asynchronous development, as well as to thrive in social settings, educators and parents must work with these students to teach them specific social skills such as recognizing social cues, articulating their thoughts and emotions, expressing their feelings through productive conversations, and learning to identify and empathize with their peers and others.

Perfectionism and Academic Pressures

Perfectionism is a socioemotional attribute that is very common in gifted students and can have either positive or negative manifestations. Niehart et al. (2002) clarified, "Perfectionism that translates into trying again and again leads to success; perfectionism that results in paralysis, avoidance, anxiety attacks, and withdrawal guarantees failure" (p. 76). Gifted students who engage in perfectionism practices generally focus intently on setting high goals for themselves and work very hard to attain extremely high levels of

academic achievement. Those who participate in perfectionism practices with positive implications frequently feel empowered by their success and ability to establish and accomplish challenging goals they set for themselves. Those who participate in perfectionism practices with negative implications often experience high levels of anxiety and stress associated with their drive to accomplish the goals and objectives they have established for themselves or have been established for them.

Silverman (1999) maintained perfectionism is a function of asynchronous development because gifted students "set higher standards for themselves than other children their age because mentally they are more like older children" (p. 217). As explained by van der Meulen et al. (2014), negative perfectionism often is a result of gifted students setting expectations for themselves that are both impractical and unrealistic. These unrealistic expectations also can come from parents and teachers because they have developed expectations for these students based on their past performances that are essentially unattainable. In order to meet these expectations, whether from parents and teachers or self-imposed, gifted students frequently experience high levels of stress and sometimes even engage in forms of academic dishonesty to ensure they are able to fulfill the expectations placed upon them. Geddes (2011) identified some of the most common academic pressures on perfectionistic gifted students to perform at high levels, to include maintaining their GPA, pressure from their peers, and exhausting demands from heavy workloads. She further explained, "Gifted students may choose to engage in academic dishonesty not because they lack ability, but due to the stress associated with being identified as gifted and the high expectations of

parents and the school community that result from the identification" (p. 51). To best support gifted students who are perfectionists, Niehart et al. (2002) suggested:

> Parents and teachers should be cautious about viewing perfectionism as unhealthy. Gifted children and adolescents need assistance from parents, teachers, and counselors to understand that wanting to achieve at a high level, having a drive to excel, and enjoying order and organization can be positive assets, while learning to set priorities, taking time to reflect on the value of mistakes and relaxation, and pursuing one's passion will reduce the stress that results from unhealthy perfectionism. (p. 76)

Teachers and counselors are responsible for providing these students with the resources needed to successfully identify and distinguish the positive and negative manifestations of perfectionism in order to implement effective coping strategies and methods that allow them to achieve and experience academic success in a safe and productive manner. Gifted students who possess perfectionism tendencies and encounter additional academic struggles and difficulties typically are so focused on their performance and maintaining their gifted and talented label they frequently fail to see the negative ramifications of their actions, which can become debilitating if left unchecked. Parents and educators can support these students by providing them with challenging tasks in an environment in which it is safe to fail, modeling for them the process of making mistakes and learning from them and that it is safe to do so, as well as to work with them to introduce the concept of productive struggle into their academic environment.

Supports for Gifted Students

It is very important for educators and parents to support the social and emotional development of gifted students so they feel safe and valued in their academic and social environments. Guthrie (2019) affirmed, "Supporting the social and emotional development of gifted children is crucial for helping them reach their full potential" (p. 2097). Also, a strong line of open communication between parents and educators is important for discussing and determining any coping strategies that should be integrated into the habits or routines of these students to help them develop positive relationships and experience positive interactions with their peers and teachers, as well as others with whom they come in contact during social outings. Herbert and Smith (2018) further clarified:

> To understand our students fully, we need also to understand how they feel--feel about their learning, about their talents, about their place in the classroom. Because if we make them feel sage to learn, to experiment, and to be wrong, we make it easier for our students to be happy about who they are--and about who they will become. (p. 176)

The feelings experienced by some gifted students in school settings may cause their surroundings to become very stressful and restrictive. The perfectionism, insistence on using logical-thinking and problem-solving methods, as well as the emotional intensity these students frequently endure, can make it extremely difficult for them to identify with their peers and to develop friendships (Tunks & Gilles, 2013). When supporting gifted students who are perfectionists, van der Meulen et al. (2014) suggested teachers "place greater emphasis on the learning process instead of the learning results

when a child already sets too high standards for him or herself" (p. 291). This method could help students focus more on the content rather than on their performance and also assist in reducing the pressure they place on themselves to consistently perform at a high level.

MacFarlane and Mina (2018) advised parents to do the following when preparing their gifted children to interact with others during challenging and uncomfortable social situations:

> Parents of the gifted should be aware of the characteristics related to emotional sensitivity and use situational scenarios at home to role-play experiences to prepare children for unexpected situations to handle with ease. Children who practice being in different scenarios at home are more effectively prepared to positively deal with challenging social situations that they might find themselves in with peers. They also know and understand the perspective of the adults in their lives and the expectation for acceptable behavior. Role-playing in both home and school settings help prepare students for life beyond school. (p. 132)

Preuss and Dubow (2004) advocated for teaching problem-solving strategies to gifted students, as these skills have been found to give gifted students the practice needed to deal with the stressors and fears that cause anxiety both inside and outside the school setting. The implementation of an affective curriculum, which can include topics such as self-esteem, interpersonal skills, and understanding emotions, also can be a successful preventative strategy that can be used by teachers and counselors to address the social and emotional needs of gifted students (Niehart et al., 2002). Teachers must understand the social and emotional development of gifted students is an essential part of their

academic and social identity. Effectively assisting these students with the social and emotional facet of their giftedness by providing them with appropriate coping strategies and methods allows them to experience success both inside and outside the academic setting.

Instructional Needs of Gifted Students

Meeting the academic needs of gifted students in the regular classroom setting can be quite a challenge for any teacher, but it is especially challenging for preservice teachers who have very limited experience working with and teaching gifted students. Research conducted by Kanevsky and Keighley (2003) identified five essential characteristics in creating productive and effective learning environments that successfully engage gifted students: being challenged, having some control over their learning, the complexity of the lessons and assignments they are taught, having choice in their assignments and projects, and having a caring teacher. Providing differentiated instruction, appropriate student grouping, opportunities for independent study, and supporting grade-level acceleration and the completion of advanced coursework are instructional methods and strategies that can be utilized by preservice teachers to effectively accommodate gifted students in the regular classroom to meet their advanced academic and intellectual needs.

Differentiated Instruction

Differentiated instruction allows teachers to provide learning opportunities that meet the diverse academic needs of all students. For teachers to accomplish this, they must consider each student as an individual and focus on the content they are teaching, as well as what they want their students to master at the conclusion of each instructional

unit. Karnes and Bean (2005) claimed the concept of differentiated instruction was originally formulated because of the advanced knowledge and learning possessed by gifted students and the realization of the inadequacy of the regular core curriculum at meeting their academic needs. Tomlinson (2003) stated, "The goal of a differentiated classroom is to plan actively and consistently to help each learner move as far and as fast as possible along a learning continuum" (p. 2). Silver et al. (2000) further advocated, "Through the fusion of learning styles, multiple intelligences, and effective lesson planning and implementation, teachers can promote the highest levels of active, in-depth learning in the classroom, while also making success a reality for every student" (p. 49). Differentiation is intentional and is developed by teachers who create learning opportunities for their students based on their interests, learning preferences, and their individual levels of readiness (Roberts & Boggess, 2012). Responsive teaching encourages the use and implementation of differentiated instruction because it is the result of teachers developing an understanding of the academic needs of all students and the confidence in their ability to plan for and meet students' instructional needs.

Gifted students frequently are expected to remain in the regular classroom, without differentiated instruction or any type of lesson modification, and to conform to the instruction being provided when oftentimes they have already mastered the content and their intellectual abilities have far surpassed those of their same-age peers. As a result of their continuous presence in the regular classroom, gifted students find very few students with whom they can successfully interact and communicate who are on their same intellectual level (Robinson, 2003). These experiences can contribute to the development of underachievement and frustration at being unable to advance their own

learning and to experience continuous academic progress. Silver et al. (2000) advocated, "Teachers need to create a classroom environment that allows students to process information the way they do in the world outside of school" (p. 47). Adams (2015) explained teachers are working toward meeting the academic needs of gifted students when they "tune in to their individual needs, do frequent assessments, and differentiate instruction" (p. 45). However, it is important to note differentiating instruction for gifted students does not mean providing them with extra work or more of the same assignment. Rather, differentiating instruction involves designing and creating lessons and projects that are more in-depth and contain more rigor and challenge.

When developing lessons and units for differentiated instruction, teachers must realize the importance of first having students complete pre-assessments focused on the content of the unit (Rakow, 2012). Gathering student data provided by the pre-assessment can assist teachers in effectively differentiating their instruction and providing students with purposeful instruction. Additionally, Gadzikowski (2013) suggested pairing an inquiry process with differentiated instruction, which can be very compelling for gifted students in regard to their learning in that, "One of the most powerful ways to challenge children to think is to encourage them to ask their own questions and to seek their own answers" (p. 9). Tomlinson (2001) noted successful differentiated instruction occurs when teachers focus on students and provide multiple approaches within their teaching to differentiate the content students learn, the processes they utilize to learn and master the content being presented, and the product students create to demonstrate what they have learned during the course of instruction. Differentiating the content, process, and product allows for students to participate in instruction that is more individualized and designed

to meet their specific academic and intellectual needs and readiness levels. Through her research, Page (2000) ascertained using differentiated instruction to meet the needs of gifted students also gives teachers the opportunity to provide challenge for all students based on their interests, academic needs, and ability levels.

Differentiated instruction was developed to help teachers provide quality learning experiences for students, at their own pace and on their own level, to allow them to experience continuous academic progress to reach their full potential. Regarding the purpose of differentiation, Roberts and Boggess (2012) asserted:

> All children deserve opportunities to have learning that is worth their time and effort. The work must be at an appropriate level of challenge. The appropriate level of challenge requires effort to reach that learning goal, but the goal must be at an academic level that is reachable for individual students. Those levels will seldom be the same for an entire class, even if it is a class of advanced learners. Excellence is the target, as expectations are high for all students. Differentiation is the overall strategy that will allow all children to make appropriate continuous progress. (p. 141)

Differentiating instruction is only one method teachers can use to provide appropriate academic services to gifted students (Karnes & Bean, 2005). Other effective instructional methods that can be used to successfully meet the academic needs of gifted students include but are not limited to various grouping strategies, allowing students to participate in independent study projects that focus on the content currently being taught in their classroom or based on their individual areas of interest, and giving them the opportunity to complete advanced coursework and engage in forms of academic

acceleration such as grade skipping, taking advanced classes, or subject-based acceleration, which focus on specific content areas.

Grouping

The most common form of grouping students when assigning cooperative learning tasks is the use of heterogeneous grouping in which students from all ability levels are included in each group. While this strategy allows for diversity with regard to ability, gifted students often experience anxiety and frustration when included in these types of student groups (Karnes & Bean, 2005). Robinson (2003) further elaborated gifted students often feel exploited in these groups, as they feel the need to do most if not all of the work, make sure the task gets finished, and become angered if their grade is lowered due to lack of cooperation by the other group members. When creating tasks that require cooperative learning, it is important for teachers to know multiple effective grouping strategies can provide a positive working and learning experience for gifted students who do not require the use of heterogeneous grouping methods.

Delisle (1992) indicated allowing the multi-age grouping of gifted students can be successful because gifted children "will enjoy, benefit from, and desire experiences with children who differ from them in age but who parallel them in interests and abilities" (p. 102). When grouping children to work on an assignment or project, van der Meulen et al. (2014) recommended grouping gifted children together because working with other students of similar abilities gives them the opportunity to relate, develop positive relationships, and also "reduces the chance of misunderstandings when they interact with their peers" (p. 291). Lamont (2012) acknowledged grouping gifted students together allows them to share their fears, anxieties, and stressors with one another while also

alleviating their feelings of isolation and boredom. Cluster grouping is very effective with gifted students because it allows them to work with their intellectual peers and to experience learning at an advanced level (Robinson, 2003). Cluster grouping also is most often used when developing pullout programs for gifted students that occur during the regular school day. Winebrenner and Brulles (2008) affirmed, "The practice of cluster grouping can provide full-time academic services to gifted students without major budget implications, and it has the potential to raise achievement for all students" (p. 3).

Teachers must incorporate flexibility, challenge, and choice into the cooperative learning tasks for student groups because, according to Karnes and Bean (2005), giving students "a variety of meaningful ways to contribute to the task" (p. 527). Regardless of the grouping strategy used when implementing cooperative learning in classroom instruction, it is important for teachers to consider special factors when deciding to use this instructional method, including the structure of the task, the needs of culturally and linguistically diverse students, any issues associated with student status and voice, and the use of technology to enhance the function and impact of cooperative learning (Karnes & Bean, 2005). For cooperative learning and student grouping to be successful, teachers must be aware of student dynamics that exist in the classroom and make themselves available to student groups while cooperative learning occurs so they can answer student questions, provide guidance, and resolve any conflicts or disagreements that may arise to ensure continuous learning is experienced by all students.

Independent Study

Participating in independent study allows gifted students to focus on and develop their love of learning while being afforded the opportunity to explore content about

which they are passionate and can learn at their own advanced pace. Strot (1997) claimed, "Independent study is ideal for gifted children in the regular classroom who are able to work independently, follow directions, and move about the school without disrupting other activities" (p. 12). Independent study allows gifted students to engage in self-directed learning and requires them to be motivated and able to guide their own instruction while being able to evaluate their progress and ask their teacher for assistance and guidance along the way, should they need it. Westberg and Leppien (2018) noted the value of independent study for gifted students and explained, "Giving students the opportunity to conduct interest-based independent investigations can increase student learning, enhance students' intrinsic motivation, create self-directed learners, and develop creative producers" (p. 13). Powers (2008) mentioned three practices recommended for gifted students to have a quality education: the use of independent study, students having both choice and voice in their learning, and connection to real-world experiences.

When participating in independent study projects, students take ownership of their learning, which teaches them the importance of being invested in their own academic success (Pugh, 1999). Powers (2008) claimed independent study is effective for gifted students because it "fosters high motivation for achievement in gifted students by allowing them to develop critical thinking skills, to delve deeply into a topic of special interest, and to design and execute their own learning" (p. 63). However, Karnes and Bean (2005) cautioned educators that independent study is not a method to allow gifted students to go off on their own without any type of instruction from the teacher; rather, it is an instructional strategy that can be implemented by the teacher to allow gifted students to learn at their own pace while receiving academic guidance when needed.

Learning about the various components of independent study while under the guidance of teachers allows gifted students the opportunity to master these skills of inquiry, research, problem solving, and dedication so they are able to apply them in the real world when they leave the classroom setting.

Advanced Coursework and Acceleration

It is vital for gifted students to be provided with challenges in the areas of their talents so they can experience continuous academic progress and excel. Gifted students must be given opportunities to develop their critical-thinking and deductive-reasoning skills. Allowing them to "consider alternatives regularly through active student discussion, deliberate emphasis on problem-solving activities, and verbalization of metacognitive strategies" assists them in advancing their intellectual abilities (Dixon et al., 2004, p. 57). Research conducted by van der Meulen et al. (2014) supported gifted students being given the opportunity to work at advanced levels of academic difficulty, incorporate their own interest areas into their studies, and be allowed to accelerate through advanced courses at their own pace since they are capable of learning and mastering advanced content at a rate much higher than their peers. One of the most important reasons gifted students need the opportunity to participate in advanced coursework or acceleration options is because these options not only allow them to be with other students who can match them academically and intellectually, but also the other students provide these highly gifted students with a peer group (Niehart et al., 2002).

