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Blended Learning for Gifted and Talented Students

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Abstract

Blended learning is a curriculum presentation method that includes both online and face-to-face aspects. Educators who use blended learning tout it for its ability to allow for effective differentiation of instruction while bringing increased use of technology into the classroom. It is seen as an improvement to online learning in that blended learning maintains the traditional classroom teacher to guide and develop the class while incorporating the online component. Gifted and talented students are often the forgotten population within schools as they are typically viewed to be successful in classes despite the fact they may not be reaching their full academic potential. Blended learning is seen as a way to differentiate instruction that will allow gifted and talented students increased opportunities to reach their academic potential. This qualitative study examined the experiences of schools which implemented blended learning for gifted and talented students. Specifically, the study focused on how schools were currently using blended learning for gifted and talented students, how the schools obtained their curriculum for the online component of the blended classroom, and what potential limitations and solutions to those limitations existed that prevents blended learning from being more widely used for gifted and talented students.

Dedication

To my parents, Tim and Harriett, from whom I was taught the importance of learning and from whom I learned the importance of a strong work ethic. To my wife, Jill, who has supported me unconditionally through nine years of college and never once asked me if I knew what I was doing. To my children, Emily, Derek, Olesya, and Katie, who shared their father with his computer too often.

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Chapter I: Introduction

Introduction to the Problem

As the effectiveness of our educational system undergoes more and more scrutiny, a major focus has been on how to close the achievement gap. Since President Bush signed the No Child Left Behind Act into law in January of 2002, the focus on Adequate Yearly Progress and improving the test scores of students in specific-demographic categories has caused many schools to center professional development and curriculum planning on closing the achievement gap. This achievement gap has many definitions, but is typically thought of as the difference in passing rates on standardized tests between students who are white and students who fall into other racial or ethnicity groups. While this is clearly a very important goal and is an issue that demands our attention, it is important that we do not lose sight of other students who do not fall into the demographics affected by the achievement gap but still have unique educational needs none the less.

Gifted and talented or high potential students are a vital part of the population of any school. They are often the students who are viewed as having the greatest academic potential and highest "ceiling" of any of the students in our schools. Just as it is important that students who are adversely affected by the achievement gap have an academic focus placed on their needs, it is equally important that students who are identified as being gifted and talented also have their academic needs met.

In many larger school districts, gifted and talented students are classified as special service students. They often have specific classes that provide a more challenging and appropriate curriculum. However, in many schools, such as those in rural America, there may not be options for these students to take special classes. Gifted and talented students in these schools are typically kept in regular education classes and do not get the academic challenges they need nor do they necessarily benefit from the forms of instruction in which they learn best.

The world of learning is increasingly relying on electronic media centered on the Internet and online resources. Blended learning is a form of teaching in which part of the curriculum is delivered to students via traditional face-to-face teacher interaction and part of the curriculum through distance learning opportunities which most often center on the Internet. This method of learning offers an opportunity to help gifted and talented students receive the level and type of education they need to reach their potential.

This study examined how gifted and talented students are currently benefiting from blended educational opportunities, how curriculum is currently being developed in a blended educational fashion to benefit gifted and talented students, and what else could be done to integrate blended learning into the curriculum for gifted and talented students so it could be better utilized to meet the needs of gifted and talented students in schools that do not offer curriculum which meets their needs.

Background of the Study

Distance learning has been around in some capacity since before the Internet was invented nearly 50 years ago (Leiner et al., 2013). It can be thought of as any educational situation in which the student and teacher are separated by geographical area (Cooper, 2005). Prior to online courses being offered, schools of higher learning, including colleges and universities, would offer courses through whatever mail delivery system was in place at the time. Students would do a variety of things such as purchase books and register for distance learning courses, and their professors would mail them their assignments. While they would usually have to be on campus for the exams, nearly all of the work was done away from the instructor.

This led to a concept of high schools being able to offer courses through distance learning that they were not able to offer as a part of their regular curriculum. Before there were web-based programs such as Skype, high schools would offer video-type conferencing courses where a teacher who was not a part of the high school staff would teach a lesson in front of a camera and students at different schools in various locations would receive instruction. These types of distance learning classrooms failed to catch on in part because the schools on the receiving end of the lesson would still need to pay a teacher to monitor the class in addition to paying for the distance learning classroom teacher (A. Berman, personal communication, July 24, 2013).

With the advent of the Internet and development of high speed Internet connections, a market developed for online classes that could be delivered in a virtual environment. Educators saw this as an opportunity to supplement not only gifted and talented curriculum but also special education curriculum (Lemke, 2000) and credit recovery for at risk students (Watson & Gemin, 2008).

Statement of the Problem

Over the past 20 years, a steady theme in education has been how the youth of America are academically falling behind their counterparts across the world. Test scores are not measuring up, other countries are getting ahead of the United States in modern inventions and technology, and the youth of the United States are stereotypically seen as unmotivated. Although there may be some truth to these assertions, it is imperative that our students with the highest academic ceiling are nurtured and given every opportunity to reach their maximum potential. This is especially important to high school students as these are the students who are poised to take the next step into postsecondary education. As educators, we owe it to every student to put him or her in a position to be the best they are capable of being regardless of demographics or academic potential. Due to school size and financial situations, many schools are not able to offer students who are identified as gifted and talented specific stand-alone courses that meet the level, type, and depth of curriculum they need to reach their maximum potential.

With the advancement of technology, the world of education has benefited greatly from computers, the Internet, Google, etc. These advances have allowed some classrooms to become virtual with distance learning, online classes, and with hybrid and blended learning. These technology additions have benefited students by exposing them to modern technology and allowing their classrooms to be opened up to the world around them. The purpose of this qualitative study was to understand how blended educational opportunities could be best developed to benefit gifted and talented students. Gifted and talented students from schools that do not offer specific classes to meet their needs could benefit from this advanced technology and would likely be the students with the experience and independence to best utilize this form of instruction (Reis & Renzulli, 1992).

Online coursework can be developed to meet the various learning styles of students as well as allowing students to get into material in as deep of a manner and at a pace of instruction that is appropriate for them. Research has shown that students have a higher level of engagement and interest in classes where there is some degree of teacher leadership and interaction in addition to having online instruction, such as in blended classrooms, when compared to students learning in traditional face-to-face classrooms (Delialioglu, 2012). Therefore in schools that cannot offer specific classes which meet the needs of gifted and talented students, having the ability to keep these students in regular classrooms with exposure to both online resources and their classroom teacher makes for an improved learning environment.

This research looked to answer three questions that dealt with gifted and talented students and education. The first question examined how and in what capacity blended learning is being used in schools which were currently utilizing blended learning in the curriculum for gifted and talented students. The research then looked to determine how curriculum is being developed in a blended educational fashion to benefit gifted and talented students in these same schools. The final question looked to answer what else can be done to integrate blended learning methods into curriculum delivery for gifted and talented students through overcoming perceived limitations to blended learning. All three research questions focused on determining the current status of how blended learning is benefiting gifted and talented students and what could be done to improve the effectiveness of this educational method.

Purpose of the Study

The purpose of this study was to determine how blended learning was currently meeting the needs of gifted and talented students, how blended learning curriculum for gifted and talented students was being developed, and to determine the future role of blended learning to benefit gifted and talented students.

Rationale

Though much of the current research and focus in education is on methods to close the achievement gap, it is our obligation as educators to meet the needs of all students. Gifted and talented students can be an overlooked population of students

within our schools. These students are not failing, not falling behind, do not harm the passing rates of schools in the matrix of No Child Left Behind, and often have satisfied parents who see their students passing all of their classes. However well these students are performing academically, they may not be reaching their potential, and it is our obligation as educators to do everything in our power to ensure all students have that opportunity.

Blended classrooms give all schools the ability to offer differentiated instruction to gifted and talented students. However, many larger schools already offer honors or accelerated courses that provide more challenging curriculum to gifted and talented students. Therefore, smaller schools which are often located in rural areas of the country may have the most to gain from the use of blended learning to benefit gifted and talented students. Many times these schools do not have enough students in their schools to justify offering separate sections for honors courses or accelerated coursework. Because of this, they keep their gifted and talented students in the regular education classrooms. Meeting the academic needs of these students through blended learning would be a major benefit for gifted and talented students.

Research Questions

There are three primary research questions this study attempted to answer:

RQ1 In high schools currently using blended learning in the curriculum for gifted and talented students, how is blended learning being used?

RQ2 In these same schools, how is the blended learning curriculum delivery method for gifted and talented students being developed?

RQ3 What do the educators in these schools who are using blended learning for gifted and talented students see as factors that limit the use of blended learning for gifted and talented students and what would need to be done to overcome these limitations?

These questions were asked of educators who were responsible in some manner for curriculum in districts with schools using blended learning to benefit gifted and talented students.

Significance of the Study

For many years, educators have been aware that students' optimal learning occurs in different ways. Gardner's original research on multiple intelligences was published in 1983. Since then, Tomlinson (1995, 2000, 2006), Heacox (2002), and others have focused on applying Gardner's concepts in the form of differentiated instruction.

While many educators might agree that differentiated instruction is the ideal way to develop a classroom, it has been difficult to put into practice (Tomlinson, 1995). Teachers who have tried to implement differentiated instruction practices into their classrooms have found it difficult to routinely create the multiple instructional activities that would satisfy the various needs of their students. The use of technology and online learning has opened up a realm of new possibilities that allow

teachers to broaden and deepen their curriculum in ways that more adequately meet the needs of their students (Long & Jennings, 2005). In addition, through blended classrooms, educators are able to deliver this curriculum in ways that potentially meet the learning styles of more students through differentiated instruction. Blended learning is the most recent development in the use of this technology. Though research is lacking on the subject, preliminary work has shown that blended learning leads to superior student satisfaction and academic achievement when compared to online learning alone (Wei-Fan Chen, 2012).

Considering the insufficient way that many schools are currently meeting the needs of gifted and talented students, developing the use of blended classrooms to provide differentiated instruction and different depths of subject matter for these students would be a significant contribution to the world of education (Burney, 2010). Whether developed by the teachers themselves through learning management systems such as Moodle or by online learning companies that operate on a for-profit basis, effective online learning allows students to go at the pace that is right for them, to the depth that they are capable of reaching, and in the style of learning that best fits them. When this is combined with access to an instructor and classmates to provide guidance, answer questions, and provide a support structure as is found with blended learning, students get the benefits of online learning along with the benefits of direct instructor interaction, hands-on wet labs, and collaboration with classmates (Vernadakis, Goammpiso, Tsitskari, Antoniou, & Kioumourtzoglou, 2012).

The use of differentiated instruction in the context of blended classrooms would be a potential benefit to every student. This is because all students can be helped by means of differentiated instruction, appropriate levels and depth of subject matter, and flexibility to move at a pace that is appropriate for them. Gifted and talented students in schools that currently do not offer curriculum to meet their needs are strong candidates to pioneer this concept, as their districts may not be meeting their academic needs in the traditional classroom.

Definition of Terms

When discussing blended learning in the context of gifted and talented students, several terms with similar meanings are used in the literature.

Blended learning. A learning environment in which students receive part of their education through traditional face-to-face teacher interaction and part of their education specifically from an online source with a degree of student control on the pacing and path of the education (Staker & Horn, 2012).

Curriculum. The concepts and information that is taught to students. This is typically based on state and district standards (Marzano, 2012).

Differentiated instruction. Offering a variety of instructional and assessment methods in order to allow students the opportunity to learn in the manner in which they can be most successful (Wormeli, 2007).

Gifted and talented students. Used to describe students who are recognized by their schools as having very high academic potential that is above and beyond

what other children of their age would be expected to possess. This is typically considered to be no more than 5% of a given population (Illinois Association for Gifted Children, 2013; Illinois Legislature, 2013).

Assumptions and Limitations

The first assumption made while conducting this study is that there were school districts using blended learning to effectively meet the needs of gifted and talented students. The second assumption is that curriculum existed that could be provided to supply the differentiated instruction and levels of curriculum that are needed by gifted and talented students. The third assumption is that there were limiting factors which were preventing blended learning from being used to benefit gifted and talented students in more districts.

One limitation to the study is that interviews could only be conducted with educators who agree to be interviewed. It was not possible to know all of the educators who were using blended classrooms to the benefit of gifted and talented students. Nor was it necessarily possible to get all educators who were using blended learning to benefit gifted and talented students to participate in an interview.

Nature of the Study

This qualitative study was designed to understand what was currently being done using blended classrooms to improve the educational opportunities for gifted and talented students and how blended educational opportunities could be further developed to benefit gifted and talented students. The data were collected through the

administration of semi-structured interviews with educators who worked in school districts that utilized blended learning to benefit gifted and talented students.

Organization of the Remainder of the Study

This qualitative study was conducted through a semi-structured interview with educators who are responsible for the development of curriculum for the gifted and talented students in their districts and are utilizing blended learning to benefit these students.

Chapter Two is a review of the literature that examines the research that has been conducted on differentiated instruction, gifted and talented students, distance learning, and blended learning as it applies to gifted and talented students. The sections in Chapter Two include examining research on the needs of gifted and talented students, the role differentiated instruction plays in meeting the needs of gifted and talented students, the role distance learning has played in meeting the needs of gifted and talented students, and how blended classrooms can be used to meet the needs of gifted and talented students.

Chapter Three includes the philosophy and justification of the study, restates the research questions, and examines the variables of the research. This chapter also addresses the research design strategy and examines the measures used in the study. The sampling design and the data collection procedures are included as well as an explanation of the data analysis mechanism. The limitations of the methodology and ethical considerations of the study conclude the chapter.

In Chapter Four, the results of the study are presented. Chapter Five includes a summary of the research including a final analysis, review of the results, findings in the context of the existing literature, implications for educational practice, and suggestions for future research.

Chapter II: Review of the Literature

Introduction

Blended learning has become a hot topic in the world of education. It is defined as a "learning environment in which students receive part of their education through traditional face-to-face teacher interaction and part of their education specifically from an online source with a degree of student control on the pacing and path of the education" (Staker & Horn, 2012). Proponents of the developing concept tout the benefits of blended learning over traditional face-to-face classrooms and over online-only classes. These benefits include the ability to meet the different learning abilities of students through both online and classroom components, the ability to do hands-on activities such as labs and projects which can incorporate student-to-student collaboration, and direct access to their instructor which allows the level of support that is needed. The major goal of blended learning is delivering the benefits of both classroom instruction and online learning together.

This research study focused on how blended learning has been used as a tool to allow gifted and talented students to be able to reach their potential in regular education classes. The literature review will be broken into four components:

- a brief look at the need for differentiated instruction
- why gifted and talented students need more academic attention from their schools than they are currently receiving in many classrooms
- the history of distance learning

- how blended learning may benefit gifted and talented students.

As Thomas Jefferson stated, "There is nothing so unequal as the equal treatment of unequals" (Clark, 1997, p.4).

The Need for Differentiated Instruction

As education has morphed from one room schools to the dynamic entities they have become today, research has found that students do not all optimally learn the same. Heacox (2002) described differentiated instruction in this way:

> Differentiated instruction specifically responds to students' progress on the learning continuum – what they already know and what they need to learn. It responds to their best ways of learning and allows them to demonstrate what they've learned in ways that capitalize on their strengths and interests. (p.5)

This concept is supported in theory by Gardner's (2006) research on multiple intelligences and in practice by Bloom's (1956) taxonomy.

