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Blended Learning Showing Gains

Jessica Lynn Becker
brownjl003@gmail.com

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Blended Learning Showing Gains

Jessica L Becker

Concordia University, St. Paul

Master of Arts in Educational Leadership

ED 590: Research & Complete Capstone Cohort #871

Professor Sharon Meyerring

Dr. Phyl Burger

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Abstract

In light of what is known about how children learn and the use of technology in society, blended learning is proving to be an effective teaching strategy to improve student academic achievement. Blended learning is a combination of digital technology with face-to-face direct instruction. The purpose of blended learning instruction is to combine the benefits of face-to-face direct instruction with the personalization and collaboration of digital technology. Blended learning comes in many different models that meet the many needs of teachers and school districts. It has succeeded in improving student academic achievement in different subject areas by allowing students to collaborate with each other along with giving the teacher more time for individual remediation and small group time with students. The unique way that blended learning personalizes instruction and is flexible to all learners and teachers is what makes it successful in achieving higher academic growth in the United States and other countries, as well as low socio-economic regions.

Keywords: blended learning, rotation model, a la carte model, enriched-virtual model

Blended Learning Showing Gains

Growing class sizes, diminishing resources, and pressure to get higher scores every year on standardized testing are all valid issues that plague current teachers. With teachers finding themselves overwhelmed with the pressures to do more every year with less of a budget and more students, where do they turn to find a solution? Letting the student take control of their learning while utilizing technology, is one-way teachers are solving this ever-increasing issue. Blended learning is an amazing way to do just that.

Blended learning is the integration of providing students a personalized pathway, allowing students to participate in learning, letting students create, and giving students an opportunity to collaborate with others (Tucker, 2012). Combining the typical teacher lead instruction with a program that gives assignments and grades and then adding in a web location where students can look up topics, join discussions, participate in online quizzes, and collaborate with others is the most successful learning environment, this is also exactly what a blended learning classroom is (Baragash & Al-Samarraie, 2018).

Scope of Research

Improving student academic achievement is something that teachers and school districts strive for. Finding a successful way to improve student learning in kindergarten to twelfth grade is a challenge. Blended learning is a newer academic model that improves student academic achievement while incorporating technology. The focus of this study is to address how blended learning has succeeded in improving student academic achievement by incorporating face-to-face instruction with online learning.

Importance of the Study

Every year district's budgets get tighter and the learning standard is raised. The pressure to do better with less is felt on teachers in the elementary, middle, and high schools. Blended learning is a way that a teacher can have a one-stop-shop for how to reach everyone with fewer resources and more expectations. A teacher can utilize what they are already using in their classroom and tie it directly into blended learning. Blended learning frees up time for the teacher and allows them to work with their students in small group settings giving students more individualized instruction.

Technology, communication, and cooperation are our future. Every year technology improves and becomes more a part of every American's life. Technology, communication, and cooperation are a part of our world, they should be a part of our school too. In light of what is known about how children learn and educational policy and practice, educators' can best lead in educational settings today by being a leader and using technology, communication, and cooperation. Blended learning is just the tool everyone can use to bring technology, communication, and cooperation into a student's education all while improving a student's level of achievement.

"We are in a moment in education when our schools can determine if they are Netflix or Blockbuster, Amazon or Borders, Samsung or Blackberry" (Tucker et al., 2017, p. 9). Education has been falling into the Borders category. It is time for a change. Blended learning is the change that will help educators go from Borders bookstores to Amazon in their classrooms.

Research Question

Is blended learning creating more personalized instruction while improving student academic achievement, even in students from low socio-economic backgrounds?

Connection to the Program Essential Question. In light of what is known about how children learn and the use of technology in society, is blended learning proving to be an effective teaching strategy to improve K-12 grade student academic achievement in today's society?

Definition of Terms

Blended learning is a formal education program that has at least a part of instruction completed through online learning and at least a part of the students' instruction in a supervised brick-and-mortar location away from home. In blended learning time, place, path, and/or pace of the instruction is in the student's control (Tucker et al., 2017). Simply stated, blended learning is a combination of face-to-face instruction and technology, where a student is taking some control of their learning experience.

The Rotation Model is where students rotate on either a fixed or teacher's discretion rotation. At least one of the rotations needs to be online learning. Station rotation, lab rotation, flipped classroom, and individual rotation are a few of the sub-models of the rotation model (Watson et al., 2015).

The Flex Model is where students are mostly in a brick-and-mortar building with a teacher in the room. In the flex model, a student moves through a flexible course depending on their needs. These courses are mainly online and the teacher is there to offer help (Watson et al., 2015).

The A La Carte Model is when a student goes to a brick-and-mortar school, seeing a teacher face-to-face but also selects to take courses that are completely online. These online courses can be completed in the brick-and-mortar building (Tucker et al., 2017).