Some of the most common forms of advanced coursework and acceleration in which gifted students can participate include subject-based acceleration, advanced

classes, and grade skipping. Subject-based acceleration allows gifted students to learn advanced content above their current grade level because they are academically ready for it and learn at a faster pace than their peers. Gifted students who take advanced classes often enroll in advanced placement (AP) classes to experience coursework at a higher level, which moves at a quicker pace. These classes also allow gifted students to take exams at the end of the school year to earn college credit based on their level of mastery of the course content. Grade-level acceleration often is done by gifted students during the primary grades of elementary school, but it can be implemented at any point during a student's academic career. In order for grade skipping to be an option, students must show they fully understand, can apply, and have successfully mastered the academic content in their current grade level to ensure no academic gaps exist by moving them to the next grade level. Robinson et al. (2007) conceded any form of acceleration accommodation is best handled by schools and educators on a case-by-case basis to ensure students benefit from this type of academic modification. All of these instructional options allow gifted students to experience continuous academic progress and are effective at meeting their academic and intellectual needs.

Lack of Preservice Teacher Training in Gifted Education

Many teacher preparation programs inadequately prepare preservice teachers to effectively meet the needs of gifted students in the classroom setting. Programs that mention gifted education during undergraduate coursework often give preservice teachers a very brief and basic overview and do not supply them with appropriate teaching strategies or instructional methods to successfully teach these students in a manner for them to experience continuous academic progress. Although many teachers desire to help

their students by providing them with more advanced and challenging material, they are unable to do so because very few teacher preparation programs provide preservice teachers with the knowledge and skills needed to teach advanced content and to provide differentiated instruction to meet the academic needs of gifted students (Rakow, 2012). Lu et al. (2017) conveyed gifted students "often languish in schools because teachers do not have the time, training, or skills to adapt instruction to their needs" (p. 46). Hong et al. (2011) further clarified when considering a vast majority of identified gifted students spend most of their academic and instructional time within a regular classroom, it is pertinent for preservice teachers to be provided with training centered on ways to effectively meet the needs of gifted students within that setting because they will be responsible for providing the academic challenge required for those students to experience growth and continuous academic progress.

Research conducted by Siegle et al. (2010) concluded, "Teachers with more training are more likely to recognize and appreciate different ways students exhibit their giftedness" (p. 349). In order for teachers to successfully recognize the various ways students demonstrate their gifted abilities, they must possess knowledge about the numerous characteristics possessed by gifted students from all backgrounds and how they prefer to showcase their gifts and talents. Moore et al. (2005) explained due to a lack of preparation in teacher programs regarding an understanding of the cultural characteristics and behaviors of students of color, teachers are less likely to identify students of color for gifted and talented programs, which can be detrimental to the academic experience of these students. It is vital preservice teachers be "exposed to culturally relevant teaching

practices and that they learn how students' cultures interact, both positively and negatively, with school systems in general and gifted education in particular" (p. 169).

Additionally, Ford et al. (2008) claimed the limited multicultural instruction received by preservice teachers, both at the undergraduate and graduate levels, often results in a lack of understanding of culturally diverse gifted students in regard to their communication styles, learning preferences, and behavioral representations. The inadequate instruction may further lead to complications between teachers and students, which then "contributes to low teacher expectations of students, poor student-teacher relationships, mislabeling, and misinterpretation of behaviors (along with other outcomes)" (p. 297). Lewis et al. (2018) asserted, "Professional learning is essential to increase educators' awareness of the needs of students who do not share their cultural or class backgrounds" (p. 51), is accurate in order for teachers to effectively meet the needs of students in the regular classroom, as well as gifted students.

It is evident preservice teachers must receive multiple training and professional development opportunities to learn how best to meet the needs of all gifted students. Ensuring teachers understand the needs, interests, and ideas of gifted students could assist them with ensuring these students develop positive behaviors that allow them to experience success in both the academic setting and in the real world (Lu et al., 2017). Providing further professional development and training opportunities for teachers outside the field of gifted education, especially for preservice teachers, safeguards the various needs of 2E students are consistently and continuously met throughout the course of their academic careers (Foley-Nicpon et al., 2013). Grissom and Redding (2016) advocated for improved teacher preparation and professional development programs for

preservice teachers to better prepare future educators to meet the needs of gifted students of color, as they believe these programs "may be particularly important avenues for reducing racial disparities at the teacher referral stage" (p. 16).

The perceptions and judgments possessed by teachers about students, specific content areas, and the curriculum directly influence their teaching and the instructional methods and strategies they use within the classroom. Of further concern is the belief of many educators regarding the assumption that gifted students can succeed on their own and are not in need of educational interventions by the teacher in order to experience success in school (Chamberlin & Chamberlin, 2010). As a result of these misconceptions, another important reason preservice teachers should participate in professional development training focused on gifted education and gifted students is so their preconceptions and any inherent bias they may believe about gifted students can be addressed and corrected (Ribich et al., 1998). In order to provide gifted students with the appropriate academic, social, and emotional services to be successful, preservice teachers must be provided with training in their undergraduate programs, as well as professional development opportunities, to learn effective teaching strategies and methods they can implement in their instruction to best meet the needs of these students.

Effective Professional Development for Preservice Teachers

Creating effective professional development opportunities for preservice teachers that focus on meeting the needs of gifted students is necessary so teachers can utilize the information they learn during the training by applying it in their future classrooms. When teachers receive professional development training focused on gifted students and ways to best meet their needs, teachers are more aware of these students' needs and can

incorporate more instructional strategies into their lessons to benefit this group of students (Robinson et al., 2007). Darling-Hammond et al. (2017) defined effective professional development as "structured professional learning that results in changes to teacher knowledge and practices, and improvements in student learning outcomes" (p. 2).

Unfortunately, many professional development programs falter because of the lack of teacher buy-in, failure for the program to be implemented, and teachers having too many other responsibilities (Ferguson, 2006). Sustained duration is another essential component in effective professional development because it encourages teachers to engage in continuous learning rather than simply learning about a concept once and then never coming back to it (Bates & Morgan, 2018). Silver et al. (2000) stated, "The challenge many teachers face after participating in an exciting professional development workshop is how to put good ideas into practice. Sometimes one good idea competes with another. Sometimes new ideas conflict with existing procedures" (p. 1). Although teachers and other educators frequently have the opportunity to attend inservice trainings that can increase their knowledge about gifted students, any long-term changes in the instructional strategies often are minimal at best, which is the reason implementing gifted training at the preservice teacher level is so important (Bangel et al., 2006). By providing preservice teachers with purposeful training about gifted students and gifted education, they can apply the training in their classroom and are much more likely to implement the strategies and methods into their instruction to effectively meet the needs of gifted students in their classrooms.

Darling-Hammond (2010) asserted prospective teachers must be provided with the opportunity to use and practice with the tools they have learned in order to analyze,

apply, and reflect on their recently acquired education, which allows them to "connect to both the subject matter and the students whom candidates teach" (p. 40). Teachers need time to adjust and adapt to new teaching strategies before they are ready to implement them into their classroom instruction. Providing preservice teachers with professional development training centered on gifted students is ideal because they have time to become familiar with the strategies and methods that are presented (McQueen, 2001). Preservice teachers who understand the importance of meeting the needs of gifted students and how they can incorporate what they have learned into their daily instruction can further encourage and inspire them to implement the strategies and methods during their training, thus helping them to become effective providers of gifted education to the gifted students in their classrooms.

Preservice and inservice teachers can benefit from professional development that transforms their way of thinking about teaching and has a lasting impact on the instruction they provide their students. Effective professional development in the field of education needs to be transformational in nature so as to change the mindsets of educators in order to bring about a lasting and sustainable change. Northhouse (2013) described transformational leadership as being highly impactful for educators due to its encouragement of followers to do more than what is expected. He further clarified:

> Transformational leadership is the process whereby a person engages with others and creates a connection that raises the level of motivation and morality in both the leader and the follower. This type of leader is attentive to the needs and motives of followers and tries to help followers reach their fullest potential. (p. 186)

Educators frequently exceed expectations in order to meet the needs of their students and are very likely to respond well to training based on transformational leadership methods. Fuller (2006) further affirmed the interconnectedness of transformational leadership with that of change theory regarding the need for effective professional development training for teachers so they can build their own professional knowledge and incorporate what they have learned in their instruction to benefit their students. Providing preservice and inservice teachers with purposeful and focused professional development that will assist them in meeting the needs of their gifted students is transformational leadership in action and is essential to altering the lack of challenge and rigor many gifted students are experiencing in the classroom setting. Instilling a desire in followers to enact lasting organizational changes and become leaders and change agents for others is a foundational concept of transformational leadership. This can be achieved for educators by providing them with effective professional development in gifted education.

Gifted students, like all others, have the right to a quality education that challenges and helps them prepare for the next stage of their lives. Participating in an advanced and challenging learning environment allows gifted students to explore their interests and passion areas while building upon their social emotional skill set of engaging and working with others through the implementation of cooperative learning, interactive discussion techniques, position defense, etc. In firm agreement with this position, Plucker et al. (2017) stated:

> Being challenged and learning new things in school must be seen as the overarching philosophy of K-12 education. The pressing challenges facing the world will not be solved by armies of minimally proficient drones who were able

> to coast through formal education. Instead, every child deserves to learn something new every day, and the economic future of the United States depends on the acceptance of this belief. (p. 249)

Preservice teachers must learn about gifted education and meeting the needs of gifted students, both academic and social emotional, before they enter the classroom in order to provide a positive and challenging learning experience for these advanced learners. When describing the ideal academic environment for gifted students, Berman et al. (2012) declared, "A classroom for gifted students provides a space for their needs to be met with more challenging and rewarding work. In an appropriate setting, GT students experience a curriculum modified in pace, breadth, and expected outcomes" (p. 20). Teachers are responsible for creating this type of environment for gifted students. Preservice teachers with the appropriate training on gifted education, gifted students, and successfully meeting their needs enables them to walk into the classroom prepared and ready to give these students the education they need and deserve.

CHAPTER III: METHODOLOGY

This research study evaluated participants' knowledge of the characteristics of gifted students and their self-efficacy in effectively meeting students' needs in the classroom setting both before and after receiving an online, self-paced professional development training centered on research-based strategies in gifted education. It also assessed the impact of effective and focused professional development on preservice and inservice teachers.

Participants

The population of interest for this study consisted of 48 preservice teachers and 85 inservice teachers in school districts in Kentucky and Tennessee. From this population, a total of 33 preservice teachers and 44 inservice teachers responded to the invitation to participate in the study. All preservice teachers were attending a public university located in southern Kentucky and majoring in some component of education. The inservice teachers were from 11 school districts in Kentucky and one school district in Tennessee during the 2020-2021 academic year. The experience of the inservice teachers ranged from four months to 40 years. All participants completed a 43-item modified Survey of Practices with Students of Varying Needs (SOP) both before and after participating in an online, self-paced professional development training centered on research-based strategies in gifted education. This survey instrument served as the pretest and posttest for this research study; the pretest also included eight items pertaining to participant demographics.

Preservice teacher participants were selected through their enrollment in education classes at a public university in southern Kentucky during the Spring 2021

semester. Professors of the education courses received an email explaining the study and were given the opportunity to inform their students of the professional development training being offered. One professor made the training part of her semester coursework, and a second provided students with the opportunity to receive bonus points on an assignment if they completed the training. The other professors made their students aware of the training but provided no incentive for them to participate or complete it.

Inservice teacher participants were selected through the use of multiple methods. The researcher sent an email to two southern Kentucky school districts, communicated with the Professional Development Coordinators of both districts, and arranged for the professional development training to be provided to all teachers of both districts so they could receive two hours of professional development credit for completing the training. An email also was directly sent by the researcher to teachers within her own school district to provide them with the opportunity to complete the training. The Director of STEM at a Kentucky educational cooperative also was contacted and informed about the study and sent the information out to the teachers in the districts she serves. An email with information about the study and the link for teachers who desired to participate was sent by the researcher to the Kentucky library media specialists who are part of the KYLMS listserv. They were encouraged to send information about the study to the teachers at their schools to provide them with the opportunity to participate.

Survey Instrument

Two sections of the SOP, developed and created by Tomlinson et al. (1995), were used to assess the benefits received by both preservice and inservice teachers from specifically targeted research-based professional development on gifted education. The

benefits related to their ability to increase their knowledge about gifted students and their self-efficacy in identifying these students, differentiating instruction for this population of students, and meeting their academic needs in the classroom. After completing a thorough review of the literature pertaining to gifted education and effective instructional methods used to meet the needs of gifted students, the SOP was determined to be the most inclusive and effective instrument regarding the item statements to which participants would respond in order to determine whether their self-efficacy had increased relative to gifted students and gifted education.

The complete SOP (Appendix B) consists of 60 items divided across four sections. The first section is comprised of 35 separate item statements, which the participants ranked on an agreement Likert scale consisting of the following scores: Strongly Agree, Agree, Don't Know, Disagree, and Strongly Disagree. Participants read each item statement and then ranked their level of agreement or disagreement with the scale. The following scores were provided for the participant answers in this section: Strongly Agree (1), Agree (2), Disagree (3), Strongly Disagree (4), and Don't Know (0). The answer choice "Don't Know" was problematic because it was vague, could be interpreted multiple ways, and provided insufficient information regarding the specifics about which the participant has no knowledge on the statement. Therefore, the decision was made to code this answer choice as 0, which represented no value. The second section of the SOP was not used because it focused on participants ranking the amount of attention they believe special education students, average students, and gifted students receive in the classroom, which was irrelevant to this study. The third section of the survey instrument consists of eight self-efficacy items, referred to as confidence items by

Tomlinson et al. (1995), in which participants rank their level of confidence in their ability to perform each action listed on a Likert scale of 1-5, with a score of 1 indicating no confidence in their ability to perform the action and a score of 5 indicating very confident in their ability. The fourth section of the SOP was not used in this study because it requires participants to select the instructional strategies that should be used with special education students, average students, and gifted students. This information was irrelevant to this study.

The item statements on the SOP are written in a way that participants can reveal their knowledge and beliefs about gifted education and gifted students. These identified results were based upon their level of agreement or disagreement with each of the items. The item statements required participants to determine their beliefs about gifted education, gifted students, and their ability to meet the needs of these students in the classroom setting. No published information is available about the reliability or validity of this survey instrument. A face validity analysis was conducted by the researcher and the research chair, who are both experts in gifted education, to determine the effectiveness and clarity of the item statements used on the survey. For the purpose of this study, slight adaptations were made to the SOP with permission from the author. The only items that were modified were demographic questions that did not impact the reliability or validity of the results. Sections two and four of the SOP were removed from the survey instrument because the information in those sections did not pertain to the focus of this study. The Modified SOP with the previously noted adaptations can be found in Appendix C.

Scoring

The Modified SOP used in this study is composed of 43 separate item statements in two sections. The first section consists of 35 item statements, which the participants ranked on an agreement Likert scale of 1-4, with 0 being assigned to items on which participants selected "Don't Know" as their answer choice. Participants read each of the item statements and then ranked their level of agreement or disagreement with the numeric scale. To score this part of the survey, the 35 items were grouped into three statement subscales: gifted, remedial, and differentiation. The gifted subscale is composed of item statements 3, 7, 10, 16, 18, 20, 21, 24, 27, 30, 33, and 34. The remedial subscale is composed of item statements 1, 4, 9, 14, 19, and 29. This subscale was not used because remedial students were not a focus of the study. The differentiation subscale is composed of item statements 2, 5, 6, 8, 11, 12, 13, 15, 17, 22, 23, 25, 26, 28, 31, 32, and 35. For each of the two subscales, a sum score was found, and reversed coding was performed on items when necessary. As a score of 1 represented strong agreement with a misconception, a low score represented a participant having considerable misconceptions about gifted education and gifted students; a high score represented a participant having few or no misconceptions. Hereafter, the variable representing the sum score for gifted misconceptions is referred to as *lack of gifted misconceptions*, and the variable representing the sum score for differentiation misconceptions is referred to as *lack of differentiation misconceptions*. Internal consistency reliability (Cronbach's alpha) was estimated for each subscale.