Gifted and talented learners can benefit from a form of differentiated instruction called compacting, in which delivery of the curriculum is individualized specifically to help gifted and talented learners maximize their time for learning (Tomlinson, 1995). Reis and Renzulli (1992) argued that curriculum compacting not only benefits advanced learners, but that it can be used to help any student who demonstrates specific strengths or a high level of interest in any specific content area. Blended learning can be the delivery method to provide this compacted curriculum to gifted and talented students.

Tomlinson (2006) described ways to differentiate instruction for these advanced leaders by differentiating content, process, and product. All of these components can be differentiated in a blended classroom.

Gifted and Talented Students

There are many ways to identify gifted and talented students (Brown, Renzuli, Gubbins, Siegle, Zhang, & Chen, 2005). The criteria for being identified as gifted and talented is exemplified by Alberta Education's (2009) definition of giftedness which describes gifted students as having "exceptional potential and/or performance across a wide range of abilities in one or more of the following: general intellectual, specific academic, creative thinking, social, musical, artistic, or kinesthetic" (p.5). The legal description per the Illinois Legislature (2013) supports Alberta Education's definition, as it states that gifted and talented students:

- Exhibit high performance capabilities in intellectual, creative, and artistic areas
- Possess an exceptional leadership potential
- Excel in specific academic fields
- Have the potential to be influential in business, government, health care, the arts, and other critical sectors of our economic and cultural environment
- Require services that are not ordinarily provided by schools

Though considered by most districts to be a special service group, this population of students in a typical school receives less attention and support than any other group that shares the special services umbrella. The reason is obvious: these students typically excel in the classroom. If they are doing well, why worry about them? If they fit into the standard classroom and are succeeding, is not that good enough? If we are not meeting the needs of these students and helping them reach their potential, then the answer is no. Lewis (2000) described gifted and talented students as having cognitive and affective characteristics that naturally will separate them from the typical student in their school. Clark (1997) asserted that for students who learn and assimilate information at a faster pace and who thrive on more complex curriculum, learn and retain information more readily, and who frequently already know the lesson, the regular education classroom can be seriously restrictive because their needs are atypical and are not being met. Savage (1994) wrote that gifted students need the interaction and socialization of other students with similar abilities and interests. They need both the opportunity to develop leadership skills and the opportunity to discuss their feelings with other students who are gifted and talented.

Burney (2010) showed that when schools do focus their efforts on gifted and talented students, improvement on achievement results will follow and these students begin to reach their potential. They need something different than what is typically done in the regular education classroom in order to reach that potential. Santo (2007)

discussed the benefits of determining learning styles and teaching students in the manner that best fits them. Differentiated instruction and blended learning potentially are a powerful combination for gifted and talented students. Tomlinson (2000) supported avoiding a standardized classroom and thought of differentiated instruction in this way:

> In differentiated instruction, classroom teachers make vigorous attempts to meet students where they are in the learning process and move them along as quickly and as far as possible in the context of a mixed-ability classroom. It promotes high-level and powerful curriculum for all students, but varies the level of teacher support, task complexity, pacing, and avenues to learning based on student readiness, interest, and learning profile. (p.25)

Distance Learning

History of distance learning.

Eight years ago, I took two college classes via distance learning where packets were mailed to me and I communicated with my professor via email and old message boards. There were certainly benefits (e.g., I could take a class from Bemidji and work on it at night to fit my schedule) and disadvantages (e.g., slow communication, limiting the material to a book and packets which did not reach very many learning styles, isolation, and lack of back and forth dialogue). At the time, this was a cutting edge delivery method and the first time I had ever experienced coursework through distance learning.

Today, it is often taken for granted that nearly anything can be found online, including school classes. However, it was not that long ago that the Internet either did not exist or was present with a delivery mechanism that was so slow people could not realistically utilize it for something as detailed and complex as taking a class for school.

Long before the Internet existed, educational institutions found ways to deliver curriculum to students in different geographical locations. Nearly 400 years ago potential clergymen received their training through correspondence (Adams & Olszewski-Kubilius, 2007). In 1873, the Society to Encourage Studies at Home was established to provide correspondence instruction in over 20 subjects to women. The University of Chicago allowed students to live off campus and take correspondence courses via the United States Postal Service in 1892. And in 1906, a school in Baltimore, Maryland, became the first school to offer correspondence courses to elementary students. The inventions of radios, televisions, and telephones provided new media with which distance learning could be expressed. In the early 1980s, real time one-way transmitted lectures represented a major step in the evolution of distance learning, as students could partake in lectures delivered by instructors located nearly anywhere in the world (Adams & Olszewski-Kubilius, 2007).

The advancement of the personal computer in the 1970s opened up a large realm of possibilities that later exploded with the invention of the Internet. Online classes quickly emerged as valuable tools in education. Online learning opportunities

grew rapidly (Watson & Ryan, 2007). Their advancement has been so extensive that as of 2012, multi-district fully online schools existed in 30 states (Evergreen Education Group, 2013a). The importance of distance learning through online sources is emphasized by the fact that five states currently have a mandatory online learning requirement (Evergreen Education Group, 2013b). In a 2007 survey of 10,000 public schools, Picciano and Seaman (2009) found that 75% of these schools had one or more students enrolled in either a full or partial online course. And of the responding schools, 66% said they expected this figure to increase in subsequent years.

The benefits of distance learning. The ability to differentiate instruction via online courses is apparent in the type of courses that can be offered through online options. Courses can run as independent study models in which students can advance at their own pace. Other courses are developed using the concept of a cohort model where students progress together through online chat rooms, online postings, or virtual online classrooms through programs such as Skype, Blackboard, and Moodle. Teachers find that they can more easily respond to the individual needs of students in their online courses compared to their traditional classrooms (Davis, 2009).

Using technology in the classroom through online learning and being able to address different learning styles has had a positive effect on the perception of students. Aydin (2012) showed that students, in general, had a positive attitude towards online learning. In particular, distance learning has become a popular means

by which to meet the unique needs of special groups of students, including at-risk students, elite athletes and performers, dropouts in need of credit recovery, migrant youth who can continue their education undisrupted as they move from community to community, pregnant students, incarcerated students, and homeschooled or home-bound students (Olszewski-Kubilius & Corwith, 2010). Rockman et al. (2007) found that students taking virtual classes in Spanish achieved as well as students in regular Spanish classrooms. Thomson (2010) also found the online format to be an effective way for gifted and talented students to develop a more differentiated learning experience when compared to regular classrooms alone.

Another significant advantage of distance learning is the access that students have to a wide range of advanced courses that may not be available to students within the confines of their schools. This is especially true for students who are in rural school districts or low-income communities whose schools have limited funds and therefore limited learning opportunities (Olszewski-Kubilius & Corwith, 2010).

Distance learning for gifted and talented students. One specific group that has been the recipient of concerted efforts by higher learning institutions to benefit from distant learning has been the gifted and talented population of students. Prominent universities, such as Duke, Stanford, and Northwestern, have developed distance education programs for high school aged gifted and talented students. In some cases, students are eligible for college credit by taking certain courses (Olszewski-Kubilius & Corwith, 2010). Olszewski-Kubilius and Lee (2004) reported

that students who took advanced courses through distance learning programs specifically designed for gifted and talented students were well prepared for their subsequent Advanced Placement course examinations with 63% earning a four or five (on a five point scale) on the exam.

Gifted and talented students who have participated in distance learning programs have reported several benefits from the coursework. Lewis (1989) described students feeling a greater sense of independence and a close relationship with peers by participating with them in their distance learning class, as a major benefit to taking their distance learning course. Wilson, Little, Coleman, and Gallagher (1998) reported students felt they developed stronger independent study and thinking skills, improved communication abilities, and felt more challenged academically. They also found students felt they had a more realistic assessment of how their abilities compared versus similar students from other schools. McLoughlin (1999) found that gifted students who participated in distance learning courses felt their collaboration skills had improved, as well as their higher order thinking skills, as a result of a blended learning-type course that supplemented their regular teacher with audiographic conference technology.

Another benefit gifted and talented students reported as a result of participating in distance learning programs was an increase in their problem-solving and logical thinking skills (Ewing, Dowling, & Coutts, 1997). Dershewitz, Lee, and Johnson (2006) wrote that students reported higher interest in the subjects they were

studying, improved organizational and study skills, and an increase in self-confidence in their academic abilities.

There are a multitude of distance learning opportunities that can benefit gifted and talented students. Mulrine (2007) and Swicord (2010) described ways that teachers can supplement their classrooms with virtual learning to benefit gifted and talented learners. These included integrated thematic units, research projects directed via teacher-designed virtual classrooms, hyperlinks to lessons, assistive technology, and virtual field trips.

The evolution of distance learning. Blended courses in which there is a component of online learning used to supplement the face-to-face instruction of a traditional classroom have been used since the beginning of online coursework. However, blended classrooms have recently been the focus of educators who have wanted to better and more efficiently utilize online opportunities to supplement their classes or differentiate instruction for students (Olszewski-Kubilius & Corwith, 2010).

As with any classroom or form of curriculum delivery system, blended learning must be done correctly in order to be effective. Watson, Murin, Vashaw, Gemin, and Rapp (2013) described three elements that need to be in place in order to have an effective blended learning program. First, there needs to be a meaningful online component which uses online content with a learning management system that allows students the ability to control time, place, path, or pace of their lessons. Next,

there needs to be a significant, onsite component that includes supervision with face-to-face instruction or mentoring. Finally, the program needs to have a technology system that captures and reports student assessment data in such a way that allows the teacher or person supervising the student the ability to individualize learning in the way that best fits each student.

Blended Learning

While access to online-only courses was a major development in the history of education, what was missing with online-only models of coursework was the routine face-to-face access to teachers which allows for direct interaction, back and forth dialogue, and a more immediate turnaround for questions and resolution of issues. Therefore, the continued evolution of distance learning was the development of blended classrooms where students would work with a teacher in a face-to-face setting while obtaining a portion of their lesson from a distance learning source. At first, the distance learning component of this form of classroom was website-based, where students received information through encyclopedia-like pages. As technology has continued to advance, students have gained access to many interactive forms of media. These include several types of curriculum presentation modes, such as videos, interactive websites, blogs, chat rooms, real-time interaction with distant instructors, professors, and students, in addition to listening to previous lectures via podcasts where they can stop and start the lecture as needed, as well as rewinding spots they need to hear again. This meets the needs of a variety of learner types and allows for a

form of self-pacing where students are not held back by others whose learning styles and speed are more deliberate.

The main ideas behind blended learning included getting the benefits of online learning by utilizing the ability to self-pace, experiencing various methods of curriculum presentation and varying degrees of depth of material, and combining those with the active experience of a classroom. By doing this, students have access to teachers, can collaborate with other students, and have the ability to do labs, activities, and projects that support active and hands-on learning. Vygotsky (1978) believed that individual student development and learning were positively influenced by students being able to take a more active role in their education along with social interaction with peers and teachers. This is especially true within blended classrooms. Delialioglu (2012) went one step further, as he looked at the difference in student engagement between blended classrooms with lecture-based components and blended classrooms with problem-based instructional approaches. His results showed that students were more engaged in classrooms with the problem-based instruction approaches.

Though extensive research on the use of blended learning with gifted and talented students does not exist, the extant research indicates that students in general do have a positive impression of blended learning. Vernadakis, Goammpiso, Tsitskari, Antoniou, and Kioumourtzoglou's (2012) study showed that students preferred a blended course delivery over a traditional lecture-based classroom. Metz

(2011) showed the components of blended learning that had a positive effect on student satisfaction were instructor support, authentic learning, and student autonomy. O'Dwyer, Carey, and Kleiman (2007) supported this by showing more students in the Louisiana Online Algebra class reported having a good learning experience when compared to students in the traditional face-to-face teacher-centered classroom.

Though blended learning may be a preferred method of curriculum presentation by students, there is a question as to whether students in blended learning classrooms learn better and achieve more than if they were in traditional face-to-face teacher-centered classrooms or in strictly online classes. The research is scant when examining the effectiveness of blended learning on gifted and talented students, but has been studied using other demographics. Wei-Fan Chen (2012) showed that students in blended classrooms performed significantly better on factual knowledge than students in online classes alone. Researchers at the University of Arkansas (2012) showed that students of the Arkansas Virtual Academy School outperformed their peers in traditional public schools in math and literacy by a range of four to 10 percentile points. This trend showed particular strength for math students in Grade 6 and literacy students in Grade 4. Students eligible for free and reduced lunch from the Virtual Academy outperformed students eligible for free and reduced lunch from traditional schools in both math and literacy by substantial margins. Another school that encompasses blended learning in a successful fashion is Rocketship Education, which is the highest-performing elementary school in California. Despite serving

predominately low-income students, the population of students at Rocketship Education uses the blended learning model to outperform upper-income communities throughout California whose students are in the more traditional face-to-face teacher-centered classrooms (Heppen et al., 2011).

It is important to understand that blended learning may not immediately improve student learning. Long and Jennings (2005) showed an insignificant effect on student achievement by first-time teachers who used electronic field trips in a blended environment. However, as teachers used this technology repeatedly in their classrooms, student achievement showed significant improvement. As with any educational model, the outcome will rely on the training and quality of the teachers who lead the classroom.

In addition, new technology is emerging to help teachers organize online learning options for students that, preliminarily, have shown promise in increasing both student engagement and achievement (Lopuch, 2013). Learning management systems are also being created that are designed to specifically support schools using blended learning (Montage Education, 2015).

Blended learning and gifted and talented students. As blended learning has become the most recent form of distance learning, educators are finding that it fits a need when attempting to provide specialized instruction to gifted and talented students. This is especially true in rural areas where student population numbers do not support the creation of special classes for gifted and talented students. Lewis

(2000) described three common barriers that inhibit appropriate services from being delivered to gifted and talented students in rural areas. The first barrier is a limited number of students. Rural schools often have smaller populations of students in each grade, and this means that the number of gifted and talented students per grade will not support special sections of courses that better meet their needs. The next barrier is limited resources. Teachers in small rural schools are often responsible for teaching multiple classes (e.g., the science teacher teaches biology, chemistry and physics for all students in the high school; the social studies teacher who is responsible for sociology, world history, and geography). It is difficult to adjust the curriculum delivery in each class to meet the needs of the few gifted and talented students. Likewise, smaller student populations often result in few, if any, upper level advanced class options being offered in the small rural schools. The final barrier is an adherence to tradition. Many rural communities hold fast to older aspects of education that support the one size fits all mentality of teaching and learning. Providing students unique learning opportunities may even be seen as offering these students unwarranted special privileges (Jones & Southern, 1992) which would not be well supported by others in the school or community.

If it is accepted that blended learning is an effective way to provide appropriate educational opportunities to gifted and talented students, how does an educator go about developing blended coursework? Hull, Bull, Montgomery, May, and Overton (2000) described how to design an introductory blended learning course

for the benefit of gifted and talented students. The authors emphasized the importance of designing coursework that involved active learning, diverse perspectives, and building upon itself. Collaboration between students taking the course and the teachers who lead the face-to-face component of the course is a key component. Lewis (2000) took the concept of collaboration a step further in rural schools. He suggested that all members of the educational community—teachers, students, principals, counselors, and parents—need to work together with community leaders to create the unique and satisfying educational opportunities. Lewis (2000) also proposed taking these concepts and developing a systemic plan. This plan would assess the needs of the gifted students in the school, determine what provisions are available to meet these needs, and then attempt to use curricular methods such as blended learning to fill in the gaps where needs are not being met.

