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Blended Learning Versus the Traditional Classroom Model

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Blended Learning Versus the Traditional Classroom Model

Technology is taking over the way that people do things in all aspects of life. There is information at the fingertips of many with cell phones, iPads, computers, and even high tech watches. The technological age has struck many parts of society, but one of the large areas that technology is effecting in today's world is education. Administrators, teachers, and others involved in the educating of today's children grapple with how to incorporate and use technology in a way that serves student's best interests and furthers their learning. Sioux Center Community School District strives to meet the needs of all their students, while attempting to fulfil its mission of educating a whole student for a whole lifetime.

Educators can no longer prepare students for the future without incorporating technology, therefore, Sioux Center has committed to providing resources and support for teachers and students. The school district has rolled out 1:1 computers to grades 5-12 over the past five years. Grades 5-6 received a Dell Chromebook, and grades 7-12 received Dell laptops. This has allowed the district to really integrate technology into the classroom and begin to help students understand how to utilize these resources appropriately. The middle school has a group of teachers that are driven to integrate technology appropriately in ways that help students learn and prepare them for the future.

There is a plethora of technological resources, apps, programs, and implementation strategies that makes incorporating technology in the classroom very overwhelming. However, peeling back the layers and reminding teachers that at the end of the day teachers are teaching to be able to serve students the best they can in whatever way possible. Technology has opened the door and provided teachers with options that were never possible and has allowed them push that pedagogical envelope to meet the needs of an ever changing and diverse student population.

Students learn in many ways and with technology teachers are able tap into some of those avenues to help engages kids.

The sixth-grade math classroom currently uses a primarily direct instruction approach with the use of technology to help students practice. In an effort to increase learning, bridge the gap for lower level learners, provide a way to reach the English language learners (ELL), and push the high achieving students to new levels, the sixth-grade math instructor is looking to use a more blended classroom approach. According to the Clayton Christensen Institute (2017), blending learning is "a formal education program in which a student learns at least in part through online learning, with some element of student control over time, place, path, and/or pace; at least in part in a supervised brick-and-mortar location away from home; and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience" (para. 1). The blended learning classroom can come in many forms, but the purpose of this research is to determine if this approach is best for all students and their learning. The primary question being asked for this action research project is: Do students learn better in a blended classroom environment or a traditional classroom environment with direct instruction?

Literature Review

Students coming to school have a wide variety of needs, interests, background knowledge, and support creating this challenge for teachers to differentiate to these needs while increasing all student's level of understanding. The idea of school is moving away from the one-size-fits-all lesson plan and assignment-imploring teachers to step out of their comfort zone and push new ideas in order to further the learning of each one of their students. No longer can you teach the middle and expect everyone to fly because the level of understanding can be drastically

different from class to class, table to table, seat to seat. This has created a conversation amongst teachers on how we are going to meet the needs of all these students, and what is a feasible way to approach these challenges. Teachers are exploring other avenues of presenting information in ways that allow the lower-level students a chance to learn as well as the chance to push the upper-level students.

One of the ways that teachers are attempting to meet the needs of their students is by implementing a blended classroom approach. This approach can take on many different looks from classroom to classroom; however, there is always an element of online learning combined with offline activities. The Christensen Institute talks about four models that almost all blended learning in the classrooms can be grouped into. The first is called the rotation model. Students "rotate on a fixed schedule or at teacher's discretion between learning modalities, at least one of which is online learning" (Christensen Institute, 2017, para. 3).

The second model is the Flex model where learning is primarily done online, but there are also times where students work offline. This model allows students to "move on an individually customized, fluid schedule among learning modalities. The teacher of record is on-site, and students learn mostly on the brick-and-mortar campus, except for any homework assignments. The teacher of record or other adults provide face-to-face support on a flexible and adaptive as-needed basis through activities such as small-group instruction, group projects, and individual tutoring. Some implementations have substantial face-to-face support, whereas others have minimal support" (Christensen Institute, 2017, para. 8).