The Enriched-Virtual Model is when students are required to have some face-to-face learning in a brick-and-mortar school but then the students are completely free to complete their coursework remotely online (Watson et al., 2015).

Summary

Blended learning is an academic model that not only helps increase student academic achievement but also makes a much-needed tie to technology without losing valuable face-to-face instruction. With technology continuing to gain importance in society, it is important that what is learned in school ties into what they will be using once they enter the workforce. Blended learning has many different faces to meet the need of the teachers and/or students. The Rotation Model may work for one teacher but then the Flex Model may fit with the teaching style of another teacher better. The A La Cart and Enriched-Virtual Model may fit the needs of high school students more than the elementary or middle school. Whether the Rotation Model or A La Carte, blended learning is helping students take some control of their learning and reach their full potential.

The following chapters will outline different styles of blended learning and examine how blended learning is making a positive impact on student academic achievement. This will be accomplished by analyzing different research studies and scholarly journals that examined the effects of blended learning on elementary, middle, and high school students' academic achievement.

As with any research study, identifying limitations to the studies and communicate future steps that will help shape student's success in achievement in today's education. The limitations of blended learning will also be assessed as well as what the next steps should be for blended learning in the academic future.

Chapter Two: Literature Review

Blended learning is the combination of face-to-face, teacher-led instruction with digital technology to provide personalized instruction. The goal of blended learning is to combine all the advantages of face-to-face instruction with all the rewards of online learning. In blended learning, students have some degree of control over content, pace, time, and location with the incorporation of digital technology (Tucker et al., 2017). The face-to-face instruction of blended learning allows for collaboration between students, individual remediation with the teacher and permits more one on one time with the teacher. The personalization of instruction using both face-to-face and digital technology helps boost student academic achievement (Balentyne & Varga, 2017; Kazu & Demirkol, 2014; Saritepeci & Çakir, 2015). Within blended learning, there are different methods of implementation that schools and districts can choose from to fit the needs of their unique school. This flexibility and personalization in blended learning is what makes it effective in achieving higher academic growth in the United States and other countries, as well as low socio-economic regions. (Evergreen Education Group, 2015; Jacobs, 2014; Macaruso et al., 2019; Prescott et al., 2018).

Diverse Methods

There are four different methods of blended learning, the Rotation Model, the Flex Model, the A La Carte Model, and the Enriched-Virtual Model (Watson et al., 2015). In Middletown, NY the Rotation Model method of blended learning instruction was used in 33 kindergarten through fifth-grade classrooms to see if using the blended learning Rotation Model would have a positive effect on student academic achievement (Evergreen Education Group, 2015). During the quantitative study, the blended learning students, as well as the students in the traditional classroom, took the NWEA and MAP at the beginning and the end of the school year.

In mathematics for grades kindergarten through fifth-grade, with the exception of second-grade, the classrooms that used the blended learning Rotation Model showed more growth than the classrooms that used the traditional face-to-face method (Evergreen Education Group, 2015). The students that participated in the blended learning classrooms had a 17.2% higher mathematics score than the traditional face-to-face instruction student (Evergreen Education Group, 2015). For reading, every grade kindergarten to fifth-grade, that took part in blended learning instruction had greater growth than their traditional face-to-face classroom peers. In reading the classrooms that used the blended learning Rotation Model showed 18.5% higher test scores than their peers who did not use the blended learning instruction model (Evergreen Education Group, 2015).

In a recent 2019 study completed by Fazal and Bryant (2019), the blended learning Rotation Model that the Evergreen Group (2015) studied was again put to the test. This quantitative study investigated the effects that the blended learning Rotation Model would have on student academic achievement. Fazal and Bryant (2019), broke 413 sixth grade Texas mathematics students apart into two groups, one that was taught using the blended learning Rotation Model and the other used the traditional face-to-face method of teaching. Student academic achievement was based on the end of the year state assessment, which for Texas is the State of Texas Assessments of Academic Readiness (STAAR) and student growth was evaluated using the Measures of Academic Progress assessment (MAP) mathematics assessment for sixth grade (Fazal & Bryant, 2019).

Fazal and Bryant (2019) found that students in blended learning classrooms scored higher on the MAP mathematics assessment. This study discovered that implementing the Rotation Model of blended learning during mathematics class, especially for students who are behind

academically, would benefit students. Fazal and Bryant (2019) found that during blended learning, students become direct consumers and develop at their own pace based on their academic success. This helps teachers create a differentiated learning classroom that really meets the needs of all students (Fazal & Bryant, 2019).

Lai and Hwang (2016) performed another quantitative study on the blended learning Rotation Model to analyze its effectiveness on student academic achievement. The study examined two classes of fourth-grade students, one class was the experimental group that participated in the blended learning Rotation Model while the other was the controlled group that used traditional face-to-face instruction. The blended learning Rotation Model group had 20 students and the traditional face-to-face instruction group had 24 students (Lai & Hwang, 2016). The students in the experimental blended learning group would have out-of-class learning which was an e-book to read and then quizzes created by the teacher to be completed online as well. The students were to finish this online work at home before beginning their in-class activities the next day (Lai & Hwang, 2016).