The second section of the Modified SOP consists of eight self-efficacy items on which participants ranked their level of efficacy regarding their ability to perform each

action listed on a Likert scale of 1-5, with a score of 1 indicating no confidence in their ability to perform the action and a score of 5 indicating very confident in their ability. Actions described included adapting instruction, individualizing instruction, accommodating student needs, assessing students' placement relative to their knowledge and content mastery, and identifying both gifted and remedial students in the classroom. Sum scores were found for each participant indicating their total level of self-efficacy; hereafter, this variable is referred to as *teacher self-efficacy*. Internal consistency reliability (Cronbach's alpha) also was estimated.

Data Collection

After gaining approval from the Human Subjects Review Board (Appendix D), a Gifted Education Training Flyer (Appendix E) was distributed to study participants containing a hyperlink to the online professional development training. When participants clicked on the hyperlink, they were immediately taken to the Consent Form (Appendix F) in the format of a Google Form, to which they must have agreed in order to continue on to the Pre-Training Survey (Appendix G). The consent form contains the purpose and description of the study in which they participated. Once they agreed to and submitted the Consent Form, they were taken to the Google Form that contains the Pre-Training Survey. All items are marked as required to ensure none were accidentally or intentionally skipped or left blank. When the Pre-Training Survey was complete, participants then clicked on a hyperlink that took them directly to the professional development training website. They had the option to complete the training at one time or in small sections because it is self-paced. Upon conclusion of the training, participants then completed the Google Form containing the Post-Training Survey (Appendix H). The

results from the Pre-Training and the Post-Training Surveys were downloaded into a spreadsheet format and analyzed using the JASP statistical software to answer the research questions posed for this study.

Gifted Education Professional Development Training

The content included in the online, self-paced gifted education professional development training was specifically chosen to increase the knowledge and awareness of both preservice and inservice teachers about gifted education and gifted students. In order to make the training engaging for participants, interactive content was developed and created for their learning. Content was created in the format of Google Slides and then voice recorded over using the Screencastify application. Each video was uploaded to EdPuzzle, where it became an interactive quiz so participants could interact with the content they were learning. A Pear Deck activity also was included to give participants the opportunity to assess their knowledge of specific gifted characteristics before learning more about them through the EdPuzzle activities. The flow of the content in this training was organized in a precise manner so participants could learn the important foundational information about gifted education and gifted students before moving on to learn about application methods for incorporating this information into their instruction.

The first part of the professional development training focused on the definition of gifted. As many versions of definitions exist in the field of gifted education and in the literature, it was important to provide participants with the federal definition upon which all other definitions are based in order to solidify their understanding of the way in which to define giftedness. Participants then learned about common characteristics of gifted students, as well as characteristics of gifted students who are from populations that are

highly underrepresented in gifted programs, such as multilingual students, 2E students, and gifted underachievers. Understanding what to look for and having examples of these characteristics when identifying gifted students helped teachers be better able to refer students to gifted programs to receive the services to which they are entitled and for teachers to be prepared to meet the needs of these students in the classroom. Once they had learned about the characteristics of gifted students, participants then learned about popular common misconceptions associated with gifted education and gifted students. They reviewed a series of statements to determine whether the statement was true or false. The answers were then provided along with a rationale about each misconception. The final section of the professional development training provided teachers with five effective research-based instructional strategies that enhanced the learning of gifted students, as well as the rest of the students in their classrooms. Examples of each strategy are provided, including explanations of implementing each strategy into their current instruction. At the conclusion of the training, a link was provided to a resource page where participants could access additional resources and videos about gifted education and gifted students, should they desire to further explore the information presented in the training.

Research Questions

The research questions posed in this study focused on the effect of a gifted education professional development training on preservice and inservice teachers regarding their knowledge of gifted education and gifted students and their self-efficacy in identifying gifted students, as well as adapting and individualizing their instruction to

meet the needs of gifted students. Specifically, this study answered the following research questions:

1. To what extent does professional development in gifted education predict increased teacher self-efficacy in working with gifted students? Does the size of this increase depend upon whether the educator is a preservice or inservice teacher?
2. To what extent does professional development in gifted education predict increased teacher self-efficacy in meeting the academic needs of gifted students? Does the size of this increase depend upon whether the educator is a preservice or inservice teacher?
3. To what extent does professional development in gifted education predict increased teacher self-efficacy in identifying students for gifted and talented programs? Does the size of this increase depend upon whether the educator is a preservice or inservice teacher? Does the size of this increase depend upon years of service?
4. To what extent does professional development in gifted education predict increased knowledge about gifted students? Does it predict a decrease in the most common misconceptions about gifted students? Does any change depend upon whether the educator is a preservice or inservice teacher?
5. To what extent does professional development in gifted education predict increased knowledge about differentiating instruction for gifted students? Does the size of this increase depend upon whether the educator is a preservice or inservice teacher?

The first research question focused on whether a significant difference existed in teacher self-efficacy between the Pre-Training and the Post-Training Surveys after they had completed the gifted education professional development training. This research question was analyzed using the eight self-efficacy items in the second section of the Modified SOP as the dependent variable. To evaluate the first research question, a *t*-test was performed comparing the sum scores of the eight self-efficacy items participants received on the Pre-Training and the Post-Training Surveys. A *t*-test also was performed to determine whether the size of the increase was dependent upon the educator being a preservice or an inservice teacher.

The second research question centered on whether a significant difference was found in teacher self-efficacy regarding their ability to meet the academic needs of gifted students between the Pre-Training and the Post-Training Surveys after they had received professional development training in this area. This research question was analyzed using four of the eight self-efficacy items (items 1, 3, 4, and 5) in the second section of the Modified SOP that focused solely on meeting the academic needs of gifted students. The sum scores of these four items were used in a *t*-test to compare the scores received by participants between the Pre-Training and the Post-Training Surveys. A *t*-test also was performed to determine whether the size of the increase was dependent upon the educator being a preservice or an inservice teacher.

The third research question focused on whether a significant difference existed in teacher self-efficacy regarding their ability to identify students for gifted programs between the Pre-Training and Post-Training Surveys after they had received professional development training on the difference between high-achieving and gifted students,

common gifted characteristics, and characteristics of gifted students from underrepresented populations in gifted programs. This research question was analyzed using one of the eight self-efficacy items (item 7) in the second section of the Modified SOP that focused on identifying gifted students. The sum score of this self-efficacy item was used in a *t*-test to compare the score received by participants on the Pre-Training and on the Post-Training Surveys. A *t*-test also was employed to determine whether the size of the increase was dependent upon the educator being a preservice or an inservice teacher. Additionally, a linear regression was performed to determine whether the size of the increase was dependent upon a teacher's years of service.

The fourth research question concentrated on whether a significant difference was seen in teacher knowledge about gifted students after the completion of a gifted education professional development training. This research question was analyzed using the items from the gifted subscale (items 3, 7, 10, 16, 18, 20, 21, 24, 27, 30, 33, and 34) in the first section of the Modified SOP. A *t*-test was performed using the sum scores of the items from the gifted subscale to compare the scores received by participants on the Pre-Training and the Post-Training Surveys. Additionally, a *t*-test was performed to determine whether the size of the increase was dependent upon the educator being a preservice or an inservice teacher. The misconception items were analyzed individually, and *t*-tests were completed using the sum scores of the specific misconception items (items 3, 7, 10, 16, and 27) within the gifted subscale of the first section of the Modified SOP to determine whether a gain occurred from the Pre-Training Survey to the Post-Training Survey. Furthermore, *t*-tests were conducted to determine whether the size of the increase was dependent upon the educator being a preservice or an inservice teacher.

The fifth research question focused on whether a significant difference existed in teacher knowledge about differentiating instruction for gifted students after the completion of a gifted education professional development training. This research question was analyzed using the items from the differentiation subscale (items 2, 5, 6, 8, 11, 12, 13, 15, 17, 22, 23, 25, 26, 28, 31, 32, and 35) in the first section of the Modified SOP. A *t*-test was performed using the sum scores of the items from the differentiation subscale to compare the scores received by participants on the Pre-Training Survey with those they received on the Post-Training Survey. A *t*-test also was performed to determine whether the size of the increase was dependent upon the educator being a preservice or an inservice teacher.

CHAPTER IV: RESULTS

Providing both preservice and inservice teachers with effective and purposeful professional development about gifted education and gifted students is essential if they are to provide these students with instruction that challenges and allows them to experience continuous academic progress. Educators must be able to identify these students in the classroom, differentiate their instruction to provide additional rigor and challenge, and meet their various academic needs in the classroom. Therefore, they must first be provided with successful research-based strategies to be efficiently and seamlessly implemented into their instruction. During the course of this study participants were assessed as to their knowledge and self-efficacy of gifted education, as well as their ability to identify and meet the needs of gifted students assessed before and after completing an online, self-paced gifted education professional development training.

Descriptive Statistics

All participants were evaluated using two sections (43 items total) from the Survey of Practices with Students of Varying Needs (SOP) created by Tomlinson et al. (1995) as a means of determining whether their knowledge and self-efficacy of gifted education had increased after completing the online, self-paced professional development training centered on research-based strategies in gifted education created by this study's researcher. This instrument served as both the pretest and the posttest for this research, with an additional eight demographic items included on the pretest. Demographic items focused on the years of teaching experience of the participants prior to this study, as well as their highest completed level of education, whether National Board certified, the

number of special education and gifted education classes they had taken, and whether they had any additional teaching certifications and endorsements.

Table 1 shows the highest completed level of education for the preservice teachers who participated in this study. Of the 33 preservice teacher participants, one completed a Master's degree and four a Bachelor's degree. Nine completed an Associate's Degree, and 19 listed high school as their highest level of education. Table 2 shows the highest level of education completed by the inservice teachers. While all 44 inservice teachers completed a Bachelor's degree, 17 attained a Master's degree. A Rank I degree was achieved by 14 of the inservice teachers, and two completed a Doctorate. The Rank I degree is recognized only in the state of Kentucky, and it is obtained by educators who complete 30 hours of approved graduate work beyond a Master's degree. Additionally, six of the inservice teachers also successfully completed their National Board Certification.

Table 1

Preservice Teacher Highest Education Level Obtained

Education Obtained	Frequency	Percent
High School	19	57.58
Associate's Degree	9	27.27
Bachelor's Degree	4	12.12
Master's Degree	1	3.03
Rank I	0	0.00
Doctorate	0	0.00
Total	33	100.00

Table 2

Inservice Teacher Highest Education Level Obtained

Education Obtained	Frequency	Percent
High School	0	0.00
Associate's Degree	0	0.00
Bachelor's Degree	11	25.00
Master's Degree	17	38.64
Rank I	14	31.82
Doctorate	2	4.55
Total	44	100.00

Table 3 contains the number of special education and gifted education classes taken by participants prior to this study and completing the online gifted education professional development training. It is notable the number of special education classes taken was much higher than that of the gifted education classes, which further supports the argument made by Lu et al. (2017), which states for educators to receive training in gifted education they often are provided with minimal if any training regarding methods and strategies to use in their instruction to meet the needs of these students.

Table 3

Participant Number of Special Education and Gifted Education Classes

Statistics	Number of Special Education Classes	Number of Gifted Education Classes
Sample Size	77.00	77.00
Mean	1.92	0.48
Standard Deviation	2.46	1.26
Minimum	0.00	0.00
Maximum	15.00	7.00

Table 4 lists the certifications obtained by participants prior to this study, indicating inservice teachers completed many more certifications than preservice teachers, which was expected due to the additional time spent in the field of education. Also of note was the wide variety of certifications completed by the educators who participated in this study.

Table 4

Participant Certifications

Type of Certification	Preservice Teachers	Inservice Teachers
Administration	0	2
Career and Technical Education	0	1
Elementary Education	2	11
Early Childhood	0	2
Educational Technology	0	1
English as Second Language (ESL)	0	1
Literacy	0	3
Learning and Behavior Disorders (LBD)	0	2
Deaf and Hard of Hearing	0	1
Counseling	0	2
Library Media Specialist	0	6
Foreign Language	0	1
Visual Arts	0	2
Music Education	0	2
Physical Education	1	2
Gifted and Talented	0	2
Special Education	2	3
Math	1	1
Science	0	4
English	0	5
Reading	0	3
Social Studies	0	4
Google	1	0
EdPuzzle	1	0

Table 5 provides an account of the endorsements completed by study participants. As can be seen, only inservice teachers have reported obtaining endorsements. This likely was a result of the classes and other coursework that must be completed in order to finish endorsement requirements, usually being accomplished within a minimum of one year.

Table 5

Participant Endorsements

Type of Endorsement	Preservice Teachers	Inservice Teachers
Gifted and Talented	0	2
English as Second Language (ESL)	0	3
Instructional Technology	0	1
Library Media Specialist	0	1
Literacy	0	2

Table 6 contains the results for the 35 knowledge items in the Pre-Training Survey (see Appendix I). A majority of the items had a mean score between 2 and 3, indicating the mean showed an average number of participants who either agreed or disagreed with the item statements. Only five of the items had a mean score less than 2, which indicated an average number of participants strongly agreed with those item statements. Additionally, Table 7 contains the Post-Training Survey results for the 35 knowledge items (see Appendix J). These results show a total of eight items with a mean score less than 2, which demonstrated a definitive change in participant knowledge upon completion of the online gifted education professional development training. An increase in the number of items having an average number of participants showing strong agreement suggested these individuals have expanded their knowledge of gifted education and are able to convey their level of agreement with the item statements in a more determined manner.

Table 8 contains the results for the eight self-efficacy items from the Pre-Training Survey (see Appendix K). The means for each of the items ranged from 3-3.753, indicating an average of the participants were somewhat confident in their ability to successfully complete each of the tasks listed in the item statements for this part of the survey instrument. However, when viewing the results for the eight self-efficacy items from the Post-Training Survey, which can be found in Table 9 (see Appendix L), it is clear by viewing the mean of each item that an average number of study participants experienced an increase in their self-efficacy regarding their confidence level to successfully complete the tasks described in the item statements. The means for each of the eight item statements in this part of the survey were all higher than those from the Pre-Training Survey. The standard deviation for each of the eight self-efficacy items also was lower in the Post-Training Survey than that recorded in the Pre-Training Survey. This finding illustrated the results from the Post-Training Survey were closer to the mean of the set of values and were spread over a smaller range than those from the Pre-Training Survey. This result was expected if participants learned new information and benefited from the online gifted education professional development training, as it showed an increase in their knowledge of gifted education as well as their self-efficacy.

Impact of Professional Development on Teacher Self-Efficacy

RQ1 queried whether a significant difference would exist in *teacher self-efficacy* upon completion of the online gifted education professional development training. An internal consistency measure was performed on the sum scores received by participants on both the Pre-Training Survey and the Post-Training Surveys. The Cronbach's alpha score for the *teacher self-efficacy* sum score- on the Pre-Training Survey was .87, and the

Cronbach's alpha score for the *teacher self-efficacy* sum score on the Post-Training Survey was .89. Both scores represented a good reliability in terms of internal consistency. A paired samples *t*-test was performed on the eight self-efficacy items in the second section of the Modified SOP, which sought to compare the sum scores on the Pre-Training Survey to the Post-Training Survey. Table 10 shows the difference in the results for the self-efficacy items between the Pre-Training and the Post-Training Surveys was statistically significant ($p < .001$), with $t(76) = -9.40$.

Table 10

T-Test Results for Self-Efficacy Items

Measure 1		Measure 2	*t*	*df*	*p*
Pre-Training Survey	-	Post-Training Survey	- 9.40	76	< .001

Additionally, this question asked whether the size of the increase was dependent upon the participants' status as either preservice or inservice teachers. An independent samples *t*-test was performed on the gain between the sum scores of the Pre-Training Survey and the Post-Training Survey, and comparisons were made between the preservice and inservice teachers. Table 11 shows the gain in teacher self-efficacy between preservice and inservice teachers was not statistically significant ($p = 0.949$), with $t(75) = 0.06$.