The third type of blended learning described by the Christensen Institute is an A La Carte model which is a course done entirely online that is a part of the student's schedule at a school where he or she has other classes that are face-to-face. This is not like full-time online learning

because the student's entire schedule is not done online (Christensen Institute, 2017). The last blended learning type is called the Enriched Virtual model where students are required to meet for classes, but a majority of their learning and practice is done online. The work does not have to be completed in the classroom however and students do not meet every day together (Christensen Institute, 2017).

Regardless of the approach that a teacher takes on blended learning, they will be utilizing face-to-face teaching while incorporating an online learning component in an effort to increase learning, as well as, attitudes towards their work. Studies have shown that "using a blended learning approach improved students' achievement scores as compared to other approaches and had improvement effects on students' attitudes toward mathematics" (Lin, Tseng, & Chiang, 2016, p. 747). This is encouraging but also should not be a surprised. When students have better attitudes towards their learning scores are likely to go up as a result.

Implementing the online piece of the equation to blended learning can come in many different forms, but one of the most common ways is to utilize video instruction. Video instruction can come from a number of different places online, but YouTube is becoming one of the easiest places to access instruction on almost any topic imaginable. Dangwal (2017) touches on this in an article about blended learning saying that "blended learning provides students to gain advantage of the experts of the course content they are studying as they can easily watch lectures by renowned experts from different fields available on you tubes" (p. 131). Sal Khan, the creator of Khan Academy, has become one of the most revered online instructors in the world and with his website has begun to fundamentally change the way that education is obtained. Students, from anywhere in the world, can access relevant, high quality instruction free. This does not replace the teacher though, but rather creates an opportunity to incorporate

the blended learning environment into the classroom. This idea of utilizing video instruction is becoming more popular amongst teachers, especially in the area of mathematics. Teachers cannot only utilize the instruction available online, but they can also create their own videos to help create a more personal blended learning curriculum. Sal Khan started creating videos at first to help teach his cousins who lived in New Orleans while he was living in Boston. One of the very first pieces of feedback he got from his cousins is that they preferred the online instruction videos because instead of hearing it once they were able to pause, rewind, and re-watch pieces that they did not understand (Khan, 2011). This can be an incredibly powerful way to utilize video and help students capitalize on the benefits of blended learning as well as helps us understand why research is saying students' attitudes and overall performance are improving.

Blended learning creates a different responsibility for the teacher in the classroom. The teachers become less of an instructor and more of a facilitator. This type of approach according to Eryilmaz (2015) creates "extensive pre-preparation" from the teachers end to make sure class will run smoothly which is different from a traditional classroom (p. 252). This seemingly makes sense because you are finding and creating videos, determining activities, and identifying the needs for each of your students rather than preparing one lesson for all the students to hear one time during class. Edutopia interviewed Peter McIntosh, an educator that has implemented the blended learning environment in his classroom where students utilize their laptops to access the instruction, which provides him the opportunity to work with specific students or groups while the rest of the class continues to stay engaged (Edutopia, 2012). The online practice and immediate feedback has been a great benefit and has encouraged students to keep moving through the problems. McIntosh said, "Their behavior, their habits were changing. We started to notice that kids were staying engaged by looking at screens of our coaching data seeing kids

repeatedly trying, watching the videos, taking some hints, taking an ownership, and developing an attitude that they are going to figure this out" (Edutopia, 2012, 3:37).

Blended learning can take many forms, but research seemingly indicates that combining face-to-face teaching while utilizing online learning resources to supplement instruction has proven to be successful.

Methods

Data Collection

The action research project to determine the effectiveness of blended learning was administered in a sixth-grade math classroom. There are four sections of math that are taught during that day that have between 23 and 29 students in a class. The demographics of the school are predominantly white, but the Sioux Center Community School District continues to see an increase in the Hispanic population. The sixth-grade class has 99 students, there are 24 students who receive English language learner (ELL) services, and six of those students test at a TELPA 1 level, which means that they speak virtually no English. The Tennessee English Language Proficiency Assessment (TELPA) was the placement test used in Iowa for ELL students this past school year. Ten students in the sixth-grade class receive special education services. There is one ELL and one special education student who participate in a pullout math program and do not attend the sixth-grade math class on a regular basis. The math classrooms throughout the middle school are also leveled by the students' history in math, test scores, and teacher recommendations. The idea is to allow teachers to meet the needs of their students by surrounding them with their peers at the same level creating an ideal situation to differentiate with the hopes of increasing student learning. There is one high core, two middle level cores,

and one low core. The low section benefits from an additional teacher, as the sixth-grade math teacher and the sixth-grade resource room teacher co-teach the math class each day. They also are provided with para-professional support as well to help meet the needs of the students.