Summary

Chapter Two was a review of the literature examining the research that has been conducted on differentiated instruction, gifted and talented students, distance learning, and blended learning as it applies to gifted and talented students.

Chapter Three includes the philosophy and justification of the study, restates the research questions, and examines the variables of the research. This chapter also addresses the research design strategy and examines the measures to be used in the study. The sampling design and the data collection procedures are included, as well as an explanation of the data analysis mechanism.

Chapter III: Methodology

Philosophy and Justification

For this qualitative study, interviews were utilized with educators who were responsible for curriculum in schools that use blended learning to help meet the needs of gifted and talented high school students. This information helped determine the most effective ways to utilize blended classrooms to meet the needs of gifted and talented students. The research looked to establish what is currently being done for gifted and talented students in schools that utilize blended classrooms for the benefit of gifted and talented students. In addition, the research examined how curriculum is being developed in a blended educational fashion to benefit gifted and talented students. Finally, this study looked to determine what educators felt could be done to best integrate blended learning into the delivery of curriculum for gifted and talented students.

Research Questions

There are three primary research questions this study attempted to answer:

RQ1 In high schools currently using blended learning in the curriculum for gifted and talented students, how is blended learning being used?

RQ2 In these same schools, how is the blended learning method of curriculum delivery for gifted and talented students being developed?

RQ3 What do the educators in these schools who are using blended learning for gifted and talented students see as factors that limit the use of

blended learning for gifted and talented students and what would need to be done to overcome these limitations?

Theoretical Framework

The theoretical framework and objectives of this study represent a practical purpose to determine how blended learning is currently meeting the needs of gifted and talented students, while investigating the limitations and possible solutions to those limitations that prevent blended learning from being used more to benefit gifted and talented students.

Gifted and talented students, particularly those in small, rural schools, often do not receive the type of education they need to maximize their academic potential. Research has shown the benefits of distance learning to students (Olszewski-Kubilius & Lee, 2004). Blended learning in which a part of the student's educational experience is face-to-face teacher interaction and a part of it is through distance learning (usually online learning) has potential to help meet the needs of gifted and talented students who have unmet academic potential.

This study examined the current ways schools are using blended learning to benefit gifted and talented students, how blended learning curriculum delivery is being developed to benefit gifted and talented students, and what additional mechanisms can be implemented to make blended learning a more viable option for gifted and talented students.

Variables

There were several important variables in this study requiring attention. One variable was the school educators used for interviews. Though nearly all schools have students who would be classified as gifted and talented, not all schools would fit into this study, and therefore not all school educators would fit well into this study. The study looked at schools that are using blended learning to the specific benefit of gifted and talented students. Therefore, the educators being interviewed would be educators who are responsible for curriculum oversight and work in high schools which use blended learning to specifically benefit gifted and talented students.

Another variable involved how to categorize students as gifted and talented. As each school may have a different definition of the requirements of students to be qualified as gifted and talented, there is no possibility to use one consistent definition that describes gifted and talented students. The study relied on the individual schools to classify their students as gifted and talented and focused on what those schools were doing through blended learning to meet the needs of the students they have classified as gifted and talented.

Though blended classrooms can potentially benefit gifted and talented students at any stage of their education, this study focused on the benefits of blended learning to gifted and talented students in high school.

Research Design Strategy

The purpose of this qualitative study was to understand what is currently being done using blended classrooms to improve the educational opportunities for gifted and talented students, how curriculum is being designed to meet the needs of gifted and talented students, and how blended educational opportunities can be further developed to benefit gifted and talented students. This was done through the use of semi-structured interviews with educators of schools which were utilizing blended learning for gifted and talented students (Patten, 2012).

A qualitative study was chosen as a means to obtain the perspective and utilize the expertise of experienced educators who have been using blended learning to benefit gifted and talented students. A person-to-person interview was used as a way to gather this information about past experiences of the study participants (Merriam, 2009).

In using a semi-structured interview approach, a pre-determined list of questions (see Appendix A) was asked to all study participants. However, in contrast to a structured approach where there is little variation from the question list, a semi-structured interview allows the subject to add information that may be helpful to the study but is outside of the established set of questions. It also allows the researcher conducting the interview more freedom to ask follow up questions where the researcher sees an opportunity to explore new ideas and concepts on the subject that did not come up in the formulated question list (Merriam, 2009).

Measures

Data was collected through semi-structured interviews. The interviews were recorded and transcribed verbatim after each interview was complete. The interviews were carried out over the telephone. The interview questions focused on current aspects of how blended learning is being used to benefit gifted and talented high school students as well as ways to better use blended learning to help gifted and talented high school students reach their academic potential.

As the results of any qualitative research will be difficult to replicate, it is none the less important to ensure that the data obtained from this study are reliable and valid. This was done through content analysis by experts in the field of gifted and talented instruction and blended learning. Individuals qualified as experts if they had extensive experience in working with gifted and talented students or working with blended learning in high school settings. Prior to the research being performed, the three guiding research questions and the actual questions being used for the interviews were given to these experts, and they were asked to assess whether the questions accurately represented appropriate concepts in the field of gifted and talented instruction and blended learning. They were also asked if they felt anything should be added to make the questions more valid while representing the concepts being studied. Finally, the expert practitioners were asked if the vocabulary used represents accepted vocabulary in the fields of blended learning and gifted and talented education. All feedback from the experts was considered and appropriate

adjustments were made to reflect these suggested changes in the final interview questions.

Sampling Design

Gifted and talented students are found in nearly every high school across the United States. Many schools have honors or advanced courses that attempt to meet the curricular needs of these students. Other schools either do not have supplemental curriculum for their gifted and talented students or will supplement curriculum in the regular education classes through means such as blended learning. It is this final group on which this research focused.

Participants for this research study came from the population of educators of gifted and talented high school students throughout the nation who were responsible for curriculum development in schools which utilized blended learning to benefit gifted and talented high school students. Nine educators were interviewed. As the research was qualitative in nature, purposeful sampling was used to help determine these nine educators. Merriam (2009) described purposeful sampling as filtering the researcher's potential subjects to only leave the ones from whom the most can be learned. Using a relatively small, nonrandom purposeful sample was also justifiable because this study was attempting to understand the concept of using blended learning to benefit gifted and talented students in depth.

The names of these educators were gathered via a specific type of purposeful sampling called snowball sampling in which a researcher finds one expert in the field

who will lead the researcher to other experts in the field (Patten, 2012). While using this sampling method potentially led to bias, it also led to a group of experts in the field of study who would be difficult to find if any other sampling method was utilized.

These educators of gifted and talented high school students were interviewed in a semi-structured manner via telephone conversations. The purpose of the interviews was to determine how gifted and talented students are benefiting from blended learning opportunities, how curriculum is being developed in a blended educational fashion to benefit gifted and talented students, and what else these educators felt could be done from their perspective to integrate blended learning into the curriculum delivery to further benefit gifted and talented high school students.

Data Collection Procedures

Interviews were used to determine the perspectives of educators of gifted and talented students to gather data which were analyzed to find answers to the three research questions of this study. The interviews were conducted via telephone conversation.

For the interviews, there was an interview protocol which consisted of written directions on how the interview was conducted in addition to a standard set of questions that was posed to all interview participants. The questions were vetted through a field test with expert review. Questions that were found to be confusing to the field test participants were revised (Patten, 2012).

The initial interview questions were designed to establish rapport with the study participants, to gather demographic information about the school in which the respondent worked, and were general in nature. After the initial questions, the next questions were designed to more specifically address the research questions of the study. If a question was unclear to the study participant, it was reworded and asked again. If the answer to the research question was deemed to be too short, additional questions were asked to gather more information regarding the question topic. In addition to predetermined questions, follow up questions were asked to individual study participants in order to further explore their unique answers in greater detail.

Field Test

A field test with expert review was performed prior to the actual research being conducted. This was done by sharing the research questions with a select group of educators who were asked to confirm that the questions were clearly stated. The group also helped establish the face validity of the questions by confirming appropriate concepts were tested in an attempt to answer the stated research questions. Finally, the group confirmed the questions elicited the type and direction of responses that were anticipated (Mike Lindstrom, personal communication, August 9, 2013).

Data Analysis

Upon completion of the interviews, a thematic analysis of the data occurred. The first step was to organize the interview data and prepare it for analysis. This

involved transcribing the interviews, typing notes, and arranging data based on the sources of information. All of the data was then be carefully read to gain a general sense of what the data said and meant. After reading through all of the data, the process of coding the data occurred (Creswell, 2009). Coding is organizing the data into common and specific segments before assigning meaning to the information (Rossman & Rallis, 2003). During the coding, themes or categories that emerged were given codes that reflected what they represented to the research.

After the coding process was completed, a description of the setting was generated along with the themes or categories for analysis. These themes or categories represented the major findings of the research study. A narrative passage was used to convey the findings of the data analysis. Finally, an interpretation of the data was constructed (Creswell, 2009). In total, the data analysis served to provide answers to the three research questions upon which the study was based.

Limitations of Methodology

In choosing to do a qualitative study which utilized interviews, limitations of the study are acknowledged. The interview provided information from the perspective of the study participants. This information was indirect and filtered through the lens of those being interviewed. In addition, the data being obtained were not observed in a natural field setting, but rather were recorded over the telephone while interviewing the subjects for their perspectives on the topic. As the interview subjects were aware of the presence of the interviewer on the telephone and were

aware of the purpose of the interviewer, their responses may represent bias. Also, the interview subjects were not all equally able to effectively communicate their experiences and certainly did not share the same level of expertise or experience as research subjects.

All of these limitations were acknowledged and were taken into account when analyzing the data. While the information was filtered and presented to the researcher via the perspective of the research subjects, by doing a semi-structured interview there was a base of consistent questions which led the research subjects through the information-gathering conversations. This provided a modicum of consistency to the interview process. While the data gathering process did not take place via observations in a natural field setting, the research subjects were educators who were interviewed in the natural setting of their work place over the telephone. By using a semi-structured interview approach, the researcher was able to build supplemental questions around the abilities and experiences that each individual study participant possessed.

Ethical Considerations

The participants of this research study were educators who were responsible for curriculum in schools using blended learning to benefit gifted and talented high school students. Several precautions were used to protect the study participants. Interviews were conducted via one-on-one discussions over the telephone. Interview times were scheduled to minimize any potential disruption to the participants'

schedules. Written transcripts were created for coding and documentation purposes using pseudonyms for the participants rather than using actual names to protect the identities of those being interviewed. It was emphasized to the study participants that participation was voluntary, they received no monetary benefit for participating, and there was no negative effects for withdrawing from the study. These conditions were stressed verbally, in writing through invitation letters and emails, and through informed consent forms. As the interviews were recorded, participants were made aware that what they were saying was being recorded and that the study participant could freely stop the recording at any time for any reason by asking to have the recording stopped.

When writing the dissertation, careful consideration was given to use gender-neutral words and phrases and to avoid the use of descriptions for race and ethnic groups. During the interview process, the researcher's presence was minimized so as not to influence those being interviewed (Creswell, 2009; Roberts, 2010). The study was also not approached with preconceived notions of what those being interviewed would reveal. As this was indirect information and a qualitative research process, the responses of those being interviewed were organized into usable results through the data analysis process. It was imperative that the results were not influenced based on any bias, and the results were presented in their truest form.

When considering the ethics and human subject protection involved in using interviewing techniques as the mode of data collection, Creswell (2009) wrote:

> Interviewers need to consider how the interview will improve the human situation (as well as enhance scientific knowledge), how a sensitive interview interaction may be stressful for the participants, whether participants have a say in how their statements are interpreted, how critically the interviewees might be questioned, and what the consequences of the interview for the interviewees and the group to which they belong might be. (p. 91)

This research will improve the human situation by helping gifted and talented students reach their potential.

Ethical research guidelines which follow the Collaborative Institutional Training Initiative (CITI) were observed in this study. Areas of consideration that reflected the guidelines from CITI included privacy, confidentiality, informed consent, assessing risk in social and behavioral sciences, research regulations and the social and behavioral sciences, defining research with human subjects, and history and ethical principles.

Summary

Chapter Three included the philosophy and justification of the study, restated the research questions, and examined the variables of the research. This chapter also addressed the research design strategy and examined the measures used in the study. The sampling design and the data collection procedures were included as well as an explanation of the data analysis mechanism. In Chapter Four, the results of the study are presented. Chapter Five includes an overview of the study, findings and

implications of the research questions, recommendations for practitioners, and suggestions for future research.

Chapter IV: Results

Research Questions

This research study focused on how blended learning has been used to allow gifted and talented students to be able to reach their academic potential. The research looked to establish what is currently being done for gifted and talented students in schools that utilized blended classrooms for the benefits of gifted and talented students. In addition, the research examined how curriculum is being developed in a blended fashion to benefit gifted and talented students. Finally, this study looked to determine what educators felt could be done to best integrate blended learning into the delivery of curriculum for gifted and talented students. The study focused on answering three research questions:

RQ1 In high schools using blended learning in the curriculum for gifted and talented students, how is blended learning being used?

RQ2 In these same schools, how is the blended learning method of curriculum delivery for gifted and talented students being developed?

RQ3 What do educators in these schools who are using blended learning for gifted and talented students see as factors that limit the use of blended learning for gifted and talented students and what would need to be done to overcome these limitations?

Sampling

Prior to beginning the research process, the interview questions were sent to three experts in the fields of gifted and talented students and blended learning for expert review. Based on their review, modifications were made to the questions to improve participant understanding and question readability.

Participants for this research study came from the population of educators of gifted and talented high school students who were responsible for curriculum development in schools which utilized blended learning to benefit gifted and talented high school students. As the research was qualitative in nature, purposeful sampling was used. Merriam (2009) described purposeful sampling as filtering the researcher's potential subjects to only leave the ones from whom the most can be learned. Using a relatively small, nonrandom purposeful sample was also justifiable because this study attempted to understand the concept of using blended learning to benefit gifted and talented students in depth.

The sampling led to nine interviews being performed with educators in California, Colorado, Wisconsin, and Pennsylvania. The names of the educators were obtained through a form of purposeful sampling called snowball sampling, in which experts in the field of blended learning for gifted and talented students led to other experts in the field (Patten, 2012). With snowball sampling, an expert in the field of blended learning was initially found who then suggested names of educators who were using blended learning in their districts to benefit gifted and talented students.

These educators were contacted. Some were found to be good candidates for the study and agreed to be interviewed while others were either not good candidates for the study or chose not to participate in the study. Regardless of participation, members of both groups were asked if there were other educators whom they knew of who would be considered experts in this field and if so, those educators were also contacted. This process of finding qualified candidates for the study continued until nine interviews were performed, and there were no other educators recommended by these experts.

Once identified by their colleagues as experts in the field of blended learning for gifted and talented students, educators were approached through telephone and email methods and asked if they would participate in the survey. An invitation letter was sent out and the list of questions (see Appendix A) used for the interview was sent to each educator one to three days prior to the interview. Semi-structured interviews were performed, as this interview method allowed for follow up questions when opportunities to explore new ideas and concepts presented themselves (Merriam, 2009). All interviews were conducted over the telephone, as all of the educators who participated in the study were out of state and face-to-face discussions were not feasible.