In the study performed by Lai and Hwang (2016), a pre and posttest was given to both the experimental blended learning Rotation Model group and the controlled traditional face-to-face group. The traditional face-to-face group's mean score for the posttest was 80.5 while the blended learning Rotation Model group's mean score for the posttest was 90.2 (Lai & Hwang, 2016). This study proved that the blended learning Rotation Model positively affected the academic achievement of the students over the traditional face-to-face method. The study also found that student's learning with the blended learning Rotation Model were active learners and received personalized feedback from their learning (Lai & Hwang, 2016).

Another quantitative study using the blended learning Rotation Model was completed in Royersford, PA at Spring City Elementary (Evergreen Education Group, 2015). To see how blended learning improved mathematics and science achievement, 130 students in kindergarten through fourth grade were taught blended learning using the Rotation Model for a year. The Pennsylvania System of School Assessment (PSSA) was used to compare students' test scores (Evergreen Education Group, 2015).

This study found not only did the students' test scores on the PSSA rise but students on Individual Education Plans (IEPs) made the most gains (Evergreen Education Group, 2015). Spring City Elementary students, using the blended learning Rotation Model, test scores rose 24 points in mathematics to 85.4% proficient or advanced. The same students using blended learning science scores rose 27 points to 90% proficient or advanced. Students in the blended learning Rotation Model classes on IEPs showed the greatest gains from the blended learning instruction, their score rose 29% from their previous year scores, which was three points better than the average increase for the total school population (Evergreen Education Group, 2015).

The blended learning Rotation Model was again studied by another group, this time Kostaris et al. (2017). This study looked at two eighth grade Information and Communication Technologies classes. There were 46 students that participated in the study, 23 students in the control traditional face-to-face group, and 23 students in the blended learning Rotation Model group (Kostaris et al., 2017). Both classes were set up as similarly as they could be; both classes used the project-based approach to instruction. The traditional face-to-face group was taught using instruction primarily through lecture, then the students were to use the time remaining for their project-based activity. After each class, the traditional face-to-face group was then assigned homework to be completed each night at home. The blended learning Rotation Model group was

given a set of learning activities they were to complete prior to class, the activities were mainly educational videos and online self-assessment quizzes. Then, when the students came to the face-to-face part of blended learning the teacher gave them some short feedback and remediation from the night before. After this feedback, the students were then directed to work on their project-based activities. This structure gave the blended learning Rotation Model group of students more time for their project-based activities (Kostaris et al., 2017).

This study found that the blended learning group using the Rotation Model displayed a statistically substantial increase in students' motivation (Kostaris et al., 2017). It also found that students were able to connect the learning development to their own interests and thus improving their sense of accomplishment. The blended learning Rotation Model group showed that maximizing the effectiveness of classroom time, with students completing work ahead of time at home, allowed time to capitalize on collaborative activities (Kostaris et al., 2017).

Student Achievement

The previous studies looked at a specific model of blended learning and showed how blended learning using that particular model impacted a student's motivation, connection to a topic, and teacher utilization of time, Cakir and Bichelmeyer (2016) took a different approach to see how effective blended learning was on student academic achievement (Evergreen Education Group, 2015; Fazal & Bryant, 2019; Kostaris et al., 2017; Lai & Hwang, 2016). A large scale quantitative evaluation study was put together by using Cisco Certified Network Associate (CCNA) to evaluate the effects of instructor characteristics on student academic achievement using blended learning. CCNA is a computer networking education to students around the world.

The qualitative study observed 226 instructors and their 3299 students (Çakır & Bichelmeyer, 2016). In order to be a part of this study, a teacher had to be a CCNA high school

instructor in the United States with more than five students. That way all the teachers were trained using the same program with the same expectations. Once the teacher was accepted into the program, all of their students were in the program as well. The instructors had to complete a five-part survey (Çakır & Bichelmeyer, 2016).

This in-depth study set out to prove if teacher qualifications really matter when teachers are given the same blended learning curriculum and used it with fidelity. If the standards are taught in the blended learning curriculum, the teacher qualifications do not matter (Çakır & Bichelmeyer, 2016). After all the studies were turned in, the years a teacher has taught, their education, and the number of times teaching the subject do not matter. It is teachers using the blended learning curriculum with fidelity that had the greatest impact on student academic achievement (Çakır & Bichelmeyer, 2016).

Cakir and Bichelmeyer (2016) analyzed how teaching credentials played a part in student academic achievement with blended learning. Pace and Mellard (2016) did not focus on the teachers of blended learning, they focused purely on the effects blended learning would have on student academic achievement with blended learning. During the qualitative study, two blended learning schools and one traditional school in a large metropolitan area in Michigan were observed. The researchers compared the MAP assessment in English Language Arts (ELA) growth scores of sixth grade ELA students in these three schools (Pace & Mellard, 2016).