The goal of the action research project was to determine if a blended classroom environment, particularly a flex model approach to blended learning, is advantageous for students and improves their learning. In order to find an answer to this question the teacher used a mixed methods approach, both quantitative and qualitative data collection, comparing two forms of teaching – direct instruction and blended learning. Since the sixth-grade math core is leveled, the teacher used the two middle level cores for comparison. Students in one core would experience a direct instruction model of teaching for the unit, receiving class instruction from a teacher at the front of the room and completing all of their work on worksheets, whereas the second group would participate in blended classroom approach, watching videos for instruction and completing their work using websites such as Khan Academy and IXL for practice with immediate feedback. The approach to the research was to be able to give a clear, straightforward determination of whether or not blended learning was positive for student achievement.

Over a three-week span, data was collected during a unit on ratios, rates, and proportions, which covered parts of the Iowa Core standards 6.RP.1,2,3a, and 3b. Students were given a pre-assessment, which allows the researcher a point of comparison when the summative assessment is given at the conclusion of the unit to compare the student learning. This also allows the researcher to statistically compare the classes prior to the research to determine whether one class is significantly smarter than the other. After the pre-assessment was given, the Core 1 math class participated in a blended classroom. Students would go to Google Classroom and find out what they needed to do for the day. Typically, students would be directed to watch a video on

EDpuzzle, which is a website that allows the teacher to create and upload videos from YouTube and track whether or not the students have watched the videos. The other feature that is key to this website is the ability for the teacher to create questions that must be answered while watching the video. Students can be forced to not skip ahead and are held accountable for what they are viewing. When they have watching the video for the day students were then able to practice using Khan Academy or IXL. These are websites that provide students with problems to solve and immediate feedback. Students can use the feedback to help monitor their learning and determine on their own if they are understanding. These websites also have hints, links to other videos, and examples of how to solve the problem when they get it wrong. The Core 2 math class participated in a direct instruction approach where the teacher taught the lesson from the front of the room going through problems with the whole class while they took notes. When the lesson for the day was finished, students were given a worksheet to practice what they had just been taught and the worksheets were then graded at the beginning of class the following day. The worksheets that Core 2 were given had very similar problems to what students in Core 1 were doing on Khan Academy and IXL. Both classes were given the same formative assessments, such as tickets out the door, checkpoints, and study guides. The videos that Core 1 watched all featured the sixth-grade math teacher doing a lesson similar to what Core 2 received in a direct instruction model. When the unit was completed, students were given the summative assessment in each class, which was a similar assessment to the pre-assessment. This allowed the researcher to quantitatively compare which method produced better results.

Although most of the data was collected quantitatively, there was a qualitative component to the research as well through observations, informal questions, and conversations with the students. General questions were asked to several students about their preference

towards utilizing worksheets or websites for practice. Students who participated were asked their thoughts regarding receiving instruction via online videos. The ability to see first-hand the differences in how the classrooms moved and breathed was powerful and provided good insight.

Findings

Data Analysis

The overwhelmingly positive research towards blended learning that has already been done, coupled with the researcher's view on how technology can influence learning, as well as, the district objectives to put a premium on utilizing laptops and Chromebooks to help further student learning have created an opportunity for research bias in this action research project. That is why it was important to create solid, clear-cut, data collection methods in order to determine if blended learning truly does increase student learning. In an effort to do that, the researcher utilized a combination of qualitative and quantitative research methods, focusing heavily on the latter of the two. The goal was to implement data collection methods that would be unbiased and easily understood.