Field notes were taken during the conversations with the educators (see Appendix B), and the conversations were recorded electronically with a hand-held digital recorder. The interviews were then transcribed, and thematic analysis was

performed for each of the questions for each interview. The data was then read to gain a general sense of what the data said and meant, and how it helped to provide answers to the research questions (Merriam, 2009). Data coding was then performed in which the data was organized into common and specific segments or themes before assigning meaning to the information (Rossman & Rallis, 2003). The digital recordings, transcripts, and field notes will be destroyed one year after completion of the dissertation.

To perform the coding, each respondent's interview was read individually and the findings for each interview question for that respondent were determined. After all interviews were read and findings for each interview question for each respondent determined, the findings for each interview question for all nine of the respondents' interviews were combined into one master document. The document was created with each of the 14 interview questions having nine findings listed. Each respondent was given a color and their findings were placed into the master document with that color. After all of the findings from all nine respondents for each interview question were added to the master document, patterns emerged for common findings and those were categorized together (Merriam, 2009). In addition, there were times in which one respondent answered differently than all of the others and that one finding proved to be an important perspective as it opened the door to a unique and personal experience.

Interview questions 1, 2, 3, and 13 were classified to be demographic and school background questions. The purpose of these questions was to better understand the academic institutions from which the interview participants came. Coding this data provided clarity in school size and community type, study participant role in the school, and what types of courses were being offered for gifted and talented students.

Interview questions 4, 5, 6, 7, and 14 dealt with research question one: In high schools using blended learning in the curriculum for gifted and talented students, how is blended learning being used? These responses explained the various ways schools were implementing blended learning for gifted and talented students. The questions started by examining how schools identify gifted and talented students and progressed into the history of blended learning at each school. The questions then examined how schools use blended learning for gifted and talented students and what criteria were used in deciding to use blended learning for certain classes and not others. The final concept within this grouping of questions asked the respondents to compare the use of blended learning in their schools between gifted and talented students and other populations of students in their schools.

Interview questions 8, 9, and 10 focused on research question two: In these same schools, how is the blended learning method of curriculum delivery for gifted and talented students being developed? Coding these responses focused on differentiating whether schools purchased curriculum from online vendors, had their

teachers develop their own curriculum, or a combination of the two methods of curriculum acquisition. In addition, these questions looked to determine the time allowance and compensation for teachers in schools in which teachers developed some or all of their curriculum.

Interview questions 11 and 12 related to research question three: What do educators in these schools who are using blended learning for gifted and talented students see as factors that limit the use of blended learning for gifted and talented students and what would need to be done to overcome these limitations? These two questions were focused on both reflection and past experiences and recommendations of ways to overcome the obstacles these educators experienced while implementing blended learning in their schools. The analysis of the responses to these two questions proved to be the most laborious, as the answers were quite varied and often provided conflicting answers as respondents had different experiences based on their individual situations.

Table 1

Alignment of Interview Questions with Research Questions

Demographic and school background questions	
Interview question 1	What is the enrollment of your school in grades 9-12?
Interview question 2	Would you describe your school as rural, urban, or suburban?
Interview question 3	Please describe your role in your school's curriculum management.
Interview question 13	Do you have honors or advanced courses for your gifted and talented students? Are blended approaches used in these courses?

Research Question 1: In high schools using blended learning in the curriculum for gifted and talented students, how is blended learning being used?	
Interview question 4	How does your school identify gifted and talented students? What criteria does your school use to classify students as gifted and talented?
Interview question 5	For what period of time has your school been using blended learning for gifted and talented students? What is the history behind using blended learning for gifted and talented students?
Interview question 6	Please describe how your school currently uses blended learning for gifted and talented students.
Interview question 7	In which specific classes does your school use blended learning for gifted and talented students? What factors contribute to blended learning being used in these classes and not others?
Interview question 14	Are blended approaches used more with gifted and talented students than other populations of students in your school? If so, why?

Research Question 2: In these same schools, how is the blended learning method of curriculum delivery for gifted and talented students being developed?	
Interview question 8	How do your teachers obtain their curriculum for the blended learning component of their classes?
Interview question 9	If teachers develop their own curriculum, do they receive any form of professional development for training on how to develop the curriculum? Are they given compensation or extended time to develop the curriculum?
Interview question 10	If the curriculum was purchased, what was the source of the curriculum? Describe the selection process that resulted in the district choosing this curriculum.

Research Question 3: What do educators in these schools who are using blended learning for gifted and talented students see as factors that limit the use of blended learning for gifted and talented students and what would need to be done to overcome these limitations?

Interview question 11	What factors limit the use of blended learning for gifted and talented students in your school?
Interview question 12	What do you see as possible solutions to these limitations?

Note: respondent answers to the interview questions are found in the Thematic Analysis section

Thematic Analysis

Educators who participated in the survey were asked 14 questions that centered on demographics and school background information as well as the three research questions of the dissertation.

Demographic and school background questions.

1. What is the enrollment of your school in grades 9-12?

Table 2 shows the Grades 9-12 enrollment of the schools for the nine respondents who participated in the interview. Respondent 2 was from a district that has a traditional high school with face-to-face classes along with an eSchool in which students utilized blended learning. Students could choose to attend the eSchool full time or take certain classes through the eSchool while taking the rest of their classes at the traditional high school. The traditional high school had an enrollment of 4,500 students and the eSchool had an enrollment of 28 full time students. However 535 students took at least one class at the eSchool in the last year.

Table 2

Summary of Responses to Interview Question 1

What is the enrollment of your school in grades 9-12?

Respondent 1	70 students
Respondent 2	28 full time students – 535 who took at least one class
Respondent 3	4,000 students
Respondent 4	340 students
Respondent 5	120 students
Respondent 6	100 students
Respondent 7	1,670 students
Respondent 8	60 students
Respondent 9	1,100 students

2. Would you describe your school as rural, urban, or suburban?

All of the respondents in the study worked in schools located in California, Colorado, Wisconsin, and Pennsylvania. Six of respondents classified their schools as urban. One school was described as being located in a rural area and one in a suburban area. One interviewee described the district as encompassing parts of all three classifications, as their district had a wide geographical footprint that bordered on the outskirts of a large city yet extended into nearby rural areas.

Table 3

Summary of Responses to Interview Question 2

	Would you describe your school as rural, urban, or suburban?
Respondent 1	Urban
Respondent 2	Urban

Respondent 3	Urban
Respondent 4	Urban
Respondent 5	Urban
Respondent 6	Rural
Respondent 7	District touches on urban, suburban, and rural areas
Respondent 8	Suburban
Respondent 9	Urban

3. Please describe your role in your school's curriculum management.

The interviewees included three principals, three curriculum coordinators, one assistant superintendent, one program leader, and an administrative assistant. All had a role in developing curriculum in their schools.

Table 4

Summary of Responses to Interview Question 3

Please describe your role in your school's curriculum management.	
Respondent 1	Administrative assistant
Respondent 2	Program leader for eSchool
Respondent 3	Curriculum coordinator
Respondent 4	Curriculum coordinator
Respondent 5	Principal
Respondent 6	Principal

Respondent 7	Curriculum coordinator
Respondent 8	Principal
Respondent 9	Assistant superintendent

13. Do you have honors or advanced courses for your gifted and talented students? Are blended approaches used in these courses?

All of the schools offered some honors or advanced courses except one. Six of the schools offered honors or advanced courses through hybrid classes while two of the schools offered the courses through traditional classes only. One respondent reported that his school did not offer honors or advanced courses, but his students could take those courses at the traditional high school with which his school was associated.

Table 5

Summary of Responses to Interview Question 13

Do you have honors or advanced courses for your gifted and talented students? Are blended approaches used in these courses?	
Respondent 1	Yes – blended approach
Respondent 2	Yes – only through traditional classes at main high school
Respondent 3	Yes – blended approach
Respondent 4	Yes – blended approach
Respondent 5	Yes – blended approach
Respondent 6	No

Respondent 7	Yes – blended approach
Respondent 8	Yes – blended approach
Respondent 9	Yes – only through traditional classes

Interview questions that pertain to research question one. Research question one asked: In high schools using blended learning in the curriculum for gifted and talented students, how is blended learning being used?

4. How does your school identify gifted and talented students? What criteria does your school use to classify students as gifted and talented?

Four of the respondents said their schools used school and state test assessment scores to identify gifted and talented students. Two relied on state assessment data alone, while two others reported that their schools relied on teacher or parent recommendations to start the identification process for gifted and talented students and then would use state assessment scores to determine whether students qualified or not. One educator from one of the smaller schools reported that her school provided differentiated instruction for all students to meet their needs and therefore, the school did not have a formal process of identifying gifted and talented students.

Table 6

Summary of Responses to Interview Question 4

How does your school identify gifted and talented students? What criteria does your school use to classify students as gifted and talented?

Respondent 1	Through state and school assessment scores
Respondent 2	Through state and school assessment scores
Respondent 3	Through state and school assessment scores
Respondent 4	All students work with blended learning to go at their pace and to the depth they are capable. Therefore, students are not labeled as gifted and talented.
Respondent 5	Through state and school assessment scores
Respondent 6	State assessments predict where students will score. School delineates the students in the top 95 percentile and up as gifted and talented.
Respondent 7	State assessment data
Respondent 8	School identifies through teacher and parent recommendation and then uses state assessment data to confirm placement
Respondent 9	School identifies through teacher and parent recommendation and then uses state assessment data to confirm placement

5. For what period of time has your school been using blended learning for gifted and talented students? What is the history behind using blended learning for gifted and talented students?

As the blended learning approach has been evolving in recent years, schools are relatively new to implementing blended learning. The range of time for using blended learning in the respondents' schools in this study ranged from one year to six years.

The histories or reasons behind the implementation of blended learning in these schools were varied. In one school, blended learning was started to directly

affect only gifted and talented students. The principal reported he felt certain students in the only math class for that grade were not getting challenged nearly enough but other students in the class were not able to move faster. So he worked with the teacher to develop a blended classroom where those students could work at their own accelerated pace and take the math concepts to a deeper level.

In another school, blended learning was instituted due to the district performing a comprehensive analysis and determining the need for increased differentiation and technology implementation. Blended learning was deemed to be a good practice to meet both needs.

One school originally started in the direction of implementing online learning but went to blended learning after finding that online learning was too confining academically and intellectually for its teachers. Another followed a similar etiology but instead changed directions when they felt online learning did not meet the school's focus on being active in the community and learning with a global perspective.

Three of the schools that were represented in the study were designed with the sole purpose to base their courses on the blended learning model due to the belief that it was the preferred method of curriculum delivery.

One of the schools originally looked at blended learning in response to state or district mandates to increase the use of differentiated instruction and technology in the classroom.

Another school looked at blended learning in their school as an alternative to losing students to online charter schools.

Table 7

Summary of Responses to Interview Question 5

For what period of time has your school been using blended learning for gifted and talented students? What is the history behind using blended learning for gifted and talented students?	
Respondent 1	5 years – School was designed from the start to be a blended learning school and an alternative to the traditional brick and mortar schools.
Respondent 2	3 years – School was developed as an alternative for gifted and talented students.
Respondent 3	6 years – School was losing money to online schools and decided to create their own option for students so they could stay in the district.
Respondent 4	3 years – School was developed for this purpose and blended learning has always been the model for the school.
Respondent 5	5 years – Originally developed as an online charter school but evolved into a blended learning school as they felt blended learning was superior to online learning for teachers and students.
Respondent 6	1 year – Felt gifted and talented students were not getting the attention they deserved as most focus was on closing achievement gap so started this process for gifted and talented students.
Respondent 7	4 years – Their district worked with a research group and determined they needed to increase differentiated instruction. They determined this was the best way to do so while also increasing the use of technology.

Respondent 8	4 years – Originally started as online school and felt the school's focus on community and providing their students a global perspective were better served with blended learning.
Respondent 9	1 year – School determined they needed to differentiate instruction more and increase use of technology.

6. Please describe how your school currently uses blended learning for gifted and talented students.

Five of the nine schools used blended learning for all of their regular education classes including those that had gifted and talented students in the classes. Overall, they felt blended learning was an effective way to deliver content for all of these students. They felt this method was especially effective for gifted and talented students, as it allowed them to move forward at their own pace and also allowed them to potentially reach depths of understanding they would be unable to reach in regular classroom settings with traditional face-to-face instruction. One school shared a similar philosophy but refrained from using blended learning in its foreign language classes because it did not find an effective online curriculum to use for foreign languages.

Two of the schools used blended learning in classes that had teachers who were well-qualified and willing to use blended learning. One of those schools which had started using blended learning this year asked certain teachers to pilot the process so the classes those teachers taught were the ones in the school being taught with

blended learning. Those classes included a mix of gifted and talented students and regular education students.

One school in the survey only used blended learning in two sections of one class, but those sections were both for gifted and talented students. The school was doing this because those students would have been in regular education classes if not for the blended learning classes and the educator felt the needs of the students were not being met in the regular education classes.

Table 8

Summary of Responses to Interview Question 6

Please describe how your school currently uses blended learning for gifted and talented students.	
Respondent 1	All students use the blended model
Respondent 2	All students use the blended model
Respondent 3	All students use the blended model
Respondent 4	All students use the blended model
Respondent 5	All students use the blended model in all classes except foreign language
Respondent 6	Two sections of one class for gifted and talented students
Respondent 7	Blended learning is used for all students in certain classes
Respondent 8	All students use the blended model
Respondent 9	Blended learning is used for all students in certain classes

7. In which specific classes does your school use blended learning for gifted and talented students? What factors contribute to blended learning being used in these classes and not others?

Five of the nine educators reported that their schools were using blended learning for all classes in the school. The educators felt this was the best way to promote learning for all students. They did this in part because blended learning allowed teachers to differentiate instruction more easily, which these educators felt was a vital tool to a successful classroom. Heacox (2002) supported this belief. Tomlinson (1995) agreed with this premise as well, especially in the context that it would be especially effective for gifted and talented students. Delialioglu (2012) also found this to be the case through an increased level of engagement and interest in classes combining online instruction with face-to-face instruction.

Two schools used blended learning in classes with teachers who were well qualified and willing to teach blended learning. Though they felt blended learning was a preferred approach for all students, they did not feel all of their teachers were ready to use blended learning in their classrooms. They described the teachers who were ready as being willing and able to bring blended learning into their classrooms, but the process made the teachers feel like recent graduates again. While the curriculum did not change, the delivery mechanism was new to them. Though they were more than capable, the learning curve was quite steep and the respondents stressed the fact that the teachers were successful in implementing blended learning in

part because of their willingness to commit to this approach and their belief in the method, but also because they were provided initial training and ongoing support to get them through the rough stretches.

One school was using blended learning in math classes that were only for gifted and talented students. The educator felt the students were not having their academic needs met in regular education classes so blended learning courses were established for these students.

One of the schools was using blended learning for all courses with the exception of their foreign language class. The teacher of that class did not find an effective way to deliver online curriculum for that class, so the class remained completely face-to-face. They were willing to move that class to the blended approach later if they felt there was an online component that effectively supported their curriculum.