Table 11

Gain in Teacher Self-Efficacy Sum Score

Sum Score	*t*	*df*	*p*
Teacher Self-Efficacy	0.06	75	0.949

Teacher Self-Efficacy in Meeting Academic Needs of Gifted Students

RQ2 explored whether a significant difference would exist in teacher self-efficacy in regard to participants' confidence in their ability to meet the various academic needs of gifted students between the Pre-Training and Post-Training Surveys. Sum scores were created for this question using items 1, 3, 4, and 5 from the second section of the Modified SOP and were identified by the variable name *teacher self-efficacy academic needs* because the items in this sum score included those focused only on successfully meeting the academic needs of gifted students. An internal consistency measure was performed on the sum scores received by participants on both the Pre-Training and Post-Training Surveys. The Cronbach's alpha score for the *teacher self-efficacy academic needs* sum score on the Pre-Training Survey was .80, and the Cronbach's alpha score for the *teacher self-efficacy academic needs* sum score on the Post-Training Survey was .88. Both scores represented a good reliability in terms of internal consistency. A paired samples *t*-test was performed on the sum scores for the *teacher self-efficacy academic needs* items in the second section of the Modified SOP, and a comparison was made of the sum scores on the Pre-Training Survey to the Post-Training Survey. Table 12 shows the difference in the results for the *teacher self-efficacy academic needs* items between the Pre-Training Survey and the Post-Training Survey was statistically significant ($p < .001$), with $t(76) = -10.01$.

Table 12

T-Test Results for Teacher Self-Efficacy Academic Needs Items

Measure 1		Measure 2	*t*	*df*	*p*
Pre-Training Survey	-	Post-Training Survey	- 10.01	76	< .001

RQ2 also sought to determine whether the size of the gain was dependent upon the participants' status as either preservice or inservice teachers. An independent samples *t*-test was performed on the *teacher self-efficacy academic needs* gain between the sum scores of the Pre-Training Survey and the Post-Training Survey. Comparisons were then made between the preservice and inservice teachers who participated in this study. Table 13 shows the gain in teacher self-efficacy in meeting the academic needs of gifted students between preservice and inservice teachers was not statistically significant ($p = 0.455$), with $t(75) = 0.75$.

Table 13

Gain in Teacher Self-Efficacy Academic Needs Sum Score

Sum Score	*t*	*df*	*p*
Teacher Self-Efficacy Academic Needs	0.75	75	0.455

Teacher Self-Efficacy in Identifying Gifted Students

RQ3 sought to determine whether a significant difference would exist in teacher self-efficacy regarding the participants' ability to identify gifted students for gifted and talented programs between the Pre-Training and Post-Training Surveys when they completed the online gifted education professional development training. A sum score was created for this question using item 7 from the second section of the Modified SOP and was identified by the variable name *teacher self-efficacy identification* because the item included in this sum score focused only on successfully meeting the academic needs of gifted students. A paired samples *t*-test was performed on the sum scores for the *teacher self-efficacy identification* item in the second section of the Modified SOP, and a

comparison was made of the sum scores on the Pre-Training Survey to the Post-Training Survey. Table 14 shows the difference in the results for the *teacher self-efficacy identification* item between the Pre-Training Survey and the Post-Training Survey was statistically significant ($p < .001$), with $t(76) = -7.95$.

Table 14

T-Test Results for Teacher Self-Efficacy Identification

Measure 1		Measure 2	*t*	*df*	*p*
Pre-Training Survey	-	Post-Training Survey	- 7.95	76	< .001

RQ3 also examined whether the size of the gain was dependent upon the educators' status as either preservice or inservice teachers. An independent samples *t*-test was performed on the *teacher self-efficacy identification* gain between the sum scores of the Pre-Training and the Post-Training Surveys, and a comparison was made between the preservice and inservice teachers who participated in this study. Table 15 shows the gain in teacher self-efficacy regarding their confidence in identifying gifted students for inclusion in gifted and talented programs between preservice and inservice teachers was not statistically significant ($p = 0.254$), with $t(75) = -1.15$.

Table 15

Gain in Teacher Self-Efficacy Identification Sum Score

Sum Score	*t*	*df*	*p*
Teacher Self-Efficacy Identification	- 1.15	75	0.254

Additionally, a linear regression was performed for this research question to determine whether the size of the increase in teacher self-efficacy regarding confidence in their

ability to identify gifted students for gifted and talented programs was dependent upon the number of years of service completed by the individual. Table 16 shows the gain in *teacher self-efficacy identification* was not statistically significant. Regression assumptions were checked, and no violations were found.

Table 16

Teacher Self-Efficacy Identification and Years of Teaching Experience

Covariate	Unstandardized	Standard Error	Standardized	*t*	*p*
(Intercept)	0.73	0.13		5.72	< .001
Years of Teaching Experience	0.01	0.01	0.11	0.92	0.362

Teacher Knowledge of Gifted Education

RQ4 sought to determine whether a significant difference would exist in teacher knowledge about gifted education and gifted students between the Pre-Training and Post-Training Surveys after the completion of an online gifted education professional development training. This analysis was completed using the sum scores of the items on the gifted subscale from the first section of the Modified SOP. The gifted subscale included items 3, 7, 10, 16, 18, 20, 21, 24, 27, 30, 33, and 34. Sum scores identified as *lack of gifted misconceptions* were created using these items. An internal consistency measure was performed on the sum scores received by participants on both the Pre-Training and Post-Training Surveys. The Cronbach's alpha score for the *lack of gifted misconceptions* sum score on the Pre-Training Survey was .75, which indicated a good reliability in terms of internal consistency. The Cronbach's alpha score for the *lack of gifted misconceptions* sum score on the Post-Training Survey was .64, which indicated questionable reliability in terms of internal consistency, meaning the results may not have

been as accurate or reliable. A paired samples *t*-test was performed on the sum scores for the *lack of gifted misconceptions* items in the first section of the Modified SOP, and a comparison was made of the sum scores on the Pre-Training Survey to those on the Post-Training Survey. Table 17 shows the difference in the results for the *lack of gifted misconceptions* items between the Pre-Training and Post-Training Surveys was statistically significant ($p < .001$), with $t(76) = -8.85$.

Table 17

T-Test Results for Gifted Subscale Items

Measure 1		Measure 2	*t*	*df*	*p*
Pre-Training Survey	-	Post-Training Survey	- 8.85	76	< .001

RQ4 also sought to determine whether the size of the gain was dependent upon the participants' status as either preservice or inservice teachers. An independent samples *t*-test was performed on the *lack of gifted misconceptions* gain between the sum scores of the Pre-Training Survey and the Post-Training Survey. Comparisons were made between the preservice and inservice teachers who participated in this study, and Table 18 shows the gain in teacher knowledge of gifted education and gifted students between preservice and inservice teachers was not statistically significant ($p = 0.576$), with $t(75) = -0.56$.

Table 18

Gain in Gifted Subscale Sum Score

Sum Score	*t*	*df*	*p*
Gifted Subscale	- 0.56	75	0.576

Teacher Knowledge of Common Gifted Misconceptions

Additionally, RQ4 investigated whether a significant difference would exist regarding the specific items focused on common misconceptions about gifted education and gifted students (items 3, 7, 10, 16, and 27) within the gifted subscale in the first section of the Modified SOP. Sum scores were created for these items and identified as *lack of common gifted misconceptions*. An internal consistency measure was performed on the sum scores received by participants on teacher knowledge of common misconceptions about gifted education and gifted students. The Cronbach's alpha score for the combined *lack of common gifted misconceptions* items sum score on the Pre-Training Survey was .69, which indicated questionable reliability in terms of internal consistency, meaning the results may not have been as accurate or reliable. The Cronbach's alpha score for the combined *lack of common gifted misconceptions* items sum score on the Post-Training Survey was .72, which represented an acceptable reliability in terms of internal consistency. A paired samples *t*-test was performed on the sum scores for the combined *lack of common gifted misconceptions* items within the gifted subscale in the first section of the Modified SOP, and a comparison was made of the sum scores on the Pre-Training Survey to those on the Post-Training Survey. Table 19 shows the difference in the results for the combined *lack of common gifted misconceptions* items between the Pre-Training and Post-Training Surveys was statistically significant ($p < .001$), with $t(76) = -7.11$.

Table 19

T-Test Results for Combined Common Misconception Items on Gifted Subscale

Measure 1		Measure 2	*t*	*df*	*p*
Pre-Training Survey	-	Post Training Survey	- 7.11	76	< .001

An independent samples *t*-test was performed on the combined *lack of common gifted misconceptions* gain between the sum scores of the Pre-Training Survey and the Post-Training Survey. Comparisons were made between the preservice and inservice teachers who participated in this study, and Table 20 shows the gain in teacher knowledge regarding the combined common gifted misconception items associated with gifted education and gifted students between preservice and inservice teachers was not statistically significant ($p = 0.811$), with $t(75) = - 0.24$.

Table 20

Gain in Combined Common Gifted Misconception Items Sum Scores

Sum Score	*t*	*df*	*p*
Common Gifted Misconceptions	- 0.24	75	0.811

Paired sample *t*-tests also were performed on the sum scores for each of the individual *lack of common gifted misconceptions* items within the gifted subscale found in the first section of the Modified SOP, and a comparison was made of the sum scores on the Pre-Training Survey to those on the Post-Training Survey. Table 21 shows the difference in the results for the five individual *lack of gifted misconceptions* items between the Pre-Training and Post-Training Surveys was statistically significant. The statistical significance of *lack of common gifted misconceptions teacher direction*

(item 3) was ($p < .001$), with $t(76) = -3.41$. The statistical significance of *lack of common gifted misconceptions challenging assignments* (item 7) was ($p < .001$), with $t(76) = -3.86$. The statistical significance of *lack of common gifted misconceptions highest grades* (item 10) was ($p < .001$), with $t(76) = -5.34$. The statistical significance of *lack of common gifted misconceptions longer assignments* (item 16) was ($p < .001$), with $t(76) = -3.96$. The statistical significance of *lack of common gifted misconceptions underachievers* (item 27) was ($p < .001$), with $t(76) = -5.24$.

Table 21

T-Test Results for Individual Common Gifted Misconception Items on Gifted Subscale

Item Number	Measure 1		Measure 2	*t*	*df*	*p*
3	Pre-Training Survey	-	Post-Training Survey	- 3.41	76	< .001
7	Pre-Training Survey	-	Post-Training Survey	- 3.86	76	< .001
10	Pre-Training Survey	-	Post-Training Survey	- 5.34	76	< .001
16	Pre-Training Survey	-	Post-Training Survey	- 3.96	76	< .001
27	Pre-Training Survey	-	Post-Training Survey	- 5.24	76	< .001

To further assess the statistical significance for the five individual *lack of common gifted misconceptions* items, an independent samples *t*-test was performed on the gain between the sum scores of the Pre-Training Survey and Post-Training Survey for each item. Comparisons were then made between the preservice and inservice teachers who participated in this study. Table 22 illustrates the gain in teacher knowledge regarding each of the five individual *lack of common gifted misconceptions* items between preservice and inservice teachers was not statistically significant.

The statistical non-significance of *lack of common gifted misconceptions teacher direction* (item 3) was ($p = 0.976^{a}$), with $t(50.44) = -0.03$. The statistical non-significance of *lack of common gifted misconceptions challenging assignments* (item 7) was ($p = 0.905$), with $t(75) = 0.12$. The statistical non-significance of *lack of common gifted misconceptions highest grades* (item 10) was ($p = 0.204$), with $t(75) = 1.28$. The statistical non-significance of *lack of common gifted misconceptions longer assignments* (item 16) was ($p = 0.256$), with $t(75) = -1.15$. The statistical non-significance of *lack of common gifted misconceptions underachievers* (item 27) was ($p = 0.382^{a}$), with $t(54) = -0.88$.

Table 22

Gain in Individual Common Gifted Misconception Items Sum Scores

Common Gifted Misconceptions	Item Number	*t*	*df*	*p*
Teacher Direction	3	- 0.03	50.44	0.976[a]
Challenging Assignments	7	0.12	75.00	0.905
Highest Grades	10	1.28	75.00	0.204
Longer Assignments	16	- 1.15	75.00	0.256
Underachievers	27	- 0.88	54.00	0.382[a]

[a]Levene's test was significant ($p < .05$), suggesting a violation of the equal variance assumption, so *t*-tests were run accounting for unequal variances.

Teacher Knowledge of Differentiating Instruction for Gifted Students

RQ5 centered on whether a significant difference would exist between the Pre-Training and Post-Training Surveys about teacher knowledge regarding the differentiation of instruction for gifted students upon the completion of an online gifted education professional development training. This research question was analyzed using

the sum scores on the items from the differentiation subscale in the first section of the Modified SOP. The differentiation subscale included items 2, 5, 6, 8, 11, 12, 13, 15, 17, 22, 23, 25, 26, 28, 31, 32, and 35. Sum scores identified as *lack of differentiation misconceptions* were created using these items. An internal consistency measure was performed on sum scores received by participants on both the Pre-Training and Post-Training Surveys. The Cronbach's alpha score for the *lack of differentiation misconceptions* sum score on the Pre-Training Survey was .78, and the Cronbach's alpha score for the *lack of differentiation misconceptions* sum score on the Post-Training Survey was .77. Both scores represented an acceptable reliability in terms of internal consistency. A paired samples *t*-test was performed on the sum scores for the *lack of differentiation misconceptions* items in the first section of the Modified SOP, and a comparison was made of the sum scores on the Pre-Training Survey to those on the Post-Training Survey. Table 23 shows the difference in the results for the *lack of differentiation misconceptions* items between the Pre-Training and the Post-Training Surveys was statistically significant ($p < .001$), with $t(76) = -7.98$.

Table 23

T-Test Results for Differentiation Subscale Items

Measure 1		Measure 2	*t*	*df*	*p*
Pre-Training Survey	-	Post Training Survey	- 7.98	76	< .001

RQ5 further examined whether the size of the gain was dependent upon the participants' status as either preservice or inservice teachers. An independent samples

t-test was performed on the *lack of differentiation misconceptions* gain between the sum scores of the Pre-Training Survey and Post-Training Survey, and comparisons were made between the preservice and the inservice teachers. Table 24 shows the gain in teacher knowledge regarding the differentiation of instruction for gifted students between preservice and inservice teachers was statistically significant ($p = 0.02$), with $t(75) = 2.38$.

Table 24

Gain in Differentiation Subscale Sum Score

Sum Score	*t*	*df*	*p*
Differentiation Subscale	2.38	75	0.02

Chapter Summary

The results of this study illustrate the significant effect of the online gifted education professional development training on the knowledge of both preservice and inservice teachers regarding gifted education, identifying gifted students, and meeting the needs of gifted students in the classroom setting. The statistical significance found in the items analyzed by the research questions demonstrated the positive impact of purposeful and focused professional development on educators and their knowledge of the students they teach. Additionally, these findings may assist in the advocacy for undergraduate programs to provide preservice teachers with training in the field of gifted education in order to be better prepared to meet the needs of these students when they have their own classrooms. Giving inservice teachers the opportunity to participate in trainings about

gifted education can further provide these students with the educators they need in order to experience continuous academic progress and reach their highest level of potential.

CHAPTER V: DISCUSSION

The purpose of this study was to evaluate the effectiveness of providing educators, both preservice and inservice, with focused professional development training centered on gifted education and gifted students. Additionally, the study sought to determine whether a significant difference existed between the participants' knowledge of gifted education and their confidence in identifying gifted students and meeting their academic needs before and after participating in a professional development training utilizing research-based gifted education strategies. Providing educators with effective and purposeful training on gifted students is essential in order for them to successfully meet the needs of these students in their classrooms. The topic of this study is especially crucial during this current period in education when gifted students are rarely the primary focus of teachers because they have had little to no training in gifted education and are overwhelmed with trying to meet the needs of the struggling students in their classrooms (Plucker et al., 2010).

A thorough review of the literature centered on gifted education and gifted students suggests teachers' lack of awareness relative to knowing (1) how to identify these students, as they are unfamiliar with the characteristics to look for, and (2) how to meet the needs of these students in an academic setting due to their lack of training in this area (Chamberlin & Chamberlain, 2010). In addition to their insufficient knowledge about gifted students, many educators identify with numerous common misconceptions and biases related to these individuals (Berman et al., 2012), which further increases the difficulty when working with these students in the classroom. Teachers are frequently provided with training to meet the needs of a wide variety of student subgroups including

special education students, English language learners, and low-performing students. However, preservice and inservice teachers seldom have the opportunity in their undergraduate teacher preparation classes, as well as in professional development sessions, to learn effective strategies to meet the needs of gifted students. Educators must be provided with high-quality gifted education training and professional development to assist them with meeting the needs and challenging this population of students to experience continuous academic progress.