The quantitative data collected was done to compare two classes going through the same unit receiving different types of instruction - blended instruction and direct instruction. The researcher administered a pre-assessment to be able to gauge where the students were at before the unit began which also served as a clear picture how the classes compared. Since the four sixth-grade math cores – a low class, two middle classes, and a high class – are leveled based on state assessment scores, previous math experience, and teacher recommendation, the two middle classes were chosen because of how they compared prior to the research. This cross-section of

the sixth grade cuts out many of the outliers – those who will struggle and those who will thrive under either circumstance.

The first step in the data collection process was to have the students take a pre-assessment. The pre-assessment had ten questions on the topics of ratios, rates, and proportions. The pre-assessment was administered as a paper-pencil test prior to the commencement of the unit. The assessments were then graded and recorded on a Microsoft Excel sheet (see Appendix A). The results of the pre-assessment showed no students getting more than three correct answers in either class. Forty-nine students took part in the action research, nine got three correct answers and five students got no correct answers. This shows that 18% of the students have some experience with the material where as 10% have seemingly no experience, prior knowledge, or retention of the material. The remaining 35 students, or 72%, that participated fell somewhere in the middle and this is likely indicative of many students having past experience with ratios in prior grades, but little knowledge on applying those ratio concepts to rates and proportions.

The second step was to incorporate the blended learning and direct instruction models into the classroom. Students went through the same unit, but in very different ways. Throughout the unit, qualitative data was collected through informal questions and observations. Students in the blended classroom were very unsure of receiving instruction through videos and in the first days of the unit would often try to rely heavily on the teacher to answer questions for them. They were reluctant to want to use the videos and take notes appropriately. However, as the unit went on and the students were shown appropriate ways to use the video and take notes, they became much more independent and started relying on the resources that were at their disposal, rather than the one resource that they were ingrained to use, the teacher. The most encouraging

observation in the blended classroom was how students began collaborating with their peers. Students were relying on each other to help understand the material in the video, as well as, seeking help to complete their practice problems. This was a noticeable difference compared to the direct instruction classroom where students, when given work time after instruction, worked independently and kept largely to themselves. Students in the directly instructed classroom were also more reluctant to ask questions and the teacher had little time to work independently with groups of struggling students. The blended classroom allowed more time to help those who did not understand by teaching to small groups of students while others worked, and the videos and practice was able to keep everyone engaged while the teacher worked with those small groups.

General questions were asked to students in the blended learning classroom about their preference of video instruction and online practice versus the traditional direct instruction teaching from front of the room they were accustom to. Students had mixed reviews, especially in the beginning, as expected with a change to the norm such as this, but throughout the unit, as their comfort grew; many students expressed how much they liked the video instruction. The main comment students voiced was the ability to watch it more than once and be able to watch it at home. This was encouraging because students who needed that extra time to understand it or needed to hear things more than once were afforded that option, as well as, the ability to watch it outside the classroom if they desired. Students in the direct instruction classroom were also asked questions, such as how they enjoyed the way class was setup with a lesson presented and then work time to follow. Students seemed to be fine with the way class was set up, but also, have not experienced much different when it came to previous math classes they have experienced and therefore, those responses were not surprising. In an effort to separate true blended learning from the direct instruction model, all the practice was done via paper and

pencil. Students throughout the year have done some practice this way, but they have also utilized Khan Academy and IXL for practice as well. This offered a unique perspective and a chance to hear what students preferred when doing their practice. When asked which they preferred, worksheet or computer practice, many preferred the computer, and when asked why they preferred one or the other, students who liked the worksheets cited most often the fact there was a fixed amount of questions, but those who preferred the practice on the computer said they appreciated the immediate feedback to know if they got it right because they didn't like waiting until the next day to correct their assignment. One student in particular said, "Even though I hate getting them wrong and having to do more problems, I feel like it helps me learn better."