Pace and Mellard (2016) did not see the results they were looking for, in their study blended learning students had the same rate of academic growth as the traditional school. What Pace and Mellard (2016) found was that there was actually a drop in all three schools' MAP ELA scores from January to May. The study suggests that the drop in scores could have been from fatigue after just taking Michigan's state assessments. It also could have been due to the

number of students tested, 602 students were tested in the fall but only 495 students were tested in the spring. No matter the reason, the validity of the study is in question (Pace & Mellard, 2016).

The Pace and Mellard study may not have seen the results predicted on student academic achievement, however, Kazu and Demirkol (2014) blended learning study has a different result on student success. This study assessed 54 biology twelfth-grade students. There were 27 in the control traditional face-to-face group and 27 in the experimental blended learning group. The biology students participated in a pretest which was then later compared to their posttest at the end of the study. The control group was taught using traditional face-to-face instruction and had 18 hours of biology instruction with a teacher. The experimental blended learning group had 12 hours of face-to-face biology instruction with an instructor and 6 web hours in total (Kazu & Demirkol, 2014). At the conclusion of the quantitative study, the students who participated in the blended learning biology instruction were academically more successful than the students who studied in the traditional face-to-face environment. It was observed that when face-to-face instruction is combined with online instruction the academic achievement increases (Kazu & Demirkol, 2014).

Saritepeci and Cakir (2015) conducted another blended learning study that had comparable academic achievement results to Kazu and Demirkol (2014) but this quantitative study was in the academic area of social studies, not biology. Saritepeci and Cakir (2015) studied 107 seventh-grade students in four different middle schools. The experimental blended learning group consisted of 52 students and the control traditional face-to-face group consisted of 55 students. The study took place over a six-week period with the control group using traditional face-to-face instruction and the experimental blended learning group using a combination of

face-to-face instruction and e-learning (Saritepeci & Çakir, 2015). For the e-learning portion of the study Modular Object Oriented Dynamic Learning Environment, Moodle, was used. The experimental blended learning group of students was trained in the use of Moodle before the study began (Saritepeci & Çakir, 2015).

At the end of the study, the control traditional face-to-face group's posttest average score was 10.25 compared to the experimental blended learning group's average score of 12.36 (Saritepeci & Çakir, 2015). The study proved that blended learning has a positive effect on academic achievement in social studies. Saritepeci and Çakir (2016) also discovered the development of student engagement was more positive in the blended learning group compared to that of the traditional face-to-face control group. So, not only did this study discover that blended learning had a positive effect over academic achievement in social studies, blended learning was also more effective in the development of engagement in social studies (Saritepeci & Çakir, 2015).

Like Saritepeci and Cakir (2016), Balentyne and Varga (2017) wanted to look at how blended learning instruction had a positive effect on academic achievement. They took their study a step farther, Balentyne and Varga (2017) wanted to see how blended learning would affect the academic achievement and attitude of high ability students in mathematics. The study looked at 23 high ability eighth-grade mathematics students from a small suburban middle school in the Midwestern United States (Balentyne & Varga, 2017). Eighth-grade students were chosen for this study due to the fact that this age group often begins to experience a negative attitude towards mathematics. This quantitative study measured the eighth-grade students' academic growth using the MAP assessment in mathematics and the students' attitudes toward

mathematics using the Attitudes Toward Mathematics Inventory (ATMI) (Balentyne & Varga, 2017).

During the course, the blended learning students completed work independently online both at home and at school. The course used Accelerated Math as a part of its blended learning component (Balentyne & Varga, 2017). When students wherein school they received direct face-to-face instruction or remediation from a teacher and participated in small groups with their peers. Each student was also to complete 120 minutes of online mathematics work a week at home (Balentyne & Varga, 2017). This was a self-paced course, with the help of blended learning, so some of the students were able to complete more than two full advanced mathematics courses in one school year. The study found that not only were the blended learning high ability students able to complete more mathematics courses in a year, the students also had a positive attitude toward mathematics (Balentyne & Varga, 2017). The study discovered that blended learning instruction had a statistically important positive relationship between achievement growth and attitudes toward mathematics at the end of the course (Balentyne & Varga, 2017).

Student and Teacher Perspective

After examining how blended learning has a positive effect on student academic achievement, Tuitt and Ku (2018) took a different approach to study blended learning. They wanted to explore the student's perspective on blended learning. In a qualitative study 31 third graders in a Title I elementary school used the blended learning Rotation Model for a year. The classroom was set up with different blended learning stations with students being able to use one of ten devices. The devices were used for the district's learning management system, Schoology. The students could also use the devices for the Wonders and the Zearn website (Truitt & Ku,

2018). During rotations, students either worked with the teacher in a small group, worked independently, worked as a collaborative group, or worked on the computers. The students rotated between three blended rotations a day (Truitt & Ku, 2018). The study was set up with two different methods of obtaining data. The first method was student focus group interviews and the second method was student questionnaires (Truitt & Ku, 2018).