Table 9

Summary of Responses to Interview Question 7

In which specific classes does your school use blended learning for gifted and talented students? What factors contribute to blended learning being used in these classes and not others?	
Respondent 1	All classes use blended learning
Respondent 2	All classes use blended learning
Respondent 3	All classes use blended learning
Respondent 4	All classes use blended learning

Respondent 5	All classes use the blended model in all classes except foreign language. They were not able to find foreign language online curriculum that they felt aligned with what they were doing.
Respondent 6	Two sections of math. This was their pilot year and they felt gifted and talented students in their schools needed the most push academically in math, so they chose math to pilot the process.
Respondent 7	Blended learning is used for certain classes which differ from year to year. This is determined by teachers' willingness and ability to make their classes blended classes.
Respondent 8	All classes use blended learning
Respondent 9	Blended learning is used for two sections of biology and one section of language arts. Administration looked for teachers who were open-minded, able to integrate technology into their classrooms, and would be willing to make a commitment to working towards then end-game in mind.

14. Are blended approaches used more with gifted and talented students than other populations of students in your school? If so, why?

In eight of the nine schools, if blended learning was used for gifted and talented students it was used for all students in the school in those same classes. Their reasoning was that due to the ability of teachers to differentiate instruction more easily and effectively through the blended approach, it was a preferred curriculum delivery method for all students. Because of this, the answers to some of the survey questions involved blended learning in general and not simply blended learning for gifted and talented students.

One school only used blended learning for gifted and talented students. This school was a smaller school that did not have extensive course offerings for gifted and talented students. This school offered the blended approach for these students in order to help them meet their academic needs and also because they found gifted and talented students to fit into the blended model better as they were motivated and more self-directed than other students. This concept fits with the findings of Reis and Renzulli (1992), who found that gifted and talented students would often be the students with the experience and independence to best utilize advanced technology.

Table 10

Summary of Responses to Interview Question 14

Are blended approaches used more for gifted and talented students than other populations of students in your school? If so, why?	
Respondent 1	No
Respondent 2	No
Respondent 3	No
Respondent 4	No
Respondent 5	No
Respondent 6	Yes. Blended learning was brought into this school this year to help meet the needs of gifted and talented students that were not being met in the general education classroom.
Respondent 7	No
Respondent 8	No
Respondent 9	No

Interview questions that pertain to research question two. Research question two asked: In these same schools, how is the blended learning method of curriculum delivery for gifted and talented students being developed?

8. How do your teachers obtain their curriculum for the blended learning component of their classes?

The responses to this question were evenly spread out, as three of the educators reported their schools used only curriculum from online curriculum providers, three used a mix of curriculum from online curriculum providers and teacher-developed curriculum, and three used curriculum that was completely teacher-developed.

The educators were quite adamant in their reasons for obtaining curriculum in the manner they obtained it. The schools which only used online curriculum from providers did so because of the thoroughness and standards-based nature of the material, the fact that they knew the material would always be current and not provide dead links or outdated material, and because they knew there would be a strong support system if there were any issues with the material or the accompanying assessments.

On the other end of the spectrum, the schools which only used teacher-developed materials for their curriculum cited the financial savings of not having to purchase the developed online curriculum from the providers and the flexibility their

teachers were given to include what they wanted and to not have to take what was provided to them. In addition, they also felt that if they were able to develop their own curriculum, it was likely to be more collaborative and involving a more active-learning approach. They acknowledged there was extensive and time-consuming work in the original development of the curriculum, but one of the three schools, which is on their third year of using blended learning, reported that the time commitment for the teachers to develop curriculum this year was significantly lower now that they had the core of the class developed. One difficulty teachers who develop their own curriculum will have is that there are few models available which provide a framework of how to create effective blended curriculum. Huang, Ma, and Zhang (2008) found "few models that can be applied to the guidance of such curriculum design" (p. 70).

The third group of schools was the group using some online curriculum from vendors but also having teachers develop some of their own curriculum. They acknowledged that there were very good parts to the curriculum provided by the online vendors but that it did not completely meet their needs. They felt they were getting the best of both worlds in centering the online component of their blended classes on the vendor-provided online curriculum but used the teacher-developed curriculum to replace the weak areas of the vendor curriculum, to supplement what was presented in the vendor curriculum, and to take the curriculum in directions that

their school might have felt was important but the online curriculum providers did not stress or emphasize.

Table 11

Summary of Responses to Interview Question 8

How do your teachers obtain their curriculum for the blended learning component of their classes?	
Respondent 1	Obtain curriculum from a vendor
Respondent 2	Combination of purchased curriculum and teacher-developed
Respondent 3	Obtain curriculum from a vendor
Respondent 4	Teacher-developed curriculum only
Respondent 5	Combination of purchased curriculum and teacher-developed
Respondent 6	Obtain curriculum from a vendor
Respondent 7	Teacher-developed curriculum only
Respondent 8	Combination of purchased curriculum and teacher-developed
Respondent 9	Teacher-developed curriculum only

9. If teachers develop their own curriculum, do they receive any form of professional development for training on how to develop the curriculum? Are they given compensation or extended time to develop the curriculum?

Of the six schools that have teachers either developing their entire online curriculum or some of their online curriculum, two schools provided initial training, ongoing support and professional development throughout the school year, and

provided paid curriculum writing time in some capacity. Two of the schools did not provide training or professional development, but did provide their teachers with paid curriculum writing time during their normal work week. Two of the schools did not provide training, professional development, or curriculum writing time. These last two schools had teachers who had been teaching blended courses for three years and five years respectively. Though the teachers originally received additional paid curriculum writing time during the summer months for the first two years they were teaching blended classes, they no longer received paid curriculum writing time as these their administrators felt the preparation involved for their classes was no longer any different than the preparation for traditional classes.

The educators who worked in schools where professional development was provided were adamant that not only providing paid time to allow teachers to focus on curriculum development was important, but providing initial training and ongoing support from knowledgeable and experienced coaches was equally important in successfully and efficiently implementing blended learning in their schools.

Table 12

Summary of Responses to Interview Question 9

If teachers develop their own curriculum, do they receive any form of professional development for training on how to develop the curriculum? Are they given compensation or extended time to develop the curriculum?	
Respondent 1	Obtain curriculum from a vendor
Respondent 2	No professional development, formal training, or curriculum writing time. Their classes have been running in a blended

	fashion for three years and there is no more change or adjustments needed for these classes than traditional classes.
Respondent 3	Obtain curriculum from a vendor
Respondent 4	No professional development or formal training. Teachers are given three paid times to write curriculum: six to seven Fridays a year with no students, two weeks during the summer, and a 75-minute prep period each day.
Respondent 5	No professional development, formal training, nor compensation to develop curriculum.
Respondent 6	Obtain curriculum from a vendor
Respondent 7	Yes. Their intermediate unit provides initial training and continued support throughout the school year. The continued support throughout the year is combined with curriculum writing time.
Respondent 8	No professional development or formal training. Teachers do have curriculum writing time written into their schedules. These are the original teachers from the start four years ago and they feel the "heavy lifting" has been done.
Respondent 9	Yes. Their intermediate unit provides initial training and continued support throughout the school year as the teachers are pulled out of classes once per month for professional development to work with their blended learning coach and to collaborate with colleagues. They are also paid curriculum writing rates to develop curriculum during their free time in addition to their teacher salary.

10. If the curriculum was purchased, what was the source of the curriculum? Describe the selection process that resulted in your district choosing this curriculum.

Six schools purchased curriculum for all or at least part of their blended learning classes. The actual software the schools chose to use is listed in Table 13. The selection process for the schools to decide which curriculum to purchase fell into two categories: those who vetted the software companies themselves and those who relied on their intermediate unit or buying unit to vet the software for them. Three schools filtered the software themselves and three schools used the intermediate unit or buying unit to procure the software for the schools.

The etiology and functionality of intermediate units or buying units varied between states but in general, they were conglomerations of school districts which created a group to provide goods and services for the districts in an economically beneficial manner to the districts. In some cases, the intermediate unit was able to provide special education services to districts that they would struggle to afford individually. In other cases such as this, the districts had the intermediate unit negotiate with vendors on their behalf and were able to secure pricing for goods and services that was more competitive than if the districts were to negotiate individually, due to the ability to buy-in greater numbers (CAOLA, 2015).

For schools which received curriculum from their intermediate unit or buying unit, they provided criteria to the intermediate or buying unit that explained what they

wanted in online curriculum. The unit then reached out to vendors of online curriculum and got multiple bids and presentations from the vendors. The units filtered through the vendors and found the right curriculum options that fit the needs of the member districts first, and then negotiated final costs for the districts.

Of the schools who vetted the software themselves, the criteria they used to make the final decision varied. Factors that were taken into consideration were alignment with state testing standards, teacher feedback, customer service satisfaction, and cost of the curriculum. Schools would negotiate with the vendors individually because they either did not belong to intermediate or buying units or because they felt they had more control over the process if they did it individually rather than relying on the different units to explore the options for them.

Table 13

Summary of Responses to Interview Question 10

If the curriculum was purchased, what was the source of the curriculum? Describe the selection process that resulted in your district choosing this curriculum.	
Respondent 1	The school uses both Aventa Learning online curriculum and Blackboard learning management system. The district vetted the vendors themselves and chose Aventa as they felt it was user friendly, affordable, and quality curriculum.
Respondent 2	For their vendor-provided online curriculum, they use online curriculum as provided through their state's eSchool network which gains them access to Florida Virtual School, eDynamic Learning, Aventa Learning, Carone Fitness, Middlebury Foreign Languages, and Accelerate Education. They let the state eSchool network filter all of the vendors.

Respondent 3	They use Apex for Advanced Placement classes and Edison Learning for non-Advanced Placement classes. The Intermediate Unit worked the vendors and chose these vendors as they were willing to work with the district and negotiate prices as well as providing curriculum that had positive teacher feedback and responsive customer service.
Respondent 4	Teacher-developed curriculum only
Respondent 5	This district chose Compass Learning. They vetted the curriculum themselves and prefer it, as it lines up well with state standards and state assessments.
Respondent 6	The district uses EdisonLearning. As they are only using the curriculum for two sections of math, they simply took what their Intermediate Unit recommended.
Respondent 7	Teacher-developed curriculum only
Respondent 8	The school purchased ALEKS Math online curriculum for their math classes and their teachers develop the rest of their curriculum. They filtered the vendors themselves and chose this software, as they liked the fact it was mastery-based and self-paced. They use Schoology for their learning management system.
Respondent 9	Teacher-developed curriculum only

Interview questions that pertain to research question three. Research question three asked: What do educators in these schools who are using blended learning for gifted and talented students see as factors that limit the use of blended learning for gifted and talented students and what would need to be done to overcome these limitations?

11. What factors limit the use of blended learning for gifted and talented students in your school?

12. What do you see as possible solutions to these limitations?

As these two questions referred to both limitations and solutions to the limitations of the use of blended learning for gifted and talented students, they are addressed together. In addition, these questions, while directed specifically for the use of blended learning for gifted and talented students, ended up being answered in the context of the use of blended learning in general, as most schools were using blended learning for all students. At the end of each limitation discussion will be a summary of the limitation and its suggested solutions.

a. Technology hardware

The limitation noted most frequently was the technology hardware needs of both the student and the school. Blended learning required some form of electronic device to access the Internet. Schools had to provide these devices to students during the school day and students typically needed access to these types of devices away from school as well. This was a financial burden to both the schools, as technology is constantly changing and upgrades are needed frequently, and to the students' families if they are required to have a certain level of technology hardware away from school. Some schools have addressed these limitations through developing a 1:1 laptop or other electronic device program in which the students could take the device home. Others have also developed the 1:1 electronic device program but require the devices

to stay at school. Demski (2012) found there were numerous potential hurdles for schools as they chose which type of device to use including affordability and long-term compatibility between the device, the school's online infrastructure, and software to be used by the schools.

All schools made families aware of the technology requirements for the blended classes ahead of time. Some worked with the families to find a way to ensure their students had access to the appropriate technology away from school or attempted to find ways to allow students to complete the online component of their work while at school.

With the improved affordability of portable computer devices such as Chromebooks, which are in effect scaled-down, relatively inexpensive laptops, schools have seen a reduced financial burden to maintain up-to-date devices. In addition, respondents discussed the use of referendums for technology to provide dedicated funds to support the technology needs of the schools, or the use of grant applications to get additional revenue streams opened to assure funding sources for technology.

Summary: The importance of accessing appropriate technology hardware for blended learning cannot be overstated. Affordable electronic devices (such as Chromebooks) seemed to be the best option schools currently have for reliable and affordable access to blended programming for gifted and talented students. In

addition, clearly communicating the requirements for families of students considering courses with blended learning is an essential part of a successful program.

b. Internet access

The availability of appropriate speed Internet was also a potential limitation for students using blended learning. The need to access video content or other interactive content is becoming the hallmark of blended learning. Lack of service or service that provides speeds slower than needed are severe limitations to blended learning. This has not just been a problem away from school but schools have found that as they have been using more and more technology that requires students to have Internet access, their existing systems to provide Wi-Fi or hard-wire access to the Internet are inadequate. Demski (2012) supported this as she found schools underprepared for the bandwidth demands and network strain that the increased use of Internet capable electronic devices put on schools' infrastructure. Solutions to this concern have involved updating existing school Internet infrastructure to provide reliable service at adequate speeds while students are at school. In addition, high speed Internet access is becoming more prevalent at libraries, coffee shops, and other places in communities. These sources of Wi-Fi potentially enable students to get access to the Internet away from school even if they do not have it at home.

Summary: Ensuring high speed Internet access at school and ideally away from school is a basic need for successful blended learning. As more public

businesses and other buildings throughout our communities develop reliable high speed Internet access, this issue will become less and less of a hurdle.

c. Costs of curriculum

While there is effective online curriculum already developed by curriculum vendors, the costs of this curriculum were seen as a limitation to schools. As solutions to this limitation, respondents did report that costs were oftentimes negotiable when schools negotiated with several vendors which provided acceptable curriculum. In addition, if an intermediate unit or buying unit did the negations, they were able to purchase greater quantities at a reduced rate. One school recommended finding the curriculum that best fit the needs, ensure adequate customer support would be in place, and then negotiate price. Other schools have found it more economical to use teacher-developed curriculum so they did not have to purchase vendor-provided curriculum. However, the schools did note that they typically paid teachers to develop curriculum over the summer and often provided them with professional development to do so – both of which incurred additional costs.

Summary: Funding issues were concerns for nearly all school districts surveyed for this study. Schools will need to find ways to be financially efficient such as participating in intermediate and buying units, continuing to look for affordable hardware and software, and committing to the means to develop effective blended learning in annual budgets.

d. Training for teachers

In order to create a classroom that uses blended learning effectively, teachers needed both upfront training as well as ongoing support while they go through the process. Owens (2012) wrote that "in order to ensure that this blend is effective, and promotes student learning, specific pedagogical and technological staff development in this area is vital" (p. 389). One theme noted from respondents was that schools often bought the technology and the curriculum but did not invest in the culture of the school or classroom to support blended learning. Respondents reported significant issues when teachers either did not have adequate training or had initial training but no ongoing support. Some schools did start the program from scratch without any formal support and reported that it worked well eventually, but the time it took to effectively implement blended learning was extended by up to several years. This is in contrast to schools that started using blended learning with initial training and ongoing professional development programs established from the start. These schools reported a smoother transition into blended learning and teachers who felt apprehensive about the integration of blended learning but strongly supported during the process. Potential solutions suggested for this limitation were making sure there is a system set up for training and continued support through professional development or a mentorship program with other teachers who are doing the blended learning approach. Many schools that were represented in this study had access to

intermediate units or education programs that provided experts in blended learning who acted as trainers and ongoing coaches for teachers.