Benefits and drawbacks were observed from the teacher's perspective for blended learning. The ability to work with small groups and struggling students topped the list of benefits. Having the freedom to work with the students that are truly struggling really helps differentiate in the classroom and gives them the attention they need to succeed. An unforeseen benefit prior to the action research was how easy it was to keep students who were absent caught up. Students who were gone knew exactly what they needed to do when they missed class and there was not a struggle to find a time to catch the student up because they could just watch the video from the day they were absent. Another key benefit to blended learning is how it created this opportunity for students to collaborate, learn from each other, and really take ownership of their learning. Students felt more responsible for their work and enjoyed be able to help their classmates. Many times, it was observed where students would be struggling, they would ask the person next to them for help, and those students would immediately, often times enthusiastically, want to help if they could. Students at the middle school level enjoy being able to help others, especially when they feel confident with their own skills. This not only helps the student who is

struggling, but this reinforces for the student helping that they know the concepts. On the other side, as with anything, there are always drawbacks, and one of those drawbacks to blended learning is the time outside of class it takes to be prepared for class. Teachers who want to make video lessons need time to create, edit, and upload those clips so they are ready to view for the students. This takes a lot of time, but it also takes resources. Schools with fewer resources may not be able to accommodate teachers that are seeking to create a blended classroom.

The third step was at the conclusion of the unit when the students took their summative assessment, which was similar to the pre-assessment, featuring ten of the same types of questions over ratios, rates, and proportions. The assessment was in paper-pencil format and the results were recorded on a Microsoft Excel spreadsheet with the pre-assessment results for an easy comparison. The blended classroom average for the summative assessment was 8.58 points out of 10, whereas the direct instruction classroom average was 7.43. Those in the blended classroom improved their scores 6.92 points compared to the direct instruction classroom of 5.87. This means that those in the blended classroom environment improved their scores on average a little more than a full point compared to the direct instruction classroom. The most evident statistic was the fact that 25 of 26 students, or 96%, got seven or better in the blended classroom, and eight students received perfect scores, whereas, only 17 of 23 students, or 74%, received a score of seven or better on the summative assessment in the direct instruction classroom, and only one student had a perfect score. Student W in the blended classroom was an ELL who benefited immensely from the video instruction. The student, who knows very little English, was able to translate the videos in Spanish using the closed captioning option that is available on YouTube.

The quantitative and qualitative analysis of blended learning versus a traditional, direct instruction approach, showed students being more engaged in their work, taking ownership of their learning, and also, showed a statistical improvement in student learning. Although this is only one unit in one classroom, the results are favorable towards a blended learning approach in the math classroom. This encourages students to responsible for what they are learning, but also provides the teacher with the freedom and access to meet the needs of their students.

Discussion

Challenges with Data

Time and energy were spent coming up with a way to collect quality data in such a short amount of time. The idea of using a mixed methods data approach was to provide insight into how the students were doing quantitatively by tracking their scores from pre-assessment to summative assessment, but also, how they were feeling about the classroom environment by collecting qualitative data through informal questioning and observations. The qualitative observations could always be contested and be up for interpretation from researcher to researcher being that one person might view a situation differently than the next. However, the observations collected suggested that students were more engaged with the material and were asking questions that are more thoughtful. An unexpected outcome of the action research was how students collaborated with one another in a blended classroom, relying on their classmates to help further their understanding.

Another area that could be called into question was how the classes were compared to one another and the unit that they went through. The classes were chosen to be compared because of how they students are leveled into their cores from previous test scores, history in

math, and teacher recommendations. The classes in comparison showed similar levels of knowledge with the material on the pre-test scoring with the blended learning classroom scoring on average 1.65 with the direct instructed classroom scoring 1.57, which is a difference of 0.08 or less than 1% higher.

The results may vary if done in longer stretches of time since this was a new and fresh idea that the students were participating in. Sixth-graders may show a reluctance to give the same amount of effort if asked to do this every unit the whole year, which may sway the results more favorably towards the direct instruction approach. However, the indication through the data collected suggests that students worked more collaboratively, take ownership of their learning, and yield higher achievement levels in the blended classroom setting. The data collection methods were solid and could be easily repeated by other researchers in other classrooms over different periods for comparison.