From the interviews and questionnaires, it was determined that the students thought the best part of blended learning was the content, technology, learning, and that learning was fun. The students expressed that they enjoyed the way the information was presented to them and they appreciated the variety of activities (Truitt & Ku, 2018). During blended learning rotations, the students were more willing to complete the learning activities because of their enthusiasm. The students appreciated being able to use technology during the blended learning Rotation Model. During the study, the main theme that developed was students expressing the ease to get help when they needed it. They stated they were able to get help from a collaborative group, the teacher, or the computer program (Truitt & Ku, 2018).

One perspective of blended learning is from the student, another is from the teacher. In a recent qualitative study, 81 undergraduate teachers participated in a class to discover the best way to prepare teachers to teach personalized instruction through blended learning (Arnesen & Graham, 2019). The class was set up so the teachers would learn through experiences. Teachers completed personalized blended learning lessons themselves to gain a perspective of blended learning in the classroom.

The teacher students were given a survey at the beginning and the end of the course to see how best to prepare teachers for personalized blended learning instruction (Arnesen & Graham, 2019). The teacher students felt their understanding of blended learning increased with

their experience, as did their aspiration and interest in implementing blended learning in their classrooms. After completing the class the teacher students had increased confidence in implementing blended learning and in their ability to collaborate with their students (Arnesen & Graham, 2019).

In another study observing the student perspective of blended learning Yapici and Akbayin (2012) examined student's attitudes toward the internet while exercising blended learning as well as blended learning's effect on student academic achievement in ninth grade biology. In this study of 107 students, 47 students were in the experimental blended learning group and 60 students were in the traditional face-to-face control group. A 40 item achievement test was analyzed as well as the students' responses to items regarding the internet. For the response to the internet, the students were to use a scale one to five, five representing I completely agree and one representing I completely disagree (Yapici & Akbayin, 2012).

The study displayed that students in the experimental blended learning group had a higher level of academic achievement than that of the traditional face-to-face control group. In regards to blended learning's effect on student's attitudes towards the internet, blended learning also contributed more significantly (Yapici & Akbayin, 2012). Students found that they understood the subject of biology better because of the activities and videos that were provided using blended learning instruction. The students felt they could self-assess better while learning in a blended learning environment due to the quizzes on the websites. The students using blended learning also found that they collaborated more with peers and they were able to pace the lessons to better fit their needs. This study found that blending learning has a positive effect on student academic achievement in biology as well as students' attitudes towards the internet (Yapici & Akbayin, 2012).

After examining studies that look at the student perspective and another study that looked at the teacher's perspective, the study by Lam et al. (2018) looked at both the student and the teacher's perspective of blended learning. In a seven-week study, 52 students were placed in an experimental blended learning instruction class and compared to 20 students in a traditional face-to-face direct instruction class (Lam et al., 2018). The purpose of the study was to see the effect blended learning had on argumentative writing.

The results of the study recommend blended learning instruction for teaching argumentative writing. The teacher of the classes felt that blended learning aided her in instructing better than traditional direct face-to-face instruction. The teacher felt that in a traditional direct instruction class the students just wait for the teacher's ideas and copy the teacher's example (Lam et al., 2018). Whereas in a blended learning instruction class the teacher felt the students were able to self-monitor and self-correct better. When the students were asked their opinions on blended learning instruction, all the blended learning students favored blended learning instruction and felt they developed greater confidence in their writing through blended learning instruction (Lam et al., 2018).

Impact on Low Socio-Economic Students

The previous studies have had a positive effect on student academic achievement, Prescott et al. (2018) wanted to know if blended learning instruction would have the same effect on student reading achievement in a low socio-economic area. In an urban Title I elementary school, 641 students kindergarten through fifth- grade participated in a study to understand the effects of blended learning instruction in a low socio-economic area. The school studied has one of the country's largest populations of English Language (EL) students. Of the students in the study, only 24% scored proficient or above on the state reading and language arts assessments

before blended learning instruction (Prescott et al., 2018). The school applied blended learning instruction for its reading program for one year. During this year, the Group Reading Assessment and Diagnostic Evaluation (GRADE) Assessment was given at the beginning of the year for a pretest and again in the spring as a posttest (Prescott et al., 2018).