Summary: Providing opportunities to acquire both initial training and ongoing support for teachers in the developing stages of blended learning are of great importance. Finding a reputable source to provide that training and support and adequately budgeting for their services are both factors that need to be considered.

e. Buy-in from teachers

Respondents stressed the need to find the right teachers to teach blended learning classes. If teachers approached the implementation of blended learning into their classroom as a top-down edict, it was unlikely to be successful. Many teachers had seen the "catchy phrases" in education come and go and were leery of anything new until it was shown to be lasting. However, if teachers believed their administrators were on board with the idea and the teachers were generally flexible, collaborative, and team players with at least a basic understanding of technology, blended learning was likely to be more successful in their classrooms. Duhaney (2004) wrote that it is "inevitable that there will be a move toward establishing a blended or distributed learning environment" (p. 37) as instructors become more comfortable with the integration of technology.

Summary: Getting teacher buy-in for the time commitment and effort level that will be needed to implement blended learning in a class is important. While teachers do not have to be advanced in their technology abilities, a basic to moderate

understanding of technology is important. In addition, if teachers feel the administration is behind blended learning for the long haul, through actions and financial investment, teachers will be more likely to buy-in to the concept.

f. Training for and buy-in from building leaders

In some cases, the implementation of blended learning courses into schools came from district administration. Building principals had this thrust upon them without a solid understanding of the benefits of blended learning or how blended learning worked. This scenario made the implementation of blended learning difficult as teachers were less likely to get adequate and appropriate support from their building administrator. Building administrators, too, have seen the "catchy phrases" in education come and go only to be replaced with the next one. Solutions to this limitation include getting the building principals involved in the process from the start and allowing them the opportunity to participate in the trainings so they have first-hand knowledge of what blended learning looks like. In addition, providing the principals with adequate funding to provide the professional development and ongoing support teachers will need, allows them to see blended learning as an overall positive addition to their schools and not a financial burden.

Summary: As with classroom teachers, getting buy-in from administrators is important for the long term development of blended learning in schools. Administrators need to also be educated as to what successful blended learning looks like and the benefits of blended learning. In addition, school boards and

administrators need to show their support for blended learning through providing adequate funding.

g. Limitations of teacher-developed curriculum

The decision to use teacher-developed or online curriculum from a vendor was a major topic for schools when deciding how to implement blended learning. For the schools that decided on using teacher-developed curriculum for all or part of their coursework, several potential limitations presented themselves. The need for training, curriculum writing time, and support while teaching a blended class was addressed in an earlier response. However, due to its importance, it is mentioned again here.

Another limitation that was brought up in these responses included the challenge for teachers to stay ahead of fast-moving students. This is of particular importance with gifted and talented students, who often move at a faster pace than other students. One school, which was on the quarter system, required teachers to have curriculum prepared for students at least one quarter in advance in case students got that far ahead. They found however that some students still pushed those boundaries. The solution to this limitation was designated curriculum writing time for teachers during the year to enable the classes to be developed well in advance. Respondents also reported that it was easier to stay ahead of the students during the second and third year of teaching with blended learning because the framework for the courses was already in place.

The difficulty in obtaining quality non-vendor-provided online content that supported the class curriculum was also brought up as a potential limitation for teachers who developed their own curriculum. In addition, models that explain how to develop blended learning curriculum are rare (Huang, Ma, & Zhang, 2008). In some cases, teachers could not consistently find high quality material. Some respondents reported that good material was out there, but there was so much to wade through to find the appropriate curriculum that it wasted time and was not efficient to put forth the effort. Others found that material changed frequently so if they put in links to websites, they would need to check the links periodically to make sure the material and link were still current and active. In addition, there were questions about who owned the blended curriculum in the event a teacher who developed the curriculum left the school.

Potential solutions to these questions are varied. The easiest way to avoid these issues is to use online curriculum from a vendor. However, cost and teacher preference for what the model looks like may prevent this from happening. In those cases, collaborating with other teachers who are teaching a similar subject will allow teachers to do less legwork as they share parts of their curriculum. Dalsgaard and Godsk (2007) found it possible to convert traditional lectures into problem-based blended learning through a social constructivist approach. Using sites that are well established will help to prevent content from disappearing, and frequently checking links while having a backup plan in mind will minimize the times students cannot

find the information they are looking for. In addition, developing a district-wide policy and communicating the plan of what happens with the curriculum in the event a teacher leaves, clarifies any misconceptions about curriculum ownership.

Summary: If schools decide that the use of teacher-developed curriculum is the way their blended learning classes will be developed, several factors need to be considered. Providing teachers time and professional development (to successfully develop online curriculum) before these classes begin is the first step. This will allow teachers the ability to have enough curriculum written to stay ahead of students who work at an accelerated pace. Finding quality sources of online curriculum is also a challenge for teachers. Brainstorming and sharing with other teachers who teach similar courses, as well as using content from reputable and stable sources, is important to the successful maintenance of the curriculum. Finally, developing school policy as to the proprietary nature of the teacher-developed curriculum will help prevent issues if the teacher responsible for curriculum development moves away from the school.

h. Negative perceptions of online or blended learning

Respondents reported getting feedback from students and parents that students would become isolated by doing online or blended learning and that online learning was easier than traditional face-to-face classes. To counter the isolation perception, the respondents emphasized that blended learning is not the same as online learning in that it involves face-to-face interactions with teachers and, when done as most

models suggest, involves collaboration with classmates. Aspden and Helm (2004) found that increased use of educational technology, such as what is used with blended learning, can actually increase the connection between students and staff. Respondents also reported that students in blended classrooms often said they wanted to return to doing things the "old way" in the traditional face-to-face classrooms because things were easier that way. Students often found that when more responsibility for their learning was put back onto them the rigor and work load would increase.

Summary: As more and more students benefit from blended or online learning, their successes will become more public and more parents and stake holders will see the value in the delivery method. Creating inclusive, interactive, and collaborative blended classes will also help dispel this concern.

i. Leadership or teacher turnover

Oftentimes, blended learning was introduced into a school as the idea of one district administrator, building leader, or teacher. That person had a passion for blended learning and put forth the energy and time to get others on board to make it happen. If that person left, there was a void in leadership and championing of blended learning. The solution is to make sure the implementation of blended learning is a team effort and that there is a commitment from the school or district that will be strong enough to survive the loss of one person. If multiple people work towards developing the curriculum, this establishes the fact that the curriculum is not

owned in a proprietary manner by one person and will allow for a cleaner and more efficient transition when one person leaves.

Summary: Developing a system or culture in which blended learning is a part of what goes on in schools will enable more widely established use of blended learning and will allow the concept to not be centered or focused on one individual.

j. Parental involvement

Respondents stressed the need for parental involvement in order to make blended learning as successful as it is capable of being. This need centered on the necessity to allow students to have access to a certain level of technology and Internet outside of school as well as supporting the students as they take more responsibility for their learning as they do with blended learning. Meeting with parents prior to having students begin the classes allowed teachers to avoid pitfalls because they were able to stress the requirements of blended learning to the parents ahead of time and assure that all parties are on board and on the same page. Schools have gone as far as having the parents and students sign a contract that spells out what is required from the student to be successful in a blended class.

Summary: Effective communication with parents and guardians of students in blended classes about the requirements needed in order for a positive experience in a blended class is important. If parents, students, and teachers are on the same page in their understanding of what the student needs, respondents reported that the transition into and navigation through a blended class were more successful.

k. Standardization of classes and curriculum

In schools in which blended learning is used in one section of a subject but not for all sections, there needs to be an awareness of the need to align curriculum between the different sections. The delivery method of blended learning should not dramatically alter the content of the curriculum. In addition, teachers that are not teaching the blended classes might have a tendency to feel left out of the excitement of the new format due to the attention and resources devoted to the blended classroom.

Summary: As not all teachers are ready to move into the world of blended learning, assuring the same level of high quality experiences from one section of a class to another is a primary concept to consider. Developing a solid curriculum that is not reliant upon the method of delivery is an important consideration to maintain standardization of classes.

Table 14

Summary of Responses to Interview Questions 11 and 12

Question 11: What factors limit the use of blended learning for gifted and talented students in your school? Question 12: What do you see as possible solutions to these limitations?	
Limitation:	Possible solutions:
1. Technology hardware	a. Affordable electronic devices (Chromebooks) b. Communicating requirements to parents early

2. Internet access	a. Upgrading school's Internet infrastructure b. Using options outside of school (business Wi-Fi)
3. Costs of curriculum	a. Purchasing in bulk via intermediate units b. Negotiating costs c. Committed budgeting for curriculum d. Teacher-developed curriculum
4. Training for teachers	a. Commitment to professional development b. Procurement of competent source of training
5. Buy-in from teachers	a. The right teachers to begin blended learning b. Evidence of administrator and district support
6. Training/buy-in from administrators	a. Education/training for administrators b. Adequate funding for blended learning
7. Limitations of teacher-developed curriculum	a. Providing professional development b. Providing adequate time to write curriculum c. Collaboration between teachers d. Establishing "ownership" of curriculum via policy
8. Perceptions of online learning	a. Show evidence of successful learning b. Make courses interactive and collaborative
9. Educator turnover	a. Make blended learning widespread b. Spread out the knowledge and responsibility
10. Parental involvement	a. Effective communication of requirements of course from the start

11. Standardization of classes	a. Development of consistent curriculum between sections of classes

Limitations and Transferability

When performing this qualitative research, there were limitations to the study. The interview provided the perspective on the study participants which was indirect and filtered through their lens. In addition, the data obtained was not observed in the natural field setting but instead recorded during a telephone interview. As the respondents were aware of the purpose of the interviewer, their responses may represent bias. In addition, each interview subject was not equally able to effectively communicate his or her experiences and did not share the same level of expertise or experience as research subjects.

These limitations were acknowledged and taken into account when analyzing the data. The use of a semi-structured interview allowed for a base of consistent questions while also allowing the respondent to take the conversation in directions that may not have been predicted. Supplemental questions were used to bring out the experiences and abilities of each individual study participant. This enabled each of the respondents to freely share their experiences while not being encumbered by only responding to the base questions.

This study included participants from schools located in urban, rural, and suburban communities. The schools ranged in Grades 9-12 with enrollment from 60 to 4,500 students and were located in various parts of the United States. Because of

this variation in community, size, and geographic location, the results of this study and experiences of these educators should be applicable and pertinent to all educators who are looking to institute blended learning in their schools for gifted and talented students.

Summary

The perspectives of experienced educators who are considered experts in the field of blended learning are vital pieces of data that will benefit future educators attempting to implement blended learning. Understanding where current educators who use blended learning come from and the situations in which they have successfully implemented blended learning will give others situations to relate to and a framework to follow. Comprehending the benefits and disadvantages of using teacher-developed curriculum compared to purchasing curriculum from a vendor will be an important step to developing a successful blended learning model. Understanding what these experienced educators have found to be both the potential limitations to the implementation of blended learning and the potential solutions to these limitations could save future educators years of frustration.

Chapter Four reviewed the sampling process for the research and presented the results of the study. Chapter Five includes a summary of the research including a final analysis, review of the results, findings in the context of the existing literature, implications for educational practice, and suggestions for future research.

Chapter V: Discussion, Implications, and Recommendations

Overview of the Study

This study pursued a greater understanding of how gifted and talented students are currently benefiting from blended learning opportunities and how curriculum is currently being developed in a blended educational fashion to benefit gifted and talented students. In addition, the study examined what educators who use blended learning for gifted and talented students felt were the current roadblocks or limitations they faced in attempting to implement blended learning into the classroom and what could be done to move past those limitations. Chapter Five summarizes the results of the study and shares important conclusions. It also discusses implications of the study while providing recommendations for practitioners and suggestions for future directions of research.

The world of education is rapidly changing. No longer are the three "r's" the sole base of a student's education. In addition, the trends in education are veering towards seeing students as individuals and doing away with the one size fits all mentality of teaching (Tomlinson, 2006). Differentiated instruction is the basis of many classrooms today (Heacox, 2002). Educators have been using technology to the benefit of students for many years. Blended learning is a current trend in education that allows teachers to integrate technology, differentiate instruction, and allows students more academic freedom to both reach the level of comprehension they are capable of, while moving at a pace that works for them. With blended learning,

students benefit from the world of online learning while maintaining the benefit of access to teachers through the traditional face-to-face model (Olszewski-Kubilius & Corwith, 2010).

Gifted and talented students can often be the forgotten population in a school. They are typically successful academically, are not the focus of closing the achievement gap, and therefore are often not a priority for administrators who have limited budgets. However, the needs of the gifted and talented students should not be ignored. As educators, it is imperative that all students are given the opportunity to reach their potential. When schools focus their efforts on meeting the needs of gifted and talented students, assessment score increases will follow and these students will move towards reaching their academic potential (Burney, 2010).

Blended learning allows schools the ability to offer differentiated instruction to gifted and talented students so they are capable of reaching that academic potential. This study examined how gifted and talented students are currently benefiting from blended learning, how curriculum is being developed in schools which are using blended learning for gifted and talented students, and what the potential limitations and solutions to these limitations are for schools attempting to use blended learning.

The qualitative study centered on performing semi-structured interviews with educators in schools which are using blended learning for gifted and talented students. Interview questions were created that focused on the three research questions of the study:

RQ1 In high schools currently using blended learning in the curriculum for gifted and talented students, how is blended learning being used?

RQ2 In these same schools, how is the blended learning curriculum delivery method for gifted and talented students being developed?

RQ3 What do the educators in these schools who are using blended learning for gifted and talented students see as factors that limit the use of blended learning for gifted and talented students and what would need to be done to overcome these limitations?

A field test with expert review was performed on the questions to make sure the interview questions accurately represented the appropriate concepts in the fields of blended learning and gifted and talented students. The field test with expert review was also performed to ensure reliability and validity of the study instrument. Modifications were made to the interview questions based on expert feedback.

Educators who used blended learning for gifted and talented students were identified through a type of purposeful sampling called snowball sampling, in which one expert in the field was found who led to other experts in the field (Patten, 2012). Nine educators were identified and interviewed over the telephone for the study. Each educator was asked the 14 interview questions (see Appendix A). The interview responses were recorded, transcribed, individually coded, and analyzed for meaning. Each interview question was then looked at in the context of the responses from all nine participants of the study and themes or categories of responses were determined

for each interview question. The themes or categories that emerged were analyzed together to provide answers for each research question (Merriam, 2009).

Research Questions: Findings and Implications

The purpose of the study was to examine how gifted and talented students are currently benefiting from blended learning, how curriculum is being developed in schools that are using blended learning for gifted and talented students, and what the potential limitations and solutions to these limitations are for schools attempting to use blended learning. These topics were organized into three research questions.