The professional development training created for this study (see Appendix M) contained several components of that which Darling-Hammond et al. (2017) defined as effective, including the following: being content focused and specific, incorporating active learning for participants, using models and examples of effective practice so participants can observe an example, being of a sustained duration, and giving participants opportunities to reflect on their learning and how they can apply it in their own instructional methods and teaching practices. Research-based gifted education topics were incorporated throughout the training, with the overarching goal that participants would complete the training feeling more knowledgeable about gifted students and more confident in their ability to meet their needs. The topics included in the training were focused on the definition of giftedness, characteristics of giftedness, common misconceptions related to gifted education and gifted students, and effective instructional strategies that can be used by teachers to increase the challenge and rigor for gifted students, in addition to the rest of the students in the classroom. At the conclusion of the training, participants also were given access to a resources page containing several additional videos and materials related to each of the differentiation instructional methods

that were discussed and reviewed in the training. The purpose of providing examples of effective differentiation methods for gifted students, as well as additional resources to support those methods in an instructional setting, was to provide the sustained duration component advocated for by Bates and Morgan (2018) that encourages and allows teachers to engage in continuous learning of newly introduced concepts.

The survey instrument was adapted with permission from Tomlinson et al. (1995) and is entitled Survey of Practices with Students of Varying Needs. This survey was chosen because of the wording of the item statements in the sections used for the research in this study. It also provided the opportunity to assess participant knowledge of gifted education and confidence in identifying and meeting the needs of gifted students in a format utilizing the survey in a pretest and posttest configuration. The two sections of the survey instrument include one that contains 35 item statements about gifted students, remedial students, and differentiation in which participants ranked their agreement on a four-point Likert scale, and a second section consists of eight self-efficacy statements in which participants ranked their confidence level in their ability to perform the task listed in each statement on a five-point Likert scale. These sections were used due to the close alignment between the item statements and the information and strategies included in the professional development training, which was completed by all participants.

The purpose of this study was to examine the impact of a gifted education professional development training on current and future teachers in order to determine the effectiveness of the training, as well as whether the effectiveness was dependent upon the participants being preservice or inservice teachers. The 77 participants included 33 preservice teachers who were attending a southern Kentucky public university and were

enrolled in undergraduate education classes, in addition to 44 inservice teachers who were teaching in 11 school districts in Kentucky and one school district in Tennessee. This study is extremely important to both the field of education and to the more specialized field of gifted education because it confirms the powerful impact of effective professional development training on gifted education and gifted students relative to teacher knowledge and teacher efficacy (Chamberlin & Chamberlain, 2010). This chapter explains the findings from the research questions and the literature that was reviewed in connection with the research. This study was specifically guided by the following research questions:

1. To what extent does professional development in gifted education predict increased teacher self-efficacy in working with gifted students? Does the size of this increase depend on whether the educator is a preservice or inservice teacher?
2. To what extent does professional development in gifted education predict increased teacher self-efficacy in meeting the academic needs of gifted students? Does the size of this increase depend on whether the educator is a preservice or inservice teacher?
3. To what extent does professional development in gifted education predict increased teacher self-efficacy in identifying students for gifted and talented programs? Does the size of this increase depend on whether the educator is a preservice or inservice teacher? Does the size of this increase depend on years of service?

4. To what extent does professional development in gifted education predict increased knowledge about gifted students? Does it predict a decrease in the most common misconceptions about gifted students? Does any change depend on whether the educator is a preservice or inservice teacher?
5. To what extent does professional development in gifted education predict increased knowledge about differentiating instruction for gifted students? Does the size of this increase depend on whether the educator is a preservice or inservice teacher?

Discussion of Findings

The investigation of professional development effectiveness and impact on teacher knowledge and efficacy regarding each of the research questions generated significant findings that support current literature in the field. These findings also suggest specific recommendations for professional practice and additional extensions for future research.

Discussion of Findings for Research Question 1

The results for RQ1 indicate a significant difference ($p < .001$) exists in teacher efficacy between the Pre-Training and Post-Training Surveys upon completion of the gifted education professional development training. This supports research conducted by Siegle et al. (2010) that found educators are much more likely to understand and accurately identify the way in which giftedness presents itself in a variety of students when they receive properly focused training on the subject. Lewis et al. (2018) further claimed the necessity of professional learning and training for educators, both preservice and inservice, as it assists them in identifying with and understanding students who come

from backgrounds that are different from their own, in addition to providing them with resources they can utilize to successfully meet the needs of these students.

The analysis of this research question also determined the increase in teacher efficacy regarding confidence in performing the tasks mentioned in the item statements for this question was not dependent upon whether they were preservice or inservice teachers ($p = 0.949$). This finding was expected because, as stated by Robinson et al. (2017), Darling-Hammond et al. (2017), and numerous others in the field of effective professional development research, all teachers benefit from professional development trainings that are focused, purposeful, provide examples of what the targeted expectation should look like, and allow teachers the opportunity to apply what they have learned and implement it into their instruction. This result is especially important because it demonstrates all educators, whether just beginning their career in education or having been a teacher for many years, benefit from being trained in gifted education and ways to meet the needs of gifted students. It is essential for educators to participate in these training sessions in order to be the best teachers for these students.

Discussion of Findings for Research Question 2

The findings for RQ2 centered on teacher efficacy relative to meeting the academic needs of gifted students and determined a significant difference ($p < .001$) exists between the Pre-Training and Post-Training Surveys completed by the participants upon the conclusion of the gifted education professional development training. The item statements analyzed in this research question (items 1, 3, 4, and 5 in the second section of the Modified SOP) are directly aligned with the characteristics identified by Kanevsky and Keighley (2003) as those essential in creating learning environments to effectively

engage gifted students and to provide the opportunity to immerse themselves in learning. These characteristics include giving gifted students partial control of their learning, providing lessons that are complex and rich in challenging content, ensuring they are appropriately challenged at their own academic level, allowing them to have choice in their projects and assignments to show what they have learned, and accommodating their learning with a teacher they feel cares about them. By meeting these specific needs and allowing them to learn at the advanced academic level in which they thrive, Robinson (2003) declared these students are much more likely to be successful and to enjoy the school setting. Silver et al. (2000) further advocated failing to meet the needs of gifted students by not creating an environment that allows them to process information in a way that best suits them as individuals can contribute to frustration with being unable to experience continuous academic progress like their peers.

This research question also investigated whether the increase in teacher efficacy relative to their confidence in meeting the specific academic needs of gifted students was dependent upon the participants' status as either preservice or inservice teachers. The results illustrate the increase in teacher efficacy regarding their confidence in meeting the academic needs of gifted students was not dependent upon whether the participants were preservice or inservice teachers ($p = 0.455$). This result was anticipated and supports current literature from Robinson et al. (2017) and Darling-Hammond et al. (2017) about the benefits all teachers receive from effective professional development. Regarding the importance of preservice teachers receiving training in how to best meet the academic needs of gifted students, Hong et al. (2011) asserted, considering a majority of identified gifted students spend most of their academic and instructional time within a regular

classroom, these teachers must be provided with this much needed training, as well as the additional resources it provides.

Discussion of Findings for Research Question 3

The results for RQ3 indicate a significant difference ($p < .001$) exists in teacher efficacy between the Pre-Training and Post-Training Surveys regarding their confidence in successfully identifying gifted students for gifted and talented programs to receive the services to which they are entitled. This research question was focused only on one item statement (item 7) from the second section of the Modified SOP, which centered on identifying gifted students. Many educators frequently struggle with accurately identifying gifted students due to their lack of knowledge regarding specific characteristics they should look for when making these identifications. Moore et al. (2005) explained teachers are less likely to identify students of color as being gifted because of the lack of preparation educators receive in undergraduate and other preservice teacher education programs in understanding cultural and behavioral characteristics of students from different backgrounds. The gifted education professional development training developed and created for this study included a section on identifying gifted students from multicultural backgrounds specifically due to the lack of teachers' knowledge in this area.

Grissom and Redding (2016) found the results of their research advocated for improved preservice teacher preparation programs, as well as professional development training to enable these educators to enter the classroom better prepared to identify and meet the needs of gifted students of color. The lack of multicultural instruction received by educators at both the undergraduate and graduate levels often results in a lack of

understanding of culturally diverse gifted students regarding their style of communication, learning preferences, and how they represent their giftedness based on the behaviors they exhibit (Ford et al., 2008). This may cause these students to be frequently under-identified in gifted education programs, which is the reason educators must receive training on diverse identification methods related to gifted students.

In addition to improving their ability to identify multicultural gifted students, educators must be able to determine the similarities and differences between gifted and high-achieving students. A thorough explanation of these characteristics also was provided in the professional development training created for this study, as it is one of the most common issues that arises relative to identification. Many educators who have not been trained in gifted education mistakenly identify students as being gifted when in actuality they are high-achieving students who perform well and know how to "do school." High-achieving students often are incorrectly identified as gifted because they may exhibit certain qualities assumed to be associated with gifted students, such as high performance, high scores on assessments or class assignments, and a passion for learning new things. While Barger (2009) expressed the importance of providing challenging content to all students in order to experience continuous academic progress, Szabos (1989), who created a reference chart outlining the specific differences between gifted and high-achieving students (Appendix A), insisted on the importance of both preservice and inservice teachers knowing this information when identifying students for gifted and talented programs. McGee and Hughes (2011) advocated for collaboration between families and teachers when identifying gifted students to provide a supportive academic environment that can be created for these students at school and at home.

RQ3 also determined the increase in teacher efficacy regarding their confidence in identifying gifted students was not dependent upon whether they were preservice or inservice teachers ($p = 0.254$). Further analysis determined the increase in teacher efficacy with respect to their confidence in identifying gifted students also was not dependent upon the number of years of service completed by a teacher ($p = 0.362$). Based on research conducted by Darling-Hammond et al. (2017) and Robinson (2017) regarding the increase in knowledge experienced by all teachers when they engage in effective professional development training, these results were expected. The knowledge that all participants in this study increased their ability to identify gifted students and their understanding regarding the characteristics they should look for when identifying these students further confirms the value of purposeful and concentrated professional development training (McQueen, 2010).

Discussion of Findings for Research Question 4

The findings for RQ4 determined a significant difference ($p < .001$) exists in teacher knowledge about gifted education and gifted students between the Pre-Training and Post-Training Surveys upon completion of the gifted education professional development training. The statements analyzed in this research question are the items included in the gifted subscale in the first section of the Modified SOP, as those statements are solely focused on gifted education and gifted students. These item statements concentrate on topics such as meeting the needs of gifted students, gifted differentiation techniques that can be implemented into classroom instruction, identifying gifted students, and common misconceptions associated with gifted education and gifted students. Lu et al. (2017) affirmed the importance of ensuring teachers understand the

needs of gifted students, their different way of thinking and viewing the world, and strategies they can utilize in their instruction to meet their academic and social emotional complexities, which gives them the confidence and opportunity to experience success inside and outside of the classroom.

Additionally, five item statements within the gifted subscale from the first section of the Modified SOP (items 3, 7, 10, 16, and 27) were labeled as common gifted misconceptions, indicating they were statements frequently misidentified as being true or false about gifted students when in fact the opposite is correct. These common misconceptions were reviewed in the professional development training created for this study, with thorough explanations and examples provided for each. Since these statements comprised a section of the professional development training, they were analyzed as a group and individually. The findings indicate a significant difference ($p < .001$) exists in teacher knowledge regarding the common gifted misconceptions as a group between the Pre-Training and Post-Training Surveys completed by participants upon the conclusion of the professional development training. Additionally, the individual common gifted misconception item statements also indicate a significant difference exists between the Pre-Training and Post-Training Surveys: *lack of common gifted misconceptions* ($p < .001$), *lack of common gifted misconceptions challenging assignments* ($p < .001$), *lack of common gifted misconceptions highest grades* ($p < .001$), *lack of common gifted misconceptions longer assignments* ($p < .001$), and *lack of common gifted misconceptions underachievers* ($p < .001$). Teachers must have access to this type of training regarding gifted students to address and correct these misconceptions. These common gifted misconceptions include the following: assuming

gifted students will succeed on their own without help or guidance from their teachers (Chamberlin & Chamberlain, 2010), thinking gifted students will challenge themselves, identifying gifted students by searching for students with the highest grades (Sheffield, 2017), assuming gifted students need longer assignments since they work faster, and thinking gifted students cannot also be underachievers (McCoach, 2000). Ribich et al. (1998) established these inherent biases and incorrect preconceptions as further support for preservice teachers to receive professional development training focused on gifted education and gifted students.

Furthermore, the analysis of RQ4 ascertained the increase in teacher knowledge about gifted education and gifted students between the Pre-Training and Post-Training Surveys was not dependent upon whether participants were preservice or inservice teachers ($p = 0.576$). Results also illustrate the increase in teacher knowledge regarding the combined common gifted misconceptions between the Pre-Training and Post-Training Surveys was not statistically significant ($p = 0.811$) and not dependent upon whether participants were preservice or inservice teachers. When analyzing the common gifted misconceptions individually, it was discovered the gains between the Pre-Training and Post-Training Surveys were statistically insignificant and not dependent upon whether participants were preservice or inservice teachers: *lack of common gifted misconceptions teacher direction* ($p = 0.976^{a}$), *lack of common gifted misconceptions challenging assignments* ($p = 0.905$), *lack of common gifted misconceptions highest grades* ($p = 0.204$), *lack of common gifted misconceptions longer assignments* ($p = 0.256$), and *lack of common gifted misconceptions underachievers* ($p = 0.382^{a}$). These results further emphasize the positive impact of effective professional development

training about gifted education and gifted students on educators and that it can alter and correct their preconceived notions of gifted students. Megay-Nespoli (2001) asserted providing workshops for preservice teachers about the common stereotypes and misconceptions often associated with gifted students helps these educators change their attitudes toward gifted students and develops a more comprehensive understanding of these individuals and their needs. Professional development opportunities can provide all educators with the information they need about gifted students, how they can best meet their needs, and ways to address any misinformation they may have about gifted students in order to provide them with effective strategies to help these students be successful.

Discussion of Findings for Research Question 5

The findings for RQ5 centered on teacher knowledge regarding differentiating instruction for gifted students and determined a significant difference ($p < .001$) exists between the Pre-Training and Post-Training Surveys completed by the participants upon conclusion of the professional development training. The item statements evaluated in this research question were those included in the differentiation subscale in the first section of the Modified SOP, as the statements were solely focused on differentiation strategies used to meet the academic needs of all students in the classroom, including gifted students. These item statements encompass various differentiation concepts, including but not limited to providing alternative assignments, presentation of the curriculum, length of assignments, modifying content, and grouping students. Tomlinson (2003), a well-known researcher in the field of differentiation and gifted education, explained the purpose of a differentiated classroom is to help every student move as far as possible through content as quickly as possible so academic success and continuous

academic progress can be experienced, especially for gifted students. Adams (2015) further asserted educators who differentiate instruction are working toward meeting both the academic and the social emotional needs of those students. Research has shown using differentiation in the classroom setting to meet the needs of gifted students provides educators with the added opportunity of meeting the needs of all students by encouraging them to design their instruction based on the interests, ability levels, and individual needs of all students in their classrooms (Page, 2000). Multiple differentiation strategies were provided in the professional development training designed for this study, with examples and suggestions of the way in which educators could implement each of the strategies presented into their pre-existing lessons and activities. Applying strategies learned in the professional development training can help participants get closer to the important concept of sustained duration, which is evident in effective professional development (Robinson et al., 2017).