According to Prescott et al. (2018), blended learning instruction had a positive effect on standard score gains on the GRADE reading test. What this test also showed was that a Title I school with students who, according to their GRADE score, normally struggle with reading proficiency beginning in kindergarten, showed gains in reading growth with the use of blended learning instruction (Prescott et al., 2018). This study shows that blended learning instruction is effective or more effective for students who were EL students. The gains in reading with blended learning instruction were at every grade level. This quantitative study found that blended learning instruction provides benefits for students who are from low socio-economic backgrounds as well as students who are EL (Prescott et al., 2018).

Similar to Prescott et al. (2018), Jacobs (2014) also conducted a study to see the effectiveness of blended learning instruction on students from low socio-economic backgrounds. The qualitative study was conducted in Oakland, CA at four different schools. One was an elementary school and the other three were middle schools. These schools were chosen because they were all district-run schools in high-poverty, high-crime areas (Jacobs, 2014).

The teachers were asked open-ended questions about how they felt the blended learning program was going and how it was affecting the students (Jacobs, 2014). The teachers expressed that the students were highly engaged with blended learning instruction and they found the students were beginning to improve on their assessments. The teachers saw that the students

were becoming more successful in understanding the reading material and were taking more ownership of their learning because of the blended learning program (Jacobs, 2014).

In another study looking at the effects of blended learning instruction on students from low socio-economic backgrounds, the District of Columbia Public Schools implemented the use of a blended learning program in ten elementary schools, four middle schools, and three high schools. The student population for the District of Columbia Public Schools was 76% of students qualify for free and reduced-price lunch and the graduation rate was only 58% (Evergreen Education Group, 2015).

With the implementation of blended learning instruction, mathematics scores rose 19 points, compared to five points in the traditional face-to-face group (Evergreen Education Group, 2015). Students in the blended learning reading program gained five points more on average than that of the traditional face-to-face group. The blended learning students also increased seven points more on average in mathematics (Evergreen Education Group, 2015). The eighth-grade students improved their mathematics score by five points and 11 points in reading if they were in the blended learning program, this is one point higher in mathematics and two points higher in reading than the national average (Evergreen Education Group, 2015). Not only has blended learning positively affected academic achievement in the District of Columbia Public Schools, but it has also increased attendance and decreased truancy (Evergreen Education Group, 2015).

Following along with the last three studies, Macaruso et al. (2019) also studied the effects blended learning had on students from low socio-economic backgrounds and their academic achievement. Macaruso et al. (2019) focused their quantitative study on how blended learning will help close the achievement gap in young students. This study took place over three years, following 68 kindergarten students from kindergarten to second grade. The students were from

an urban Title I elementary school. Of the 68 students in the study, 74% of them qualified for free or reduced-price lunch (Macaruso et al., 2019). During the three years, the GRADE assessment was given a total of six times, once in the fall and again in the spring of every year (Macaruso et al., 2019).

Macaruso et al. (2019) found that blended learning had a positive effect on student academic achievement and aided in closing the achievement gap. They found that the students had a summer slide each year, where the student scores from the spring dropped in the fall, but due to blended learning instruction, the students were able to continue to make considerable gains once school resumed (Macaruso et al., 2019). One factor that the study attributed to the impact blended learning made was that the program required less direct teacher-led instruction (Macaruso et al., 2019). This would be helpful for larger class sizes, with blended learning instruction the young students are receiving personalized instruction with online programs and the teacher would be able to see more students in a smaller setting offering specific remediation when needed. With less direct teacher-led instruction the teachers had more time to provide this targeted, small group instruction leading to the considerable gains seen with blended learning (Macaruso et al., 2019).

Conclusion

Overall in the studies examined, blended learning was shown to have a positive effect on student learning. Blended learning, no matter the method delivered, has shown to give students some amount of control over the content, pace, time, and location with the combination of digital technology and face-to-face instruction. Due to the mixture of face-to-face and digital technology, the personalization of instruction has boosted student academic achievement. Blended learning is working successfully in helping to close the achievement gap with EL

students as well as low socio-economic students. Blended learning is the teaching tool to give teachers the flexibility to personalize education for each of their unique students' needs and the freedom of time teachers need to be able to work with small groups.

Chapter three will review the positive impact blended learning is developing on the academic achievement of all students. It will recap the findings of the previous studies to show just how important the blending of face-to-face instruction with online instruction to create blending learning is on student personalization of instruction, academic achievement as well as an attitude toward learning. As the digital age continues to advance and world pandemics threaten our society, blended learning has never been as critical as it is today.

Chapter Three: Summary

The qualitative and quantitative studies examined in the literature review showed how implementing blended learning, no matter whether it was the Rotation Model, the Flex Model, the A La Carte Model, or the Enriched Model (Watson et al., 2015), have all positively affected student academic achievement. The studies reviewed how blended learning has increased academic achievement in students from low-socioeconomic backgrounds. The studies found that students from kindergarten to twelfth grade in different academic areas of study all increased their academic achievement with the practice of blended learning instruction.

