Blended Learning in the 21st Century Classroom

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Abstract

The purpose of this literature review is to examine the effective practices of blended learning in the 21st century classroom. Teachers are challenged with teaching students in an ever changing world. Students are growing up with technology at their fingertips and blended learning is trying to adapt to that. In order for teachers to support students through blended learning models, school districts need to create a plan that will be long lasting and supportive of teacher learning. Blended learning provides an outlet for teachers to meet the demands to provide students with the proper skills needed for the 21st century.

Blended Learning in the 21st Century Classroom

In the 21st century classroom students are being asked to prepare for a totally new workforce. Though students continue to learn in a brick-and-mortar school with traditional teaching methods. As the teacher stands in front of the room and provides lecture notes and projects primarily with pencil and paper; the question is can the skills and knowledge needed to be successful today be taught in the same traditional way? School districts across the globe are crossing the digital divide and are looking for new means to acquire these skills and knowledge. Blended learning is not a new concept but has gained attention as of recent. Clayton M. Christensen, Michael B. Horn, and Heather Staker discuss the impacts of blended learning as a disruptive innovation. They see blended learning as a disruptive learning tool that will eventually become part of the mainstream classroom (Christensen, Horn, Staker, 2013).

Around the world schools are taking blended learning to a new level by incorporating mobile learning. Schools across the world are using mobile learning to infuse into a blended learning environment

As the internet continues to grow and develop. Learning more about what blended learning is; is at the forefront for schools and the learning community. This literature review will discuss what blended learning is, the models of blended learning, how it is being implemented, and the global impact of blended learning.

Review of the literature

Blended Learning Defined

Blended learning, also referred to as hybrid learning combines the traditional classroom with online learning. While students are accustomed to a teacher administering their education in a teacher centered classroom. Blended learning allows for a more personalized learning that is student centered. Within the brick-and-mortar building which is the traditional classroom, teachers are now incorporating more technology than ever before. As teachers have incorporated technology into their classrooms the traditional classroom has been transformed into a 21st Century Classroom. Michael B. Horn and Heather Staker defined blended learning as “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 and at least in part at a supervised brick-and-mortar location away from home (Horn & Staker, 2011).” John Bailey, Nathan Martin, Carri Schneider, Tom Vander Ark, Lisa Duty, Scott Ellis, Daniel Owens, Beth Rabbitt, and Alex Terman 2013 research added to these definitions by stating Blended Learning is a shift to an online delivery for a portion of the day to make students, teachers, and schools more productive, both academically and financially (Bailey, Martin, Schneider, Vander Ark, Duty, Ellis, Terman, 2013).

Blended Learning Models

Blended learning has many different means of implementation. With blended learning there are several different dimensions available for teachers to use. Teachers have the liberty to choose which model best suits them and their teaching style.

Christensen's et al. (2013) research on blended learning schools and programs found that the majority of blended programs fall into one of four models: Rotation, Flex, A La Carte, and/or Enriched Virtual (Christensen et al., 2013).

Rotation Model. According to Horn and Stalker (2011), a common feature in the rotation model is that, within a given course, students rotate on a fixed schedule between learning online in a one-to-one, self paced environment and sitting in a classroom with a traditional face-to-face classroom and online learning because it involves a split between the two (Horn & Staker, 2011). Rotation models can be seen as hybrid models. It is considered a hybrid solution that gives educators the best of both worlds. It has the ability to sustain itself in a traditional classroom even though it is not a traditional means of teaching. The Rotation model has four sub-models:

Station Rotation. John Watson, Allison Powell, Patrick Staley, Susan Patrick, Michael Horn, Leslie Fetzer, Laura Hibbard, Jonathan Oglesby, and Su Verma (2008) defined it as a course or subject in which students experience the Rotation Model within a contained classroom or group of classrooms. All students would travel from one station to the next receiving the same information at each station. There is no deviation in this model (Watson, Powell, Staley, Patrick, Horn, Fetzer, Hibbard, Oglesby, Verma, 2008).

Lab Rotation. Students rotate from the traditional classroom to an online learning area.

Flipped Classroom. In 2008 Watson et al. stated this is a course or subject in which students participate in online learning off-site, in place of traditional homework,

and then attend the brick-and-mortar school for face-to-face, teacher guided practice or projects. In this model students go home and learn the content and primary instruction online. Homework is practiced with-in the classroom. Where teachers can supervise and give one-on-one help.