The results from the analysis of RQ5 also determined the increase in teacher knowledge about differentiating instruction for gifted students based on whether the participants were preservice or inservice teachers, was statistically significant ($p = 0.02$). While the other research questions found the increase in teacher knowledge and efficacy was not dependent upon participants being preservice or inservice teachers, it is not surprising to find a difference between the two groups regarding their knowledge of differentiating instruction. Inservice teachers have much more experience than preservice teachers in regard to differentiating their instruction to meet the needs of the students in their classrooms because they do it on a daily basis. Inservice teachers also are familiar with administering pre-assessments to their students before they begin to teach a unit in

order to determine what their students already know when designing their lessons and instruction (Rakow, 2012). Darling-Hammond (2010) advocated for professional development for preservice teachers so they can apply and analyze what they have learned in order to make connections to the content they teach, as well as with future students. The effectiveness of the gifted education professional development training created for this study had a positive impact on the growth and increase in knowledge and efficacy of all educators who participated, which further supports the need for gifted education training in teacher preparation programs, as well as professional development opportunities for inservice teachers about gifted education and gifted students.

Alignment with Leadership Theory

The purpose of this study, as well as the gifted education professional development training, is comprehensively aligned with servant leadership theory. The field of education, particularly gifted education, is abounding with educators whose primary purpose is to serve their students and do what is necessary to best meet their academic, social, and emotional needs. As explained by one of the founders of servant leadership, Greenleaf (1977) identified servant leaders as those who desire to serve and grow into someone who aspires to lead others into service. This is the very nature of education, as teachers begin their career by serving students, families, and their colleagues; they then grow into leaders who teach and inspire others to do the same.

Servant leadership was at the forefront of the design and thought process during the creation of the gifted education professional development training. The formatting and flow of the content was constructed in a manner to best serve educators, who in turn could apply what they learned to serve their gifted students by being better prepared to

meet their needs in the classroom. Input was solicited from other servant leaders with extensive experience in designing and delivering professional development trainings in an online setting in order to arrange the professional development components in a manner most beneficial for the study participants. Nolan and Richards (2015) described this approach of servant leadership as the desire to ensure the needs and development of those who follow are placed ahead of those of the leader, which is precisely the way in which the training was constructed. Utilizing the information learned from these consultations allowed for improvements to the training to become more centered on the needs of the participants relative to the content being presented.

In addition to the goal of assisting educators in need of professional development training about gifted education and gifted students, other benefits resulted from this study. In completing the training, all participants were given the opportunity to learn about and interact with technology applications they can now use in their classrooms to actively engage students. Through the use of these applications to complete the activities incorporated into the training, participants were aware of how these applications could be used from a student perspective in order to enhance the content being taught. Also, upon completion of the data collection process, many participants described the benefits they received from the training and noted their plans to use the differentiation techniques in their classrooms because they believed their gifted students would also benefit from them. Some participants, both teachers and administrators, have even reached out to inquire about using the training with teachers in their schools and districts. This brings the servant leadership theory full circle, as the training was created to help teachers in meeting the needs of their gifted students. In addition, upon the conclusion of this study,

the same professional development training will be used to further serve more teachers and gifted students. Greenleaf (1977) recognized individuals and organizations could be servant leaders, given their true desire to serve and improve society. This component of servant leadership, within this study and throughout the field of education, requires the inclusion of gifted education training for both preservice and inservice teachers to allow educators to receive the materials they need to best serve all students in their classrooms, especially those who crave challenge and rigor, to experience continuous academic progress.

Implications for Practice

The findings from this study suggest several implications for practice in the field of general education, as well as that of gifted education. First, when evaluating the effectiveness of the gifted education professional development training, it became quite clear when reviewing the results for each research question that all participants benefited from the training regardless of their status as preservice or inservice teachers. This finding is crucial because it shows all educators can increase their knowledge and their efficacy relative to their confidence in applying what they learned when provided with effective and focused professional development on gifted education and gifted students. The professional development training prepared educators to be much better equipped to identify gifted students, meet the needs of this population of students, and differentiate their instruction with additional rigor and challenging content for their gifted students, as well as the other students in their classroom, which is precisely the purpose of this study.

A second implication centers on the specific gifted education professional development training created for this study. The training was designed using interactive

applications to be more effective than the typical webinars many educators have become accustomed to attending in which they simply sit and watch videos to learn new information. The training provided preservice and inservice teachers with content that allowed them to be engaged and to interact with the information they were learning through the utilization of a variety of technology applications to accomplish the intended result, including Google Sites, Google Slides, Google Forms, EdPuzzle, Pear Deck, YouTube, and Screencastify. By incorporating these applications into the training, participants were required to answer questions, complete tasks, reflect on their learning, and apply that learning while participating in the training. This process increased the engagement of participants while enhancing the learning that was occurring. Upon completion of the training, many participants commented they enjoyed the interactive components and felt those elements helped them retain much more of the information. Based on these comments, professional development trainings clearly need to engage participants in the content being presented. Providing participants with opportunities to interact with new information allowed the freedom to own their learning and make connections, which is exactly the purpose of effective professional development trainings.

Another implication based on the results of this study, focuses on leaders in education, administrators, and teachers embracing the powerful and lasting impact that online professional development can have when it is purposeful and designed in a manner that allows educators to actively engage in learning and apply what they have learned. This study and the comments from participants who participated in the gifted education professional development training demonstrate how mindsets and perspectives can be

changed in the face of effective professional development. An online training can be just as effective, if not more so, than a training completed in person, and it has the additional benefit of reaching a broader audience so that more educators can be impacted. Embracing online training from a leadership perspective can shift the focus of professional development from providing teachers with training selected by their districts to furnishing teachers with the opportunity to choose training they want to participate in based on their individual needs, interests, and identified areas for their own professional growth. This shift can assist in establishing new paradigms in how professional development is viewed and implemented for the benefit of educators as well as the students they serve.

A final implication is that of incorporating differentiated instruction strategies and methods into teacher preparation courses. While preservice teachers increased their knowledge of differentiating instruction for gifted students upon the completion of the training, a significant difference was found in the gain of differentiation knowledge between preservice and inservice teachers. This finding likely is due to the additional experience and practice of inservice teachers with implementing differentiation techniques into their instruction because they must do so to meet the needs of the students in their classrooms. As differentiation is an important educational strategy frequently used to meet the needs of all students, it is important for preservice teachers to be exposed to this strategy early in their teacher preparation programs to have more time to learn various differentiation techniques that work best for their instruction. Educators will have more time to apply differentiation strategies in their coursework and become more

comfortable utilizing them in their teaching, resulting in a greater inclination to use them with their future students.

Acknowledgment of Limitations

The limitations of this study include the requirement for the professional development training to be in an online and virtual environment due to the COVID-19 pandemic during the data collection period. As explained by Darling-Hammond et al. (2017), new learning, particularly on topics with which participants are unfamiliar, is best mediated in a social context that allows for both interaction and engagement among participants. When presenting new content in a professional development setting, participants benefit from the ability to ask questions of the presenter in order to clarify content with which they may struggle to understand or to clarify misconceptions associated with the content being presented. Direct interaction among the participants in this study, as well as between the participants and the researcher, likely would have enhanced the training; however, due to the health and safety restrictions established during the pandemic, conducting the professional development in a face-to-face setting was not feasible.

Another limitation of the study involves the instructional technology utilized in the formatting of the gifted education professional development training. As the training was presented in an online asynchronous format, some of the original technology applications could not be used because they were not synchronized with some of the applications used to ensure participants could complete the training at their own pace rather than being required to complete it in one sitting. Modifications were needed for some of the interactive activities that were incorporated into the training in order to

achieve the desired outcome. This was accomplished while also ensuring the training would maintain its high quality and participants could interact with the content being presented in order to have a positive and engaging learning experience.

An additional limitation of the study involves the time of year in which the data were collected. The collection process occurred between the months of April and May, which are very busy times during the school year for both preservice and inservice teachers. As stated in Chapter III, the original interest in this study, which was based on initial participants who completed the Consent Form and the Pre-Training Survey, consisted of a total of 133 educators, with 48 being preservice teachers and the remaining 85 being inservice teachers. Approximately 58% of the initial study participants (33 preservice teachers and 44 inservice teachers) completed the entire gifted education professional development training, with many of those who did not complete the training stating they simply had insufficient time to participate in the study in addition to all their other work responsibilities. If data collection could have occurred during a different point in time during the school year, with a longer time frame with which to collect the data, a more robust sample size may have resulted.

Recommendations for Future Research

The results and findings in this study support multiple avenues of future research in the area of gifted education and effective professional development implementation. First, although the gifted education professional development training was modified to an online and asynchronous format, the results from the analysis of the research questions indicate the training was highly effective and beneficial for all participants. While transitioning the training to an online format was previously identified as a limitation, it

also is an opportunity for further research and study. Many professional development trainings are delivered in a public face-to-face setting based upon the desired interaction between the presenter and the participants. However, the engagement and content interaction of participants in this study with the information they learned still yielded statistically significant results relative to the increase in knowledge and efficacy they experienced at the completion of the training. It is both compelling and beneficial for future research to ascertain whether educator knowledge and efficacy improves when participants attend in-person training as opposed to an online format.

This study included participants from a southern Kentucky public university, 11 Kentucky school districts, and one Tennessee school district. Another recommendation for future research is to replicate this study on a larger scale and for a longer period of time in order to reach a much larger number of preservice and inservice teachers, which could allow for the simulation of this study, or one of similar design, on a regional or national level. A study on a larger scale with a longer time frame could assist in providing a much larger and more diverse sample size, therefore increasing the amount of data collected on these important topics. The results of this future research potentially could reveal additional findings of great value to the field of gifted education beyond the scope of this current study.

A final recommendation for future research centers on determining the potential impact of providing educators with training about gifted education and gifted students regarding the achievement of gifted students. As determined in this study, all educators who participated in the training, regardless of whether preservice or inservice teachers, benefited by experiencing an increase in knowledge and efficacy upon completion of the

training. The conclusion can be made that gifted students are much more likely to benefit from being taught by educators who received training about gifted education and gifted students, as those individuals would have the ability to apply what they have learned to best meet the needs of the gifted students in their classroom. Examining whether a correlation exists between gifted student achievement and teachers who received gifted education training may yield results to further advocate for the inclusion of gifted education training in preservice teacher preparation programs and inservice professional development opportunities for current teachers.

Conclusion

This study sought to determine whether educators would experience an increase in their knowledge and self-efficacy of gifted education and gifted students upon participating in and completing an online, self-paced gifted education professional development training. The components of the training were specifically designed to be interactive so participants could engage with the material as a means to supplement the interaction experienced in an in-person professional development training. As expected, the results demonstrate statistical significance for the following concepts: an increase in teacher knowledge in gifted education; an increase in teacher knowledge in differentiating instruction for gifted students; an increase in teacher knowledge in understanding common gifted misconceptions; and an increase in teacher efficacy in identifying and meeting the academic needs of gifted students and in their overall ability to meet the needs of these students in the classroom setting. These findings are encouraging because they reveal the benefits received by teachers when they are given

the opportunity to participate in effective professional development that is focused and purposeful.

This study also examined whether statistically significant differences were evident for each of the gains previously mentioned based upon whether participants were preservice or inservice teachers. Initial review of the research questions concluded only one of the questions, which focused on an increase in teacher knowledge regarding differentiating instruction for gifted students, could potentially indicate a difference between the two groups of participants. As anticipated, the findings for this research question found a statistically significant difference between preservice and inservice teachers. As inservice teachers implement differentiation techniques and methods into their instruction much more frequently than preservice teachers due to working with students on a daily basis, it is not surprising to find a marked difference between the increase in their knowledge on this topic and that of preservice teachers. These results can assist in further advocating for the inclusion of differentiation methods in teacher preparation programs in addition to training in gifted education. It is essential for teacher preparation programs and school districts to provide the necessary gifted education training to future educators and to those currently teaching in the classroom environment, resulting in all educators being prepared to successfully and effectively meet the needs of the gifted students they serve.

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APPENDIX A

Bright vs. Gifted - Characteristics of Gifted Learners

Bright vs. Gifted – Characteristics of gifted learners

Source: Janice Szabos, Challenge Magazine, 1989, Issue 34

A Bright Child:	A Gifted Learner:
Knows the answers	Asks the questions
Is interested	Is highly curious
Is attentive	Is mentally and physically involved
Has good ideas	Has wild, silly ideas
Works hard	Plays around, yet tests well
Answers the questions	Discusses in detail, elaborates
Top group	Beyond the group
Listens with interest	Shows strong feeling and opinions
Learns with ease	Already knows
6-8 repetitions for mastery	1-2 repetitions for mastery
Understands ideas	Constructs abstractions
Enjoys peers	Prefers adults
Grasps the meaning	Draws inferences
Completes assignments	Initiates projects
Is receptive	Is intense
Copies accurately	Creates a new design
Enjoys school	Enjoys learning
Absorbs information	Manipulates information
Technician	Inventor
Good memorizer	Good guesser
Enjoys sequential presentation	Thrives on complexity
Is alert	Is keenly observant
Is pleased with own learning	Is highly self-critical

APPENDIX B

Survey of Practices With Students of Varying Needs (SOP)

Tomlinson, C. A., Callahan, C. M., Moon, T. R., Tomchin, E. M., Landrum, M., Imbeau, M, Hunsaker, S. L., & Eiss, N. (1995). *Preservice teacher preparation in meeting the needs of gifted and other academically diverse students* (Research Monograph 95134). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

Survey of Practices With Students of Varying Needs

This instrument is designed to help us understand teacher attitudes about classrooms, students, and teaching practices. The instrument will take about fifteen minutes to complete. Do not put your name on the paper. Please be sure to answer every question on front and back of both sheets. Thank you for taking time to participate in this study.

Please respond to the following demographic information (please complete each item):

Check the box that best describes you: undergraduate graduated

Please indicate the approximate number of credit hours you have taken (circle one):

Bachelor's	Bachelor's +15	Bachelor's +30
Master's	Master's +15	Master's +30

Please indicate the number of courses you have taken in the following areas:

Special education ___ Gifted education ___

If you are a graduate, please respond to the following items:

Years of teaching experience ___ Type of degree _____

Area of certification _____

Other endorsements _____

Part I:

Read each statement and circle the response that best describes your feelings about the statement. Circle SA if you strongly agree, A if you agree, D if you disagree, SD if you strongly disagree, and DK if you don't know how you feel about the statement.