Review of the Proposed Problem

With the growing amount of implementation of blended learning and in light of what is known about how children learn and the use of technology in society, is blended learning proving to be an effective teaching strategy to improve kindergarten to twelfth-grade student academic achievement in today's society? This is an important question to answer because blended learning directly affects the way teachers present curriculum. The combination of direct

face-to-face instruction with digital technology to form blended learning is a different way to approach instruction. Understanding this strategy of teaching is important due to the effects it has on student academic achievement.

Importance of the Topic

According to Cakir and Bichelmeyer (2016), the way curriculum is taught has a greater effect on student academic achievement than the years a teacher has taught, their education, and the number of times teaching the subject. Blended learning is a different approach to teaching curriculum with the grouping of digital technology and face-to-face direct instruction. Blended learning uses personalization and student control over the education that digital technology along with providing more small group individualized face-to-face remediation with the teacher. Providing the teacher time to remediate and instruct in small group settings, giving students the time to collaborate with their peers and allowing students some control over their learning helps boost student academic achievement, even in low-socioeconomic regions.

Summary of the Main Points of the Literature Review

Throughout the literature study, common themes in blended learning instruction occurred in numerous studies. The way instruction is delivered in a blended learning classroom leads to the personalization of lessons for students, the increase in student motivation and engagement, and the overall higher level growth of academic achievement. The research in this literature review suggests the positive effects of blended learning on student academic achievement.

There are four main models of blended learning instruction, in five studies that focused on the Rotation Model a common theme arose, student academic achievement grew with the implementation of blended learning (Evergreen Education Group, 2015; Fazal & Bryant, 2019.; Kostaris et al., 2017; Lai & Hwang, 2016). The use of the Rotation Model was tested in the areas

of mathematics, reading, and science, all produced the same positive outcome on academic achievement (Evergreen Education Group, 2015; Fazal & Bryant, 2019.; Kostaris et al., 2017; Lai & Hwang, 2016). In the study by Lai and Hwang (2016), they found that not only is student academic achievement positively affected by the use of the Rotation Model but the students became active learners who received personalized feedback from their teachers. Kostaris et al (2017) found another positive to the Rotation Model, students were more motivated and connected to learning. The study attributed the positive results from blended learning to the way the teacher was able to maximize the effectiveness of the instruction. In Spring City, the study found that not only did students' academic achievement grow, but the students on IEPs grew, even more, showing again how the blended learning Rotation Model is on all students' academic achievement (Evergreen Education Group, 2015).

As previously stated Cakir and Bichelmeyer (2016) found that the way curriculum is taught has a greater effect on student academic achievement than the years a teacher has taught, their education, and the number of times teaching the subject. The use of blended learning instruction proved that when digital technology and face-to-face direct instruction are combined student academic achievement grows (Balentyne & Varga, 2017; Kazu & Demirkol, 2014; Saritepeci & Çakir, 2015). Saritepeci and Cakir (2015) also found that when blended learning was implemented while teaching social studies the students were more engaged in their curriculum. Balentyne and Varga (2017) found another positive to blended learning instruction, students who normally would have a negative view of mathematics instead had a positive view of mathematics.

Not only are the results for student academic achievement proving the effectiveness of blended learning on student academic achievement but teachers and students alike had a positive

outlook on blended learning. Truitt and Ku (2018) found that students had more enthusiasm to learn and that students found it easier to get the help they needed with blended learning. Yapici and Akbayin (2012) found similar results with students, students understood the biology curriculum better with blended learning, could collaborate with peers, and self-assess easier. Lam et al (2016) found that students could self-correct their writing easier with blended learning. Students in this study also found that they had greater self-confidence. The teacher in the study noted that students were not waiting to copy her work, with blended learning they were developing their own ideas and thoughts along with greater achievement in the area of writing (Lam et al., 2016).

As mentioned earlier, blended learning has shown to have a positive impact on student academic achievement, even with students on IEPs. The Evergreen Education Group (2015), Jacobs (2014), Macaruso et al. (2019), and Prescott et al. (2018) all wanted to see what impact blended learning would have on students from a low-socioeconomic region. They all found that blended learning had a positive effect on student academic achievement. Two studies focused on younger students to see if blended learning could help close the achievement gap when students were young, they both found that blended learning can help in doing just that (Macaruso et al., 2019; Prescott et al., 2018). In the District of Columbia, the study found that not only did students have greater growth and academic achievement, but the truancy numbers also decreased and more students attended school (Evergreen Education Group, 2015).

According to the research in this literature review, blended learning is creating more personalized instruction while improving student academic achievement. Blended learning is an effective teaching strategy to improve kindergarten to twelfth-grade student academic achievement in today's society according to the research. Not only does blended learning

improve student academic achievement, but it also creates students who are more engaged and enthusiastic about the curriculum they are learning. In the next chapter, the application of blended learning has on education will be examined as well as what future studies for blended learning would be beneficial.