Conclusion

The results of the research to determine if the blended learning approach provided students with an advantage to those in a direct instruction classroom showed that those in a blended classroom performed higher than those in a direct instruction classroom. The research also revealed that students in a blended classroom were better able to utilize their resources, collaborate with other students, and take more of an ownership of their learning. Students were more engaged with the material because they could not escape it as they could in a traditional classroom. They were not afforded the option to relax in the back and tune out the teacher, but were asked formative questions as they watched the video to help themselves gauge their understanding. Students with higher needs benefited from the blended classroom as well because they could work one-on-one or in small groups with the teacher. This allowed them to

get the help they needed and their questions answered. Those who had a higher content knowledge also benefited because they were able to work at their own pace and explore deeper level concepts in the unit on their own. Blended learning provided all students with a positive learning experience and produced higher student achievement.

References

Christensen Institute. (2017). Blended learning definitions. Retrieved March 18, 2017, from http://www.christenseninstitute.org/blended-learning-definitions-and-models/

Dangwal, K. L. (2017). Blended learning: An innovative approach. *Universal Journal of Educational Research*, 129-136. Retrieved March 12, 2017, from http://files.eric.ed.gov/fulltext/EJ1124666.pdf

Edutopia (Adapter). (2012, October 10). Blended learning energizes high school math students (Tech2Learn Series) [Video file]. Retrieved February 4, 2017, from https://www.youtube.com/watch?v=wAvWvP7jvRI&feature=youtu.be

Eryilmaz, D. (2015). The effectiveness of blended learning environments. *Contemporary Issues In Education Research*, *8*(4), 251-256. Retrieved February 4, 2017, from http://files.eric.ed.gov/fulltext/EJ1077330.pdf

Khan, S. (Writer). (2011, March). Sal Khan: Let's use video to reinvent education [Video file]. Retrieved ‘February 26, 2017, from https://www.ted.com/talks/salman_khan_let_s_use_video_to_reinvent_education#t-95720

Lin, Y., Tseng, C., & Chiang, P. (2016). The effect of blended learning in mathematics course. *EURASIA Journal of Mathematics Science and Technology Education*, 741-770. Retrieved March 18, 2017, from file:///C:/Users/Aaron.Rozeboom/Downloads/eurasia_2017_00641a.pdf.

Appendix A

BLENDED LEARNING (CORE 1)				
Students	Pre-assessment	Post-Assessment	Change in Score	Percentage Change
Student A	2	8	6	3.00
Student B	3	10	7	2.33
Student C	2	8	6	3.00
Student D	1	9	8	8.00
Student E	2	8	6	3.00
Student F	3	10	7	2.33
Student G	3	10	7	2.33
Student H	2	8	6	3.00
Student I	1	7	6	6.00
Student J	2	8	6	3.00
Student K	1	10	9	9.00
Student L	2	9	7	3.50
Student M	1	7	6	6.00
Student N	2	9	7	3.50
Student O	1	10	9	9.00
Student P	1	8	7	7.00
Student Q	2	8	6	3.00
Student R	2	9	7	3.50
Student S	3	10	7	2.33
Student T	0	6	6	#DIV/0!
Student U	1	7	6	6.00
Student V	2	8	6	3.00
Student W	0	7	7	#DIV/0!
Student X	1	10	9	9.00
Student Y	2	9	7	3.50
Student Z	1	10	9	9.00
Averages	1.65	8.58	6.92	4.19

DIRECT INSTRUCTION (CORE 2)				
Students	Pre-assessment	Post-Assessment	Change in Score	Percentage Change
Student A	0	5	5	#DIV/0!
Student B	1	8	7	7.00
Student C	2	7	5	2.50
Student D	1	7	6	6.00
Student E	3	9	6	2.00
Student F	3	10	7	2.33
Student G	1	6	5	5.00
Student H	2	5	3	1.50
Student I	1	8	7	7.00
Student J	2	6	4	2.00
Student K	2	9	7	3.50
Student L	3	7	4	1.33
Student M	3	9	6	2.00
Student N	0	6	6	#DIV/0!
Student O	1	8	7	7.00
Student P	2	7	5	2.50
Student Q	1	9	8	8.00
Student R	1	9	8	8.00
Student S	0	5	5	#DIV/0!
Student T	2	8	6	3.00
Student U	3	7	4	1.33
Student V	1	8	7	7.00
Student W	1	8	7	7.00
Averages	1.57	7.43	5.87	3.75