A student who is learning disabled will usually be a low achiever in most subjects.	**SA**	**A**	**D**	**SD**	**DK**
The regular curriculum will challenge all students if the teacher is interesting and exciting.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students can make it on their own without teacher direction.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students find it difficult to work on their own without teacher direction.	**SA**	**A**	**D**	**SD**	**DK**
It is important to assess students' knowledge about the topic before beginning a new unit.	**SA**	**A**	**D**	**SD**	**DK**

Tomlinson, C. A., Callahan, C. M., Moon, T. R., Tomchin, E. M., Landrum, M., Imbeau, M, Hunsaker, S. L., & Eiss, N. (1995). *Preservice teacher preparation in meeting the needs of gifted and other academically diverse students* (Research Monograph 95134). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

If tests indicate that a student has acquired basic skills, the teacher should omit the regular assignments and modify the curriculum for that student.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students will take their regular assignments and make them more challenging on their own.	**SA**	**A**	**D**	**SD**	**DK**
If students have already mastered some of the material before starting a unit, they should be given alternative assignments.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students may need additional time to practice to master basic skills.	**SA**	**A**	**D**	**SD**	**DK**
An effective way to identify gifted students is to look for students with the highest grades.	**SA**	**A**	**D**	**SD**	**DK**
In the classroom, content should be varied to match students' interests and abilities.	**SA**	**A**	**D**	**SD**	**DK**
To assure that all students have the same knowledge base, it is appropriate to present curriculum information to all students in the same way.	**SA**	**A**	**D**	**SD**	**DK**
Allowing gifted students to work on assignments that are different from the rest of the students is playing favorites and fostering elitism.	**SA**	**A**	**D**	**SD**	**DK**
Students who are learning disabled are usually poor readers.	**SA**	**A**	**D**	**SD**	**DK**
Average students need to spend most of their time working in teacher-directed activities.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students need longer assignments since they work faster.	**SA**	**A**	**D**	**SD**	**DK**
It is important for all students to do workbook exercises, review pages, and textbook assignments because these activities are an integral part of the curriculum.	**SA**	**A**	**D**	**SD**	**DK**
Working too hard in school leads to burn-out in gifted students.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students do not do well in most subjects.	**SA**	**A**	**D**	**SD**	**DK**
Learning disabled students who are gifted will need to concentrate their study to remediate their weaknesses so they can go on to use their areas of strength.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students are easy to identify in the classroom.	**SA**	**A**	**D**	**SD**	**DK**
Work that is too easy or boring frustrates a gifted child just as work that is too difficult frustrates an average learner.	**SA**	**A**	**D**	**SD**	**DK**
Assignment length and homework assignments are usually designed to meet the needs of the average learner.	**SA**	**A**	**D**	**SD**	**DK**

Tomlinson, C. A., Callahan, C. M., Moon, T. R., Tomchin, E. M., Landrum, M., Imbeau, M, Hunsaker, S. L., & Eiss, N. (1995). *Preservice teacher preparation in meeting the needs of gifted and other academically diverse students* (Research Monograph 95134). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

Gifted students should be encouraged to direct their own learning.	**SA**	**A**	**D**	**SD**	**DK**
Having some students work on different assignments results in unfair grading.	**SA**	**A**	**D**	**SD**	**DK**
Students who differ markedly in ability level from the average learner should be taught in special classes to fully meet their needs.	**SA**	**A**	**D**	**SD**	**DK**
Some underachievers are actually gifted students.	**SA**	**A**	**D**	**SD**	**DK**
While it is appropriate for students to work on different assignments commensurate with their ability levels, the means of assessment should be the same for all students.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students have difficulty grasping concepts and need a more fact-based curriculum.	**SA**	**A**	**D**	**SD**	**DK**
If a gifted student is doing poorly in spelling, it is necessary to deal with the weakness in spelling before presenting more advanced content in other areas.	**SA**	**A**	**D**	**SD**	**DK**
All students in the class should take the same test to show mastery of the material in a unit.	**SA**	**A**	**D**	**SD**	**DK**
Removing special education and gifted students from the classroom for special classes is disruptive to the class schedule.	**SA**	**A**	**D**	**SD**	**DK**
In teaching gifted students, teachers should modify the content only, since all students need to use the same processes and can generate the same projects.	**SA**	**A**	**D**	**SD**	**DK**
Having gifted students work on individual projects or assignments isolates them from the rest of the class.	**SA**	**A**	**D**	**SD**	**DK**
Grouping students is more detrimental than beneficial.	**SA**	**A**	**D**	**SD**	**DK**

Tomlinson, C. A., Callahan, C. M., Moon, T. R., Tomchin, E. M., Landrum, M., Imbeau, M, Hunsaker, S. L., & Eiss, N. (1995). *Preservice teacher preparation in meeting the needs of gifted and other academically diverse students* (Research Monograph 95134). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

Part II:

In thinking about students in the classroom, please rank the following three groups according to the amount of time and attention each one receives. Place a 1 beside the group receiving most of your attention. Place a 2 beside the next group. Place a 3 beside the group receiving the least amount of attention. If you feel you give equal time to all groups, place an E in each blank.

Special education students ____

Average students ____

Gifted students ____

Part III:

How confident do you feel about the following? Rate from 1 (no confidence) to 5 (very confident) by circling the response that best describes your feelings:

Adapting my lessons to meet the needs of gifted learners	1	2	3	4	5
Adapting my lessons to meet the needs of remedial learners	1	2	3	4	5
Accommodating varying levels of ability in my class	1	2	3	4	5
Assessing where students are and designing appropriate lessons	1	2	3	4	5
Individualizing instruction to meet the needs of gifted learners	1	2	3	4	5
Individualizing instruction to meet the needs of remedial learners	1	2	3	4	5
Identifying gifted students	1	2	3	4	5
Identifying remedial students	1	2	3	4	5

Tomlinson, C. A., Callahan, C. M., Moon, T. R., Tomchin, E. M., Landrum, M., Imbeau, M, Hunsaker, S. L., & Eiss, N. (1995). *Preservice teacher preparation in meeting the needs of gifted and other academically diverse students* (Research Monograph 95134). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

Part IV:

Which specific techniques, activities, or instructional strategies do you think you would use with each of the following learners in the classroom? Place a check in the appropriate column. Do not check strategies unfamiliar to you.

	Gifted Students		Average Students		Special Education Students
ability grouping					
activities to enhance creativity					
cooperative learning					
curriculum compacting					
drill and practice					
higher level thinking activities					
independent study					
individual instruction					
interdisciplinary activities					
learning centers					
problem-solving activities					
projects					
values training					
workbook exercises					

APPENDIX C

Modified Survey of Practices With Students of Varying Needs

Survey of Practices With Students of Varying Needs

This instrument is designed to help us understand teacher attitudes about classrooms, students, and teaching practices. The instrument will take about fifteen minutes to complete. Thank you for taking time to participate in this study.

Please respond to the following demographic information (please complete each item):

Which identifier best describes you?

_____ Preservice Teacher
_____ K-12 Teacher

Please indicate the number of courses you have taken in the following areas:

_____ Special Education _____ Gifted Education

Please respond to the following items:

Years of Teaching Experience _____

Highest Degree Earned: High School Bachelor's Masters Specialist Doctorate

Have you received National Board Certification? _____

Area(s) of Certification _____

Other Endorsements _____

Part I:

Read each statement and circle the response that best describes your feelings about the statement. Circle SA if you strongly disagree, A if you agree, D if you disagree, SD if you strongly disagree, and DK if you don't know how you feel about the statement.

A student who is learning disabled will usually be a low achiever in most subjects.	**SA**	**A**	**D**	**SD**	**DK**
The regular curriculum will challenge all students if the teacher is interesting and exciting.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students can make it on their own without teacher direction.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students find it difficult to work on their own without teacher direction.	**SA**	**A**	**D**	**SD**	**DK**
It is important to assess students' knowledge about the topic before beginning a new unit.	**SA**	**A**	**D**	**SD**	**DK**
If tests indicate that a student has acquired basic skills, the teacher should omit the regular assignments and modify the curriculum for that student.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students will take their regular assignments and make them more challenging on their own.	**SA**	**A**	**D**	**SD**	**DK**
If students have already mastered some of the material before starting a unit, they should be given alternative assignments.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students may need additional time to practice to master basic skills.	**SA**	**A**	**D**	**SD**	**DK**
An effective way to identify gifted students is to look for students with the highest grades.	**SA**	**A**	**D**	**SD**	**DK**

In the classroom, content should be varied to match students' interests and abilities.	**SA**	**A**	**D**	**SD**	**DK**
To assure that all students have the same knowledge base, it is appropriate to present curriculum information to all students in the same way.	**SA**	**A**	**D**	**SD**	**DK**
Allowing gifted students to work on assignments that are different from the rest of the students is playing favorites and fostering elitism.	**SA**	**A**	**D**	**SD**	**DK**
Students who are learning disabled are usually poor readers.	**SA**	**A**	**D**	**SD**	**DK**
Average students need to spend most of their time working in teacher-directed activities.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students need longer assignments since they work faster.	**SA**	**A**	**D**	**SD**	**DK**
It is important for all students to do workbook exercises, exercises, review pages, and textbook assignments because these activities are an integral part of the curriculum.	**SA**	**A**	**D**	**SD**	**DK**
Working too hard in school leads to burn-out in gifted gifted students.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students do not do well in most subjects.	**SA**	**A**	**D**	**SD**	**DK**
Learning disabled students who are gifted will need to concentrate their study to remediate their weaknesses so they can go on to use their areas of strength.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students are easy to identify in the classroom.	**SA**	**A**	**D**	**SD**	**DK**
Work that is too easy or boring frustrates a gifted child just as work that is too difficult frustrates an average learner.	**SA**	**A**	**D**	**SD**	**DK**

Assignment length and homework assignments are usually designed to meet the needs of the average learner.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students should be encouraged to direct their own learning.	**SA**	**A**	**D**	**SD**	**DK**
Having some students work on different assignments results in unfair grading.	**SA**	**A**	**D**	**SD**	**DK**
Students who differ markedly in ability level from the average learner should be taught in special classes to fully meet their needs.	**SA**	**A**	**D**	**SD**	**DK**
Some underachievers are actually gifted students.	**SA**	**A**	**D**	**SD**	**DK**
While it is appropriate for students to work on different assignments commensurate with their ability levels, the means of assessment should be the same for all students.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students have difficulty grasping concepts and need a more fact-based curriculum.	**SA**	**A**	**D**	**SD**	**DK**
If a gifted student is doing poorly in spelling, it is necessary to deal with the weakness in spelling before presenting more advanced content in other areas.	**SA**	**A**	**D**	**SD**	**DK**
All students in the class should take the same test to show mastery of the material in a unit.	**SA**	**A**	**D**	**SD**	**DK**
Removing special education and gifted students from the classroom for special classes is disruptive to the class schedule.	**SA**	**A**	**D**	**SD**	**DK**
In teaching gifted students, teachers should modify the content only, since all students need to use the same processes and can generate the same projects.	**SA**	**A**	**D**	**SD**	**DK**
Having gifted students work on individual projects or assignments isolates them from the rest of the class.	**SA**	**A**	**D**	**SD**	**DK**

Grouping students is more detrimental than beneficial.	**SA**	**A**	**D**	**SD**	**DK**

Part II:

How confident do you feel about the following? Rate from 1 (no confidence) to 5 (very confident) by circling the response that best describes your feelings:

Adapting my lessons to meet the needs of gifted learners	**1**	**2**	**3**	**4**	**5**
Adapting my lessons to meet the needs of remedial learners	**1**	**2**	**3**	**4**	**5**
Accommodating varying levels of ability in my class	**1**	**2**	**3**	**4**	**5**
Assessing where students are and designing appropriate lessons	**1**	**2**	**3**	**4**	**5**
Individualizing instruction to meet the needs of gifted learners	**1**	**2**	**3**	**4**	**5**
Individualizing instruction to meet the needs of remedial learners	**1**	**2**	**3**	**4**	**5**
Identifying gifted students	**1**	**2**	**3**	**4**	**5**
Identifying remedial students	**1**	**2**	**3**	**4**	**5**

Tomlinson, C. A., Callahan, C. M., Moon, T. R., Tomchin, E. M., Landrum, M., Imbeau, M, Hunsaker, S. L., & Eiss, N. (1995). *Preservice teacher preparation in meeting the needs of gifted and other academically diverse students* (Research Monograph 95134). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut. Adapted with permission.

APPENDIX D

IRB Approval

INSTITUTIONAL REVIEW BOARD
OFFICE OF RESEARCH INTEGRITY

DATE:	December 10, 2020
TO:	Keely P'Pool, B.A., M.A., Ed. S.
FROM:	Western Kentucky University (WKU) IRB
PROJECT TITLE:	[1693495-1] The Influence of Professional Development on Teacher Self-Efficacy in Gifted Education
REFERENCE #:	IRB 21-130
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	December 10, 2020
EXPIRATION DATE:	February 28, 2021
REVIEW TYPE:	Expedited Review

Thank you for your submission of New Project materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by an *implied* consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a MINIMAL RISK project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of February 28, 2021.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Robin Pyles at (270) 745-3360 or irb@wku.edu. Please include your project title and reference number in all correspondence with this committee.

WESTERN KENTUCKY UNIVERSITY

Institutional Review Board
Continuing Review Report

If this is your third year for your Continuing Review Request, please complete a new application.
Otherwise; DO NOT include the complete application in describing modifications and requests for additional time to collect data.

Name of Project: The Influence of Professional Development on Teacher Self-Efficacy in Gifted Education
Name of Researcher: Keely P'Pool, B. A., M. A., Ed. S.
Department: Educational Leadership Doctoral Program

How many total subjects have participated in the study since its inception? 0

How many subjects have participated in the project since the last review? 0

Is your data collection with human subjects complete? ☐ **Yes** ☒ **No**

1. Has there been any change in the level of risks to human subjects? (If "Yes", please explain changes on a separate page). ☐ Yes ☒ No

2. Have informed consent procedures changed so as to put subjects above minimal risk? (If "Yes", please describe on a separate page). ☐ Yes ☒ No

3. Have any subjects withdrawn from the research due to adverse events or any unanticipated risks/problems? (If "Yes", please describe on a separate page). ☐ Yes ☒ No

4. Have there been any changes to the source(s) of subjects and the Selection criteria? (If "Yes", please describe on a separate page). ☐ Yes ☒ No

5. Have there been any changes to your research design that were not specified in your application, including the frequency, duration and location of each procedure. (If "Yes", please describe on a separate page). ☐ Yes ☒ No

6. Has there been any change to the way in which confidentiality of the Data is maintained? (If "Yes", please describe on a separate page). ☐ Yes ☒ No

7. Is there desire to extend the time line of the project? ☒ Yes ☐ No
   On what date do you anticipate data collection with human subjects to be completed? May 30, 2021

Due to the COVID-19 virus, there have been some setbacks in getting the data collection process finished by the original completion date that was submitted. Having additional time to finish the data collection from all study participants would be extremely helpful and allow for the successful completion of this research study.

WKU IRB# 21-130
Approved: 2/25/2021
End Date: 5/30/2021
EXPEDITED
Original: 12/10/2020

APPENDIX E

Gifted Education Professional Development Training Flyer

APPENDIX F

IRB Participant Consent Form

INFORMED CONSENT DOCUMENT

Project Title: The Influence of Professional Development on Teacher Self-Efficacy in Gifted Education

Investigator: Keely P'Pool, Educational Leadership Doctoral Program, keely.ppool913@topper.wku.edu

You are being asked to participate in a project conducted through Western Kentucky University. The University requires that you give your agreement to participate in this project.

You must be 18 years old or older to participate in this research study.

A basic explanation of the project is written below. Please read this explanation and email the researcher any questions you may have. If you then decide to participate in the project, please continue to the questionnaire. You should keep a copy of this form for your records.

1. **Nature and Purpose of the Project:** The overall nature and purpose of this project is to determine if teachers who receive effective professional development training in gifted education and about gifted students are better able to meet the needs of those students in the classroom setting and if they also feel more confident in their ability to do so. Many teachers, both preservice and experienced, receive little to no training in gifted education but are expected to meet the needs of these students in the classroom. By providing teachers with professional development focused on gifted education, characteristics of gifted students, and how to meet the academic and social emotional needs of gifted students this research project will determine if receiving professional development training assists teachers in being better able to meet the needs of these students in their classrooms and increases their confidence in their abilities to apply the instructional strategies and techniques they learned during this training.

2. **Explanation of Procedures:** You will first review and agree to the informed consent document indicating that you are participating in this study voluntarily and that you are aware you can withdraw from the study at any time without any consequences or negative outcomes. You will then complete the Survey of Practices with Students of Varying Needs questionnaire, which will serve as your pretest. You will then complete the online professional development training and the Survey of Practices with Students of Varying Needs questionnaire at the conclusion of the training, which will serve as your posttest. This entire process is expected to take approximately 2 hours to complete. Upon completion of both surveys and the online professional development training, you will receive a certificate of completion.

3. **Discomfort and Risks:** There are no known or anticipated risks to those who participate in this study. During this study you will answer questions provided on a questionnaire and receive an online professional development training focusing on gifted education and gifted students. Since you will be completing the questionnaire and professional development training online at a time and location of your choosing, the possibility of experiencing any discomfort is minimal.

4. **Benefits:** The anticipated benefits to those who participate in this study include the knowledge they receive about gifted education and gifted students and their ability to apply what they have learned in their classrooms to best meet the needs of gifted students.