Analysis of research question 1. Research question 1 asked: In high schools currently using blended learning in the curriculum for gifted and talented students, how is blended learning being used? The major finding for this research question was that while these schools found blended learning to be a powerful and effective tool in the education of gifted and talented students, eight of the nine schools used blended learning for all students and not just gifted and talented students. Their logic centered on the fact that blended learning focused on two major aspects of education through the use of technology and the ability to differentiate instruction that benefits all students. The one school that only offered blended learning to gifted and talented students was doing so to meet a specific need for a specific class and was not ready financially or conceptually to offer it uniformly to all students.

Overall, the use of blended learning for gifted and talented students is a relatively recent development for these schools, as the school that has been doing it

the longest has only been doing it for six years. In two of the schools, this was their first year implementing blended learning. The reasons schools started using blended learning were varied. The need for differentiation, the need to integrate technology into the classroom, and the desire to avoid online-only classrooms so that students maintained the overview of a day to day teacher were overriding themes as to why schools looked to blended learning.

The concept of offering blended learning for all students and not just gifted and talented students was a theme that resonated throughout the study. Five of the schools were already implementing blended learning in all classes for all of their students. Two of the schools were using blended learning in classes that had teachers who were willing and able to make their classes blended classrooms. These classes were not chosen to be blended classes because of the student population (where the gifted and talented students were mixed with non-gifted and talented students) but rather chosen because of the teacher who was teaching the course. One school used blended learning for every class except foreign languages, as they could not find online foreign language content they felt supported their curriculum.

Implications for educators who are considering implementing blended learning in their classes for gifted and talented students would be to see if this model would be effective and practical in their schools and classes for all students as most respondents found to be the case in their schools.

Analysis of research question 2. Research question 2 asked the following question: In these same schools, how is the blended learning method of curriculum delivery for gifted and talented students being developed? The answers to this research question fell into three categories: schools which purchase their entire online curriculum, schools which purchase none of their online curriculum, and schools which use some purchased online curriculum but supplement it with additional online portions as organized by their teachers. In this study, the schools that fit into each category were evenly represented (three schools each).

For schools which purchased their own online curriculum, the benefits described included the time savings of not having to develop something from scratch, the ease of using curriculum that was already prepared, the knowledge that the curriculum supported state standards, and the support they received for the curriculum from the online vendor. While acknowledging the cost of the curriculum was a negative aspect of obtaining online curriculum in this fashion, the respondents also felt they were saving money by not having to pay teachers to write curriculum.

Respondents from schools in which teachers developed their own online curriculum touted the flexibility and teacher control of developing curriculum in this fashion. They also felt the online curriculum that was being offered from vendors was potentially cost prohibitive. Though some did experience costs through paying teachers to write curriculum and by providing these teachers initial and ongoing professional development, they believed those costs minimized over time. Two

schools which had teachers develop their own curriculum for three and five years respectively both reported they no longer paid for curriculum writing time nor professional development as the curriculum of the classes was fairly well established and the same curriculum tweaking that occurs in non-blended classes was all that was happening now.

The final group found it best to use some of the vendor-provided online curriculum while supplementing it with curriculum their teachers developed. They felt this was the best of both worlds in that the teachers had a solid foundation to build from with the purchased online curriculum, but could supplement where they felt gaps existed in the purchased curriculum. It was acknowledged that this potentially could be the most expensive of the three options, as schools could potentially be paying for curriculum writing time and for the vendor-provided online curriculum.

The sources of the purchased online curriculum were varied. The respondents in this study reported using 12 different vendors for their schools. The sources that were reported to be used most frequently were ones provided to schools through their intermediate or buying units, which filtered the vendors and negotiated prices for the online curriculums the units felt best met the needs of their member schools.

Implications of these findings are that there is no set conclusion on where to obtain curriculum for the online component of blended learning. Educators who are considering implementation of blended learning would need to consider the budgetary

needs when comparing the costs associated to purchase curriculum as compared to costs associated with paying teachers to write curriculum, their teachers' comfort levels with technology and ability to develop effective online curriculum, and what their teachers' preferences are.

Analysis of research question 3. Research question 3 asked: What do educators in these schools who are using blended learning for gifted and talented students see as factors that limit the use of blended learning for gifted and talented students and what would need to be done to overcome these limitations? All of the respondents looked at the limitations of using blended learning in general and did not focus on the use for gifted and talented students in particular. Eight of the nine respondents were already using blended learning for all students and the ninth answered these questions in a manner that discussed what would prevent him from offering it to all students.

Costs of hardware, software, professional development, and school infrastructure to support blended learning were most commonly brought up as limitations by the respondents. As school budgets can be tight, looking to open up other sources of revenue (technology referendums and the use of grants) or looking to save money (through the negotiating power of the intermediate or buying units) were mentioned as possible solutions to these limitations.

Buy-in from invested parties was another theme that was mentioned by respondents. Some schools limited the classes in which they offered blended learning

due to only certain teachers being willing and able to teach blended classes. Others felt administrators (building or district) were not fully on board, as blended learning was not their idea and they did not understand the benefits of blended learning. Parents and students were also mentioned as needing to buy-in to both understand the requirements of taking blended classes and the different way in which blended classes put more of the responsibility of learning on the student. Providing teachers and administrators with the professional development they needed and allowing teacher collaboration were discussed as possible solutions to these limitations. Early and effective communication to explain the expectations of blended classes with both parents and students was the potential solution offered by the respondents.

In addition to helping to develop buy-in, the need for initial and ongoing professional development for teachers and administrators was seen as a significant limitation to the development of effective blended classes. In addition to training educators how to develop a blended classroom, developing a solid base in using differentiated instruction as the foundation of blended learning cannot be overemphasized. Throwing administrators and teachers into the world of blended learning without adequate knowledge and training not only lowered buy-in, but also potentially resulted in ineffective teaching and unproductive learning. The importance of finding qualified trainers and coaches who could provide initial and ongoing professional development for teachers and administrators and working the

costs associated with this training into the budget were seen as solutions to these limitations.

Respondents felt that some people in their community saw the online learning component of blended learning in a negative light. The perception was that online learning was easier and allowed for greater isolation of students. Respondents reported that students actually found blended learning to be more challenging, as the onus of learning was placed more squarely on the student. Aspden and Helm (2004) showed that increased use of technology as occurs with blended learning can actually increase the connection between students and staff, which therefore built relationships and lessened isolationism. Getting students to experience effective blended learning and seeing the positive results were seen as the solution to this limitation.

Finally, the loss of vital staff members in the schools' hierarchy of blended learning and the difference between sections of classes that were blended and those that were traditional were also mentioned as limitations. As blended learning is relatively new in most schools, it is common to have one person or a small group of people in the school who are seen as the "experts" in blended learning. Spreading this knowledge out to more educators through inclusive trainings and professional development lessens a school's dependence on one person. In addition, establishing a district policy which states that the teacher-developed curriculum stays with the school if teachers leave is essential. This allows the next teacher to pick up where the previous teacher left off. Establishing one overriding curriculum for a class and

applying that curriculum through blended learning or the traditional classroom was seen as the solution to the lack of standardization of classes.

Implications of these findings are that there are many factors to consider prior to implementing blended learning in a school. Assuring that technology needs are met, that there is the needed buy-in from all involved parties, and there is a plan for initial training and ongoing professional development to effectively implement and maintain blended learning are vital frameworks upon which to build.

Conclusions

The responsibility to help all learners reach their potential is an important job of all professionals in education. While the recent focus and keywords in education deal with closing the achievement gap and helping our struggling students, it is important to not lose sight of how high we can push our top students. Meeting the needs of gifted and talented students should be just as much of a priority as meeting the needs of any other student. One concept to focus on in order to adequately challenge gifted and talented students is differentiated instruction. Teaching students what they are ready to learn in the manner and pace they are able to best learn provides a medium for gifted and talented students to successfully reach their potential. Using online technology to aid in the differentiation of instruction is a key tool that allows for the flexibility and broad reaches of the Internet. Combining the use of online technology with the guidance, support, experience, and personal

relationship of a face-to-face teacher allows gifted and talented students an optimal learning opportunity.

Three overriding themes emerged from this study based on the research questions proposed for the study. First, while blended learning is believed to be effective for gifted and talented students, the respondents in the interview reported that they felt all students in their schools would benefit from blended learning. They felt the same concepts of differentiated instruction through the use of technology with guidance from a face-to-face teacher that blended learning provides are not only effective pedagogical processes for gifted and talented students but for all students in their schools.

Second, there are multiple ways to procure the online curriculum for blended classrooms and each way has its advantages and disadvantages. Prior to deciding which method to use, consideration of the school's budget, abilities of its staff, and preferences of its staff need to occur.

Third, there are numerous potential limitations to consider prior to implementing blended learning. The need for and costs of appropriate technology hardware and Internet access, professional development for teachers and administrators, costs of curriculum purchase or development, parental involvement, and how to standardize classes in schools where not all courses are blended are all things to consider. While none of the potential limitations will necessarily prevent implementation of blended learning in schools, consideration of these limitations and

dealing with them ahead of time will make the development of blended learning smoother.

Recommendations for Practitioners

The findings of this study are especially applicable to this section as the last research question focused on what limitations were found in the implementation of blended learning into the classroom and the respondents' potential solutions to these limitations. Being able to learn directly from educators who have recently experienced the implementation of blended learning into their schools and classrooms would prove to be an important tool in the development of an efficient and effective blended learning program.

1. Determining which blended learning model to use. The first step in the implementation of blended learning for gifted and talented students is to consider what blended learning would look like in the school. In order to determine the model, educators first need to ask themselves why they are using blended learning and which population of students they feel it is most appropriate for in their schools. This will allow reflection for all vested parties to make sure full buy-in occurs from necessary district administrators, building administrators, teachers, families, and students. Several models of how blended learning was being implemented in the respondents' schools demonstrated the different paths educators could follow based on what they hoped blended learning would accomplish in their schools. These models were discussed in Chapter Four.

Using blended learning in certain classes for gifted and talented students. The most scaled-down model of blended learning for gifted and talented students involved using it for select classes of gifted and talented students. This was done to specifically address perceived limitations in the depth of curriculum in one subject area for gifted and talented students.

Using blended learning in all classes for gifted and talented students. While none of the respondents to the study used blended learning in this fashion, this was the original premise of the study, as the concept pertained to using blended learning for gifted and talented students in small, rural schools. Blended learning would be used in these situations to meet the needs of gifted and talented students who did not have the options to take advanced classes due to the limited enrollment and course offerings of the school.

Using blended learning in classes that were taught by certain teachers. This model was used in schools which had teachers who wanted to implement blended learning, were technologically capable to a certain minimum standard, were collaborative, and were flexible. This could be used as an initial pilot which would lead to further development of blended learning within the school or may be seen as the ultimate way in which blended learning would be used in the school.

Using blended learning in certain subjects, but not others, for all students. This model was used in schools which had effective blended learning curriculum for certain subjects but not for others. The one school that reported doing this was a

school that could not find appropriate online curriculum for foreign language classes but could for other subjects.

Using blended learning for all classes for all students. Schools who used this model believed that the concept of blended learning was the best way to educate all students so they committed to blended learning for all classes and all students.

2. Assess technology needs. After the model of blended learning is determined, the next step would be to assess the technology needs and requirements to implement blended learning and the costs associated with these needs and requirements. These needs would vary greatly depending on the model of blended learning implementation being used. Technology hardware, Internet infrastructure, Wi-Fi capabilities, and sources of online curriculum are all things that need to be considered along with the costs to adequately develop and maintain each of these to ensure effective ongoing usage.

3. Professional development. Procuring sources of quality initial training and ongoing professional development for administrators and teachers will help ensure ongoing success for the program. Respondents who received professional development lauded the positive effect on the success of blended learning in their schools. In addition, using appropriate professional development for administrators and teachers will help each stake holder develop the skills necessary to fulfill their roles in a blended learning school.

Recommendations for Academics

This study spawned several potential avenues of future exploration in the field of using blended learning for gifted and talented students. Recommendations for further areas of study or future research are as follows:

- As this qualitative study was limited to interviewing nine respondents from schools who used blended learning for gifted and talented students, the performance of a quantitative study via a survey with far greater numbers of respondents could strengthen the reliability of the data in this field.
- Creating a case study that followed the implementation of blended learning for gifted and talented or all students in a school would provide a narrative and perhaps a handbook for educators who also want to implement blended learning into their schools.
- As one of the primary differences between schools in this study involved the use of vendor-provided online curriculum as compared to teacher-developed online curriculum, a deeper comparison of the two methods of online curriculum obtainment could be performed. This comparison could potentially include the costs of the vendor-provided curriculum (curriculum and any recommended training) versus the costs of teacher-developed curriculum (curriculum writing time, training and professional development, ongoing monitoring of curriculum for changes), student satisfaction, teacher

satisfaction, and effectiveness of the curriculum as determined by appropriate common assessments.

- One of the interview questions of this study asked respondents to identify their schools as urban, suburban, or rural. A study to isolate and examine the different school classifications by looking at the models of blended learning implemented in each classification of school and the educators' experiences with blended learning in each classification of school would help future educators who are planning on implementing blended learning in their schools relate to the experiences of schools with similar classifications to their own.
- As there is minimal research on the benefits of blended learning to gifted and talented students, further research could be conducted to see if factors such as student satisfaction and student achievement data are increased for gifted and talented students in blended classes as compared to gifted and talented students in regular education classes.

Concluding Comments

Blended learning is more than just a buzzword in education. It combines the increased use of technology with differentiated instruction to provide a mechanism for students to learn at the pace, depth, and manner that best fits their needs. As opposed to online learning alone, blended learning classes maintain the guidance and oversight of face-to-face teachers. These teachers use their educational training to

lead and develop the class while building relationships with their students which will strengthen students' educational experiences.

Gifted and talented students are often the forgotten population in schools. While they are typically successful in the basic academic terms, their academic potential may not be met due to limited class offerings. Blended learning provides for many models in which schools can meet the needs of gifted and talented students. The respondents in this study reported that when blended learning is done right, it is an ideal curriculum delivery mechanism for not only gifted and talented students, but for all students in regular education classrooms.

As blended learning becomes more widely used, this study found several factors that need to be considered to effectively and efficiently implement it into classrooms. If these factors are taken into consideration during the planning, implementation, and maintenance stages of the process, blended learning can become a successful part of a school's educational framework to benefit not only gifted and talented students, but all students.

References

Adams, C. M., & Olszewski-Kubilius, P. (2007). Distance learning and gifted students. In J. VanTassel-Baska (Ed.). *Serving gifted learners beyond the traditional classroom: A guide to alternative programs and services*. (pp169-188). Waco, TX: Prufrock Press.

Alberta Education. (2009). *Special education coding criteria 2009/2010: ECS to grade 12 Mild/Moderate (including gifted and talented)/Severe*. Alberta, Canada: Alberta Education.

Arkansas Department of Education. (2012). Internal evaluation of the Arkansas Virtual Academy School. Retrieved from http://kpk12.com/cms/wp-content/uploads/EEG_KP2012-stateprof-AR.pdf

Aspden, L., & Helm, P. (2004). Making the connection in a blended environment. *Educational Media International, 41*(3), 245-252.

Aydin, I. E. (2010). Attitudes toward online communications in open and distance learning. *Turkish Online Journal of Distance Education, 13*(4), 333-346.