Chapter Four: Discussion/Application and Future Studies

The research has proven that blended learning is having a positive impact on student academic achievement when it is implemented no matter the subject area in which it is taught or the region of the world it is taught in. The mixture of digital technology and face-to-face direct instruction is a powerful combination. Blended learning is taking education to the world of technology while still incorporating what has worked in the past. It has a place in today's society as well in the future.

Insights Gained from the Research

After diving into the depths of blended learning through research studies that looked at a number of different aspects of blended learning, some results were predicted but other results were surprising. Blended learning is reaching out, positively affecting the growth of students' academic achievement. The effect that blended learning had on students with IEPs and EL students was surprising. The way that blended learning allows for smaller group work, personalized instruction, and more time with the teacher for remediation, the results should not have been so shocking.

The same goes for the results that blended learning had on students from low-socioeconomic backgrounds. Even in a large classroom, blended learning creates the opportunity for the personalizing of curriculum, students to work at their own pace, student collaboration,

and time for the teacher to work and instruct small groups of students all of these effects the success of blended learning for any classroom no matter the students' background.

Blended learning did not only affect the academic achievement of students, however, it also created a positive learning environment that fostered enthusiasm and motivated students. In a blended learning environment, students become more engaged in their curriculum and enjoy their subject area more. Due to the fact that students are actively engaged in their own learning, there is a flip from teacher-led instruction to student-led instruction. This flip allows the students to take control of their learning, allowing them to self-monitor and self-assess. In a learning environment that is motivated and engaged with students taking control of their own learning, it should not be shocking that attendance rates would increase and truancy would then decrease.

Application

This literature review reveals the success that blended learning has had on student academic achievement in different academic areas in kindergarten through twelfth grade. This study proves that if a school district is looking to boost academic growth, blended learning is a ticket for success. Blended learning has proven, through these studies, that the economic makeup of the district does not matter. If a district spends time investing in the training of its teachers in blended learning, academic growth will follow.

Not only did these studies prove that a kindergarten through twelfth-grade school district's academic achievement would grow, but it also showed how blended learning is a solution to time management for teachers. The implementation of blended learning gives teachers more time to work with small groups and really personalize the instruction of each student. When teachers are able to personalize instruction, students get to take ownership of their education. This makes learning fun again. When the students are having fun with their learning,

they invest more in their education, this shows both in the academic achievement students demonstrate with blended learning and student attendance. When love for learning is fostered, students bloom.

Recently in 2020, society experienced a pandemic to which the economy and schools were forced to shut their doors. Teachers had to teach from a distance to their students. Teachers met this challenge head-on. Blended learning is a tool that could ease this transition. If a teacher was already implementing blended learning in their classroom, most of the instruction and activities would remain constant for the students. The personalization of digital technology would already be in place, and students would be comfortable with the format.

Future Studies

As previously mentioned distance learning has forced its way into every school in the United States. With distance learning being a learning style that is so new, there is not any data on how blended learning could support student academic achievement during distance learning. A study on the effect that blended learning could have on student academic achievement during distance learning, or even inclement weather, should be considered. Students could still access all of the digital technology that the teacher already had in place and the teacher could replace face-to-face small group remediation and instruction with a video conference call.

In this literature study of blended learning, the Rotation Model was examined in great depth. The Rotation Model is not the only model in blended learning instruction, there are a total of four different methods. There four different methods of blended learning are the Rotation Model, the Flex Model, the A La Carte Model, and the Enriched-Virtual Model (Watson et al., 2015). An in-depth study on each of the other three models would be beneficial. Better yet, an in-depth study of each model and then a head to head comparison of each model would assist in

teachers, schools, and districts looking to implement blended learning. Each model of blended learning is different and benefits students differently. A deeper look at which students benefit the most from each blended learning model would increase student academic achievement at a greater rate.

Arnesen & Graham (2019) analyzed how to best train teachers in the instruction of blended learning. Blended learning is a different teaching style that incorporates digital technology with face-to-face direct instruction. The combining of these two systems could be a challenge for some teachers. More studies into the most effective way to train teachers in implementing this new method of instruction are important. Blended learning is the most effective when it is taught with integrity, Cakir and Bichelmeyer (2016) the way curriculum is taught has a greater effect on student academic achievement than the years a teacher has taught, their education and the number of times teaching the subject do not matter. If the way curriculum is taught is that important, then the most effective way to train the teachers who implement blended learning is just as important as implementing blended learning itself.

In closing, blended learning is the combination of face-to-face instruction with digital technology to provide personalized instruction. Blended learning intermingles all the benefits of face-to-face instruction with all the personalization of online learning. The research has proven that the flexibility and personalization of blended learning make it effective in a variety of subject areas for achieving greater academic growth in the United States and other countries, as well as low socio-economic regions. The past face-to-face instruction and the present digital technology combine in blended learning to make a commanding future for all students today.

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