WKU IRB# 21-130
Approved: 2/25/2021
End Date: 5/30/2021
EXPEDITED
Original: 12/10/2020

The knowledge that is expected to result from this study will be of great importance in the field of gifted education as it will additionally advocate for teachers to receive training in gifted education so they can effectively challenge their gifted students and better help them reach their highest level of potential. This study can further be used in the creation and development of effective professional development training resources that engage participants and provide them with strategies and methods they can utilize in their own classrooms, which benefits both educators and students. This study will also add to the body of literature that has been published about gifted education, gifted students, and the importance of their academic and social emotional needs being met.

5. **Confidentiality:** Participant data will be initially collected through a digital survey in a cloud-based, password protected online storage account at WKU. Immediately after the data collection phase is completed all of the data will be downloaded onto a flash drive and stored on the password protected computer of the faculty sponsor at WKU. All cloud records will be deleted. Only the researcher and the researcher's dissertation chairperson will have access to the data. Participants will be assigned an identification number such that all data are de-identified and confidentiality of participants is maintained. Records will be viewed, stored, and maintained in private, secure files only accessible by the P.I. and advising faculty for three years following the study, after which time they will be destroyed.

6. **Refusal/Withdrawal:** Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

By clicking "I agree" at the bottom of the page and moving on to answer the questions in the survey you are giving your consent to participate in this research study.

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD
Robin Pyles, Human Protections Administrator
TELEPHONE: (270) 745-3360

WKU IRB# 21-130
Approved: 2/25/2021
End Date: 5/30/2021
EXPEDITED
Original: 12/10/2020

APPENDIX G

Professional Development Pre-Training Survey

This instrument is designed to help us understand teacher attitudes about classrooms, students, and teaching practices. The instrument will take about fifteen minutes to complete. Thank you for taking time to participate in this study.

Please respond to the following demographic information (please complete each item):

Which identifier best describes you?

_____ Preservice Teacher
_____ K-12 Teacher

Please indicate the number of courses you have taken in the following areas:

_____ Special Education _____ Gifted Education

Please respond to the following items:

Years of Teaching Experience _____

Highest Degree Earned: High School Bachelor's Masters Specialist Doctorate

Have you received National Board Certification? _____

Area(s) of Certification _____

Other Endorsements _____

Part I:

Read each statement and circle the response that best describes your feelings about the statement. Circle SA if you strongly disagree, A if you agree, D if you disagree, SD if you strongly disagree, and DK if you don't know how you feel about the statement.

A student who is learning disabled will usually be a low achiever in most subjects.	**SA**	**A**	**D**	**SD**	**DK**
The regular curriculum will challenge all students if the teacher is interesting and exciting.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students can make it on their own without teacher direction.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students find it difficult to work on their own without teacher direction.	**SA**	**A**	**D**	**SD**	**DK**
It is important to assess students' knowledge about the topic before beginning a new unit.	**SA**	**A**	**D**	**SD**	**DK**
If tests indicate that a student has acquired basic skills, the teacher should omit the regular assignments and modify the curriculum for that student.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students will take their regular assignments and make them more challenging on their own.	**SA**	**A**	**D**	**SD**	**DK**
If students have already mastered some of the material before starting a unit, they should be given alternative assignments.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students may need additional time to practice to master basic skills.	**SA**	**A**	**D**	**SD**	**DK**
An effective way to identify gifted students is to look for students with the highest grades.	**SA**	**A**	**D**	**SD**	**DK**

In the classroom, content should be varied to match students' interests and abilities.	**SA**	**A**	**D**	**SD**	**DK**
To assure that all students have the same knowledge base, it is appropriate to present curriculum information to all students in the same way.	**SA**	**A**	**D**	**SD**	**DK**
Allowing gifted students to work on assignments that are different from the rest of the students is playing favorites and fostering elitism.	**SA**	**A**	**D**	**SD**	**DK**
Students who are learning disabled are usually poor readers.	**SA**	**A**	**D**	**SD**	**DK**
Average students need to spend most of their time working in teacher-directed activities.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students need longer assignments since they work faster.	**SA**	**A**	**D**	**SD**	**DK**
It is important for all students to do workbook exercises, exercises, review pages, and textbook assignments because these activities are an integral part of the curriculum.	**SA**	**A**	**D**	**SD**	**DK**
Working too hard in school leads to burn-out in gifted gifted students.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students do not do well in most subjects.	**SA**	**A**	**D**	**SD**	**DK**
Learning disabled students who are gifted will need to concentrate their study to remediate their weaknesses so they can go on to use their areas of strength.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students are easy to identify in the classroom.	**SA**	**A**	**D**	**SD**	**DK**
Work that is too easy or boring frustrates a gifted child just as work that is too difficult frustrates an average learner.	**SA**	**A**	**D**	**SD**	**DK**

Assignment length and homework assignments are usually designed to meet the needs of the average learner.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students should be encouraged to direct their own learning.	**SA**	**A**	**D**	**SD**	**DK**
Having some students work on different assignments results in unfair grading.	**SA**	**A**	**D**	**SD**	**DK**
Students who differ markedly in ability level from the average learner should be taught in special classes to fully meet their needs.	**SA**	**A**	**D**	**SD**	**DK**
Some underachievers are actually gifted students.	**SA**	**A**	**D**	**SD**	**DK**
While it is appropriate for students to work on different assignments commensurate with their ability levels, the means of assessment should be the same for all students.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students have difficulty grasping concepts and need a more fact-based curriculum.	**SA**	**A**	**D**	**SD**	**DK**
If a gifted student is doing poorly in spelling, it is necessary to deal with the weakness in spelling before presenting more advanced content in other areas.	**SA**	**A**	**D**	**SD**	**DK**
All students in the class should take the same test to show mastery of the material in a unit.	**SA**	**A**	**D**	**SD**	**DK**
Removing special education and gifted students from the classroom for special classes is disruptive to the class schedule.	**SA**	**A**	**D**	**SD**	**DK**
In teaching gifted students, teachers should modify the content only, since all students need to use the same processes and can generate the same projects.	**SA**	**A**	**D**	**SD**	**DK**
Having gifted students work on individual projects or assignments isolates them from the rest of the class.	**SA**	**A**	**D**	**SD**	**DK**

Grouping students is more detrimental than beneficial.	**SA**	**A**	**D**	**SD**	**DK**

Part II:

How confident do you feel about the following? Rate from 1 (no confidence) to 5 (very confident) by circling the response that best describes your feelings:

Adapting my lessons to meet the needs of gifted learners	**1**	**2**	**3**	**4**	**5**
Adapting my lessons to meet the needs of remedial learners	**1**	**2**	**3**	**4**	**5**
Accommodating varying levels of ability in my class	**1**	**2**	**3**	**4**	**5**
Assessing where students are and designing appropriate lessons	**1**	**2**	**3**	**4**	**5**
Individualizing instruction to meet the needs of gifted learners	**1**	**2**	**3**	**4**	**5**
Individualizing instruction to meet the needs of remedial learners	**1**	**2**	**3**	**4**	**5**
Identifying gifted students	**1**	**2**	**3**	**4**	**5**
Identifying remedial students	**1**	**2**	**3**	**4**	**5**

APPENDIX H

Professional Development Post-Training Survey

This instrument is designed to help us understand teacher attitudes about classrooms, students, and teaching practices. The instrument will take about fifteen minutes to complete. Thank you for taking time to participate in this study.

Part I:

Read each statement and circle the response that best describes your feelings about the statement. Circle SA if you strongly disagree, A if you agree, D if you disagree, SD if you strongly disagree, and DK if you don't know how you feel about the statement.

A student who is learning disabled will usually be a low achiever in most subjects.	**SA**	**A**	**D**	**SD**	**DK**
The regular curriculum will challenge all students if the teacher is interesting and exciting.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students can make it on their own without teacher direction.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students find it difficult to work on their own without teacher direction.	**SA**	**A**	**D**	**SD**	**DK**
It is important to assess students' knowledge about the topic before beginning a new unit.	**SA**	**A**	**D**	**SD**	**DK**
If tests indicate that a student has acquired basic skills, the teacher should omit the regular assignments and modify the curriculum for that student.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students will take their regular assignments and make them more challenging on their own.	**SA**	**A**	**D**	**SD**	**DK**

If students have already mastered some of the material before starting a unit, they should be given alternative assignments.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students may need additional time to practice to master basic skills.	**SA**	**A**	**D**	**SD**	**DK**
An effective way to identify gifted students is to look for students with the highest grades.	**SA**	**A**	**D**	**SD**	**DK**
In the classroom, content should be varied to match students' interests and abilities.	**SA**	**A**	**D**	**SD**	**DK**
To assure that all students have the same knowledge base, it is appropriate to present curriculum information to all students in the same way.	**SA**	**A**	**D**	**SD**	**DK**
Allowing gifted students to work on assignments that are different from the rest of the students is playing favorites and fostering elitism.	**SA**	**A**	**D**	**SD**	**DK**
Students who are learning disabled are usually poor readers.	**SA**	**A**	**D**	**SD**	**DK**
Average students need to spend most of their time working in teacher-directed activities.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students need longer assignments since they work faster.	**SA**	**A**	**D**	**SD**	**DK**
It is important for all students to do workbook exercises, exercises, review pages, and textbook assignments because these activities are an integral part of the curriculum.	**SA**	**A**	**D**	**SD**	**DK**
Working too hard in school leads to burn-out in gifted gifted students.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students do not do well in most subjects.	**SA**	**A**	**D**	**SD**	**DK**

Learning disabled students who are gifted will need to concentrate their study to remediate their weaknesses so they can go on to use their areas of strength.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students are easy to identify in the classroom.	**SA**	**A**	**D**	**SD**	**DK**
Work that is too easy or boring frustrates a gifted child just as work that is too difficult frustrates an average learner.	**SA**	**A**	**D**	**SD**	**DK**
Assignment length and homework assignments are usually designed to meet the needs of the average learner.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students should be encouraged to direct their own learning.	**SA**	**A**	**D**	**SD**	**DK**
Having some students work on different assignments results in unfair grading.	**SA**	**A**	**D**	**SD**	**DK**
Students who differ markedly in ability level from the average learner should be taught in special classes to fully meet their needs.	**SA**	**A**	**D**	**SD**	**DK**
Some underachievers are actually gifted students.	**SA**	**A**	**D**	**SD**	**DK**
While it is appropriate for students to work on different assignments commensurate with their ability levels, the means of assessment should be the same for all students.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students have difficulty grasping concepts and need a more fact-based curriculum.	**SA**	**A**	**D**	**SD**	**DK**
If a gifted student is doing poorly in spelling, it is necessary to deal with the weakness in spelling before presenting more advanced content in other areas.	**SA**	**A**	**D**	**SD**	**DK**
All students in the class should take the same test to show mastery of the material in a unit.	**SA**	**A**	**D**	**SD**	**DK**

Removing special education and gifted students from the classroom for special classes is disruptive to the class schedule.	**SA**	**A**	**D**	**SD**	**DK**
In teaching gifted students, teachers should modify the content only, since all students need to use the same processes and can generate the same projects.	**SA**	**A**	**D**	**SD**	**DK**
Having gifted students work on individual projects or assignments isolates them from the rest of the class.	**SA**	**A**	**D**	**SD**	**DK**
Grouping students is more detrimental than beneficial.	**SA**	**A**	**D**	**SD**	**DK**

Part II:

How confident do you feel about the following? Rate from 1 (no confidence) to 5 (very confident) by circling the response that best describes your feelings:

Adapting my lessons to meet the needs of gifted learners	**1**	**2**	**3**	**4**	**5**
Adapting my lessons to meet the needs of remedial learners	**1**	**2**	**3**	**4**	**5**
Accommodating varying levels of ability in my class	**1**	**2**	**3**	**4**	**5**
Assessing where students are and designing appropriate lessons	**1**	**2**	**3**	**4**	**5**
Individualizing instruction to meet the needs of gifted learners	**1**	**2**	**3**	**4**	**5**
Individualizing instruction to meet the needs of remedial learners	**1**	**2**	**3**	**4**	**5**
Identifying gifted students	**1**	**2**	**3**	**4**	**5**
Identifying remedial students	**1**	**2**	**3**	**4**	**5**

APPENDIX I

Table 6 - Pre-Training Survey Knowledge Items

Table 6

Pre-Training Survey Knowledge Items

Item Number	Mean	Standard Deviation	Minimum	Maximum
1	3.00	0.63	2	4
2	2.60	0.89	1	4
3	3.22	0.58	1	4
4	2.36	0.68	1	4
5	1.49	0.62	1	4
6	2.37	0.87	1	4
7	3.09	0.68	1	4
8	2.02	0.54	1	4
9	1.75	0.47	1	3
10	3.15	0.59	1	4
11	1.64	0.54	1	3
12	3.06	0.66	2	4
13	3.29	0.65	1	4
14	2.94	0.74	1	4
15	2.89	0.58	1	4
16	3.15	0.65	1	4
17	2.92	0.80	1	4
18	2.51	0.90	1	4
19	3.14	0.54	2	4
20	2.65	0.77	1	4
21	2.88	0.52	1	4
22	1.80	0.65	1	4
23	2.03	0.52	1	4
24	2.20	0.66	1	4
25	3.07	0.48	2	4
26	2.79	0.67	1	4
27	1.75	0.62	1	4
28	2.51	0.67	1	4
29	2.82	0.52	2	4

30	2.72	0.79	1	4
31	2.59	0.75	1	4
32	2.84	0.54	2	4
33	2.97	0.77	1	4
34	2.78	0.61	1	4
35	3.07	0.60	1	4

APPENDIX J

Table 7 - Post-Training Survey Knowledge Items

Table 7

Post-Training Survey Knowledge Items

Item Number	Mean	Standard Deviation	Minimum	Maximum
1	3.10	1.01	0	4
2	2.96	0.85	1	4
3	3.48	0.60	2	4
4	1.92	0.94	0	4
5	1.52	0.55	1	3
6	2.04	0.98	0	4
7	3.21	0.80	0	4
8	1.87	0.77	0	3
9	1.66	0.70	0	4
10	3.42	0.70	0	4
11	1.47	0.58	0	3
12	3.35	0.64	1	4
13	3.52	0.53	2	4
14	2.91	0.88	0	4
15	2.62	1.10	0	4
16	3.33	0.57	2	4
17	3.17	0.89	0	4
18	2.33	1.23	0	4
19	3.08	0.91	0	4
20	2.42	1.17	0	4
21	2.74	0.85	0	4
22	1.62	0.65	1	4
23	1.88	0.61	0	4
24	2.27	0.97	0	4
25	3.36	0.69	0	4
26	2.75	1.02	0	4
27	1.49	0.53	1	3
28	2.58	1.10	0	4
29	2.35	1.16	0	4
30	2.55	1.23	0	4

31	2.84	1.00	0	4
32	2.95	0.78	0	4
33	2.99	0.88	0	4
34	3.14	0.70	0	4
35	2.90	1.06	0	4

APPENDIX K

Table 8 - Pre-Training Survey Self-Efficacy Items

Table 8

Pre-Training Survey Self-Efficacy Items

Item Number	Mean	Standard Deviation
1	3.05	0.99
2	3.75	0.81
3	3.29	0.83
4	3.55	0.80
5	3.00	0.95
6	3.47	0.82
7	3.00	1.04
8	3.56	0.88

APPENDIX L

Table 9 - Post-Training Survey Self-Efficacy Items

Table 9

Post-Training Survey Self-Efficacy Items

Item Number	Mean	Standard Deviation
1	3.96	0.73
2	4.08	0.60
3	4.03	0.73
4	4.01	0.77
5	3.87	0.75
6	3.97	0.74
7	3.81	0.93
8	3.88	0.76

APPENDIX M

Gifted Education Professional Development Training Website

Professional Development Training Website Link: https://bit.ly/2TfTD1q

IMPORTANT: If you would like to take a break from this training at any time, make sure you bookmark the URL link of the page you are currently on so you can continue your progress from the same place when you return!

Please click on the "Definition of Gifted" link below to begin the training!

Topics Discussed During This Training:

Definition of Gifted (1 video, 6:23)

Characteristics of Gifted Students (3 videos, 22:46)

Common Misconceptions About Gifted Students (1 video, 7:46)

Effective Strategies for Teaching Gifted Students (8 videos, 1:08:33)