Belanger, J., & Gagne, F. (2006). Estimating the size of the gifted/talented population from multiple identification criteria. *Journal for the Education of the Gifted, 30*(2), 131-163.

Bloom, B., Englehart, M., Furst, E., Hill, W., & Krathwohl, E. (1956). *Taxonomy of educational objectives: The classification of educational goals.* New York, NY: McKay.

Brown, S. W., Renzuli, J. S., Gubbins, E. J., Siegle, D., Zhang, W., & Chen, C. (2005). Assumptions underlying the identification of gifted and talented students. *Gifted Child Quarterly, 54*(2), 116-126.

Burney, V. H. (2010). High achievement on advanced placement exams: The relationship of school-level contextual factors to performance. *Gifted Child Quarterly, 54*(2), 116-126.

CAOLA. (2015). Capital Area Online Learning Association district information. Retrieved from http://caola.caiu.org/online-courses/for-districts.aspx

Clark, B. (1997). *Growing up gifted* (5th ed.). Columbus, OH: Merrill.

Compass Learning. (2015). Blended learning: The right content for the right student at the right time. Retrieved from https://compasslearning.com/blended-learning/.

Cooper, B. (2005). Online courses: Connecting with distance learning. *Understanding Our Gifted*, *17*(4), 13-15.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oakes, CA: Sage Publications.

Dalsgaard, C., & Godsk, M. (2007). Transforming traditional lectures into problem-based blended learning: Challenges and experiences. *Open Learning: The Journal of Open, Distance and e-Learning, 22*(1), 29-42.

Davis, M. R. (2009). Breaking away from tradition: E-learning opens new doors to raise achievement. *Education Week, 28*(26), 8-9.

Delialioglu, O. (2012). Student engagement in blended learning environments with lecture-based and problem-based instructional approaches. *Journal of Educational Technology & Society, 15*(3), 310-322.

Demski, J. (2012). The hard(ware) choice. *T.H.E. Journal, 39*(9), 28-35.

Dershewitz, L., Lee, S-Y., & Johnson, P. (2006). Parents' perceptions of the effects of distance education on gifted children. Paper presented at the Illinois Association for Gifted Children, Chicago, IL in February, 2006.

Duhaney, D. C. (2004). Blended learning in education, training, and development. *Performance Improvement, 43*(8), 35-38.

Evergreen Education Group. (2013a). [Table illustration of states that have online learning requirements for graduation]. *States with online learning requirements.* Retrieved from http://kpk12.com/cms/wp-content/uploads/Figure-5-States-with-Multi-district-Fully-Online-Schools.png

Evergreen Education Group. (2013b). [Table illustration of states that have online learning requirements for graduation]. *States with online learning requirements.* Retrieved from http://kpk12.com/cms/wp-content/uploads/Table-6-States-with-Online-Learning-Requirements.png

Ewing, J., Dowling, J., & Coutts, N. (1997). *STARS: Report on superhighway teams across rural school projects*. Dundee, Scotland: Northern College.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York, NY: Basic.

Gardner, H. (2006). *Multiple intelligences: New horizons in theory and practice.* New York, NY: Basic.

Heacox, D. (2002). *Differentiated instruction in the regular classroom.* Minneapolis, MN: Free Spirit Publishing, Inc.

Heppen, J.B., Walters, K., Clements, M., Faria, A-M., Tobey, C., Sorensen, N., & Culp, K. (2011). Access to Algebra I: The effects of online mathematics for grade 8 students. United States Department of Education. Retrieved from http://ies.ed.gov/ncee/edlabs/regions/northeast/pdf/REL_20124021.pdf

Huang, R., Ma, D., & Zhang, H. (2008). Towards a design theory of blended learning curriculum. *Hybrid Learning and Education, 5169*(1), 66-78.

Hull, D. F., Bull, K. S., Montgomery, D., May, J. R., & Overton, R. (2000). Designing an online, introductory gifted education course. Conference proceedings from *Capitalizing on Leadership in Rural Special Education: Making a Difference for Children*. Alexandria, VA: American Council on Rural Special Education.

Illinois Association for Gifted Children. (2013). *Illinois definition of gifted and talented children*. Retrieved from http://www.iagcgifted.org/

Illinois Legislature. (2013). Public Act 094-0151. Retrieved from http://www.ilga.gov/legislation/publicacts/94/094-0151.htm

Jones, E. D., & Southern, W. T. (1992). Programming, grouping, and acceleration in rural school districts: A survey of attitudes and practices. *Gifted Child Quarterly, 36*(2), 112-117.

Lemke, J. (Ed.). (2000). Proceedings from American Council on Rural Special Education 2000: *Capitalizing on leadership in rural special education: Making a difference for children and families.* Alexandria, VA: ACRE.

Leiner, B. M., Cerf, V. G., Clark, D. D., Kahn, R. E., Kleinrock, L., Lynch, D. C., Postel, J., Roberts, L. G., & Wolff, S. (2013). Brief History of the Internet. The Internet Society. Retrieved from http://www.internetsociety.org/sites/default/files/Brief_History_of_the_Internet.pdf.

Lewis, G. (1989). Telelearning: Making maximum use of the medium. *Roeper Review, 11*(4), 195-198.

Lewis, J. (2000). Rural gifted education: Enhancing service delivery. Conference proceedings from *Capitalizing on Leadership in Rural Special Education: Making a Difference for Children*. Alexandria, VA: American Council on Rural Special Education.

Long, M., & Jennings, H. (2005). "*Does it work?": The impact of technology and professional development on student achievement*. Calverton, MD: Macro International.

Lopuch, M. (2013). The effects of educational apps on student achievement and engagement. *eSpark Learning*. Retrieved from http://www.esparklearning.com/results/student-achievement-engagement-in-educational-apps.html.

McLoughlin, C. (1999). Providing enrichment and acceleration in the electronic classroom: A case study of audiographic conferencing. *Journal of Special Education Technology, 14*(2), 54-69.

Marzano, R. (2012). Marzano levels of school effectiveness. Retrieved from http://legisweb.state.wy.us/InterimCommittee/2012/Z02MarzanoLevels.pdf

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.

Metz, K. F. (2011). Predictors of secondary students' achievement and satisfaction in online courses. Retrieved from http://www.proquest.com/en-US/products/dissertations/individuals.shtml

Montage Education. (2015). BrainHoney: What is blended learning? Retrieved from http://brainhoney.montageeducation.com/BrainHoney/what-is-blended-learning.

Mulrine, C. F. (2007). Creating a virtual learning environment for gifted and talented learners. *Gifted Child Today, 30*(2), 37-40.

O'Dwyer, L.M., Carey, R., & Kleiman, G. (2007). A study of the effectiveness of the Louisiana algebra I online course. *Journal of Research on Technology in Education, 39*(3), 289-306.

Olszewski-Kubilius, P., & Corwith, S. (2010). Distance education: Where it started and where it stands for gifted children and their educators. *Gifted Child Today 34*(3), p. 16-25.

Olszewski-Kubilius, P., & Lee, S-Y. (2004). Gifted adolescents' talent development through distance learning. *Journal for the Education of the Gifted, 28*(1), 7-35.

Owens, T. (2012). Hitting the nail on the head: The importance of specific staff development for effective blended learning. *Innovations in Education and Teaching International, 49*(4), 389-400.

Patten, M. L. (2012). *Understanding research methods: An overview of the essentials*. Glendale, CA: Pyrczak Publishing.

Picciano, A. G., & Seaman, J. (2009). *K-12 online learning: A 2008 follow-up of the survey of U.S. school district administrators*. Newburyport, MA: The Sloan Consortium.

Reis, S. M., & Renzulli, J.S. (1992). Using curriculum compacting to challenge the above-average. *Educational Leadership, 50*(2), 51-57.

Roberts, C. M. (2010). *The dissertation journey: A practical and comprehensive guide to planning, writing, and defending your dissertation*. Thousand Oakes, CA: Sage Publications.

Rockman, S., Sloan, K., Akey, T., Farr, B., Pereira-Leon, M., Shapiro, J., & Clark, L. (2007). Technology intervention in education: ED PACE final report. Submitted to the West Virginia Department of Education. San Francisco, CA: Rockman.

Rossman, G. B., & Rallis, S. F. (2003). *Learning in the field: An introduction to qualitative research*. Thousand Oakes, CA: Sage Publications.

Santo, S. (2007). *Learning styles and personalities*. Retrieved from http://www.usd.edu/~ssanto/gregorc.html.

Savage, L., & Werner, J. (1994). Potpourri of resources to tap gifted education in rural areas. Proceedings of the *Annual National Conference of the American Council on Rural Special Education*. Austin, TX: ACRES.

Staker, H., & Horn, M. B. (2012). Classifying K-12 blended learning. Innosight Institute. Retrieved from http://brokersofexpertise.net/cognoti/content/file/resources/documents/13/1319d4c9/1319d4c97e8faaa11702c08691abc208dcdad43f/downloadedfile_6158012205637240566_Classifying-K-12-blended-learning2.pdf

Swicord, B. (2010). *A phenomenological study of gifted adolescents and their engagement with one on-line learning system.* Retrieved from http://www.proquest.com/en-US/products/dissertations/individuals.shtml

Thomson, D. L. (2010). Beyond the classroom walls: Teachers' and students' perspectives on how online learning can meet the needs of gifted students. *Journal of Advanced Academics, 21*(4), 662-712.

Tomlinson, C. (1995). *How to differentiate instruction in mixed-ability classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. (2000). Differentiated instruction: Can it work? *Education Digest, 65*(5), 25-32.

Tomlinson, C. (2006). *Differentiation in practice: A resource guide for differentiating curriculum, grades 9-12.* Alexandria, VA: Association for Supervision and Curriculum Development.

Vernadakis, N., Goammpiso, M., Tsitskari, E., Antoniou, P., & Kioumourtzoglou, E. (2012). A comparison of student satisfaction between traditional and blended technology course offerings in physical education. *Turkish Online Journal of Distance Education, 13*(1), 137-147.

Vygotsky, L. (1978). *Mind in society: The development of higher mental process.* Cambridge, MA: Harvard University Press.

Watson, J., & Gemin, B. (2008). Promising practices in online learning: Using online learning for at-risk students and credit recovery. *North American Council for Online Learning.* Retrieved from http://www.k12hsn.org/files/research/Online_Learning/NACOL_CreditRecovery_PromisingPractices.pdf.

Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2013). *Keeping pace with K-12 online and blended learning: A review of state-level policy and practice*. Evergreen Education Group. Retrieved from http://kpk12.com/cms/wp-content/uploads/KeepingPace2012.pdf

Watson, J., & Ryan, J. (2007). *Keeping pace with K-12 online learning: A review of state-level policy and practice*. Evergreen Education Group. Retrieved from http://www.kpk12.com/cms/wp-content/uploads/KeepingPace_2007.pdf

Wei-Fan Chen. (2012). An investigation of varied types of blended learning environments on student achievement: An experimental study. *International Journal of Instructional Media, 39*(3), 205-212.

Wilson, V., Little, J., Coleman, M. R., & Gallagher, J. (1998). Distance learning: One school's experience on the information highway. *The Journal of Secondary Gifted Education, 9*(2), 89-100.

Wormeli, R. (2007). *Differentiating: From planning to practice grades 6-12*. Portland, ME: Stenhouse Publishers.

Appendix A

Interview Questions

1. What is the enrollment of your school in grades 9-12?
2. Would you describe your school as rural, urban, or suburban?
3. Describe your role in your school's curriculum management.
4. How does your school identify gifted and talented students? What criteria does your school use to classify students as gifted and talented?
5. For what period of time has your school been using blended learning for gifted and talented students? What is the history behind using blended learning for gifted and talented students?
6. Please describe how your school currently uses blended learning for gifted and talented students.
7. In which specific classes does your school use blended learning for gifted and talented students? What factors contribute to blended learning being used in these classes and not others?
8. How do your teachers obtain their curriculum for the blended learning component of their classes?
9. If teachers develop their own curriculum, do they receive any form of professional development for training on how to develop the curriculum? Are they given compensation or extended time to develop the curriculum?

10. If the curriculum was purchased, what was the source of the curriculum? Describe the selection process that resulted in your district choosing this curriculum.
11. What factors limit the use of blended learning for gifted and talented students in your school?
12. What do you see as possible solutions to these limitations?
13. Do you have honors or advanced courses for your gifted and talented students? Are blended approaches used in these courses?
14. Are blended approaches used more with gifted and talented students than other populations of student in your school? If so, why?

Appendix B

@ 10:20 AM central wed. 5/13 Director.

Hergenrader Interview Questions

1. What is the enrollment of your school in grades 9-12?
   District 1300 Kids 60 students
2. Would you describe your school as rural, urban, or suburban? suburban ≈
3. Describe your role in your school's curriculum management. Director
4. How does your school identify gifted and talented students? What criteria does your school use to classify students as gifted and talented? → Yes... GT coordinator works K-12 Variety - parent teacher initiated
   ↑ already identified
5. For what period of time has your school been using blended learning for gifted and talented students? What is the history behind using blended learning for gifted and talented students? 4 years - see notes
6. Please describe how your school currently uses blended learning for gifted and talented students. 1-2 meetings w F to f - rest w/ online & projects
7. In which specific classes does your school use blended learning for gifted and talented students? What factors contribute to blended learning being used in these classes and not others? All blended
   Some more structured → Projects very individualized, but standards based
   ↓
   Science - more, but
8. How do your teachers obtain their curriculum for the blended learning component of their classes? Math - canned
   Rest - individualized

9. If teachers develop their own curriculum, do they receive any form of professional development for training on how to develop the curriculum? Are they given compensation or extended time to develop the curriculum?

Curriculum time - but all teachers here from start & now tweak instead of creation from start.

10. If the curriculum was purchased, what was the source of the curriculum? Describe the selection process that resulted in your district choosing this curriculum.

Alecs-Math - really like the program, kids work through on own, mastery based
Schoology - Student mgmt → Group instruction minimal

11. What factors limit the use of blended learning for gifted and talented students in your school?

1) Perception - not racism or isolated but that is the perception
2) Dev. Community
3) Technology - Grant fund 3 years of federal funding
Planning & impl
- funded P.D., curr., technology needs

12. What do you see as possible solutions to these limitations?

1) Interviews
2) "
3) Grant, show benefits & B easier to

13. Do you have honors or advanced courses for your gifted and talented students? Are blended approaches used in these courses?

AP Classes - Social Studies & English
↳ blended

14. Are blended approaches used more with gifted and talented students than other populations of student in your school? If so, why?

All

Background

* HS 9-12 60 Students 4th year

75 next year

2 Goals

® Global perspective

® Leadership

- Field exp
- Internships

Content area - 1-2 meetings per week

- rest is online / ind. work

Semester long - inquiries

½ research

½ C.T. - analysis, comprehension

Originally,

District plan - online school

Realized not best env. for most students

® F2F & community important, so went hybrid

7 years ago - was directed to transform district

Feasability study → Global → Choices, more successful

&

Fine Arts

Most teacher-led

Looking back .....

Anything done differently.....

- Logistically - so many different tools
- use quite a few different

⊛ Crucial to have staff on board

- not top down
- group mentality & flexibility
- team work work.

New teacher - definitely learning curve

Can't teach mindset

- need growth mindset