Individual Rotation. In 2013, Clayton M. Christensen's et al. review of Blended Learning Hybrids, Individual Rotation differs from other Rotation models because each student in essence has an individualized playlist and does not necessarily rotate to each available station or modality.

Flex Model

Watson et al. (2008) continue on by defining this as a course or subject in which online learning is the backbone of student learning, even if it directs students to offline activities at times. The teacher is on-site, and students learn mostly on a brick-and-mortar campus, except for any homework. Students move through a Flex course according to their individual needs. Face-to-face teachers are on hand to offer help, and in many programs they initiate projects and discussion to enrich and deepen learning, although in other programs they are less involved (Watson et al., 2015). Horn and Staker note that many dropout-recovery and credit recovery blended programs fit into this model (Horn & Staker, 2011).

A La Carte Model

Christensen's et al. (2013) classified A La Carte models as one in which students take one or more courses entirely online with an online teacher of record and at the same time continue to have brick-and-mortar educational experiences. Students may

take the online courses either on the brick-and-mortar campus or off-site (Christensen et al., 2013). In Watson's research he adds it differs from a full-time online learning because it is not a whole-school experience. Students take some courses A La Carte and others face-to-face at a brick-and-mortar campus (Watson et al.,2015).

Enriched Virtual Model

Christensen's et al. research in 2013, stated that Enriched Virtual Models is a course or subject in which students have required face-to-face learning sessions with their teacher or record and then are free to complete their remaining course work remotely from the face-to-face teacher (Christensen et al.,2013). Similarly to Christensen, Horn, and Staker's research in 2013, Watson's et al. (2015) research went on to conclude that many Enriched Virtual programs begin as full time online schools and then develop into blended programs that provide students with brick-and-mortar school experiences (Watson et al., 2015). Students seldom meet face-to-face with their teachers every weekday in this model. Teachers have the freedom to create specific times in which students are required to meet face-to-face.

Implementation of Blended Learning

According to Dr. Pandit, Blended Learning is not a new idea. "Technology-based training emerged as an alternative to instructor-led training in the 1960s on mainframes and min-computers" (Pandit,2015). In Murphy, Snow, Mislevy, Gallagher, Krumm, & Wei's research found that blended learning has very little research. They found that only 46 studies between 1996 and 2008 have any conclusive evidence to support Blended

Learning. Their conclusion is that more research needs to be conducted. Since 2008 more research has been conducted on the Implementation of Blended Learning.

In 2013 Bailey's et al. research indicated that by the end of the decade, most U.S. schools will fully incorporate instructional technology into their structures and schedules. They also concluded that digital instructional materials will be the predominant means of learning. That the learning day and year will be transformed and extended. Learning will be more personalized, and the reach of effective teachers will be expanded (Bailey et al., 2013). The path to Blended Learning has multifacets to its creation. Incorporating new technology and teaching pedagogy into the school is not as simple as just dropping in new computers. Districts will need to create a plan that is tailored to their own needs and wants.

Creating a Plan

Rachel L. Schechter et al. in 2017, stated that in order for innovative programs to be successful, teachers need to be engaged in both new educational practices as well as the related professional development opportunities. Whether teachers implement a new curriculum with enthusiasm or return to their traditional way of instruction depends on their perception of success (Schechter et al., 2017). One of the first steps in creating a plan is developing a team of leaders.

Leadership. Anytime implementing a new model of learning leadership is needed in order to spearhead the implementation. In 2013, Rob Darrow, Bruce Friend, and Allison Powell stated that successful implementation of blended learning requires strong and consistent leadership at both the district and school levels. Leadership is the

foundation from which all other components develop, and leads to the adoption of blended learning so that it becomes part of the fabric and culture of the school (Darrow, Friend, and Powell, 2013). As part of the effort to build support, school districts should consider running small pilot groups. Blended Learning is more successful when there are groups of stakeholders such as: Superintendent, School Board, Principal, Teaching Staff, Community and Students involved. A successful team is devoted to creating a school culture dedicated to continuous improvement. Once a team of leaders is established, school wide and teacher goals need to be established.

Developing Goals. In 2013, John Bailey's et el. research stated that in order for success project-specific goals for blended learning must be created. These implementation goals should include timeline and milestones, budgets, staff learning goals, infrastructure objectives, and curriculum development activities (Bailey et al., 2013). Bailey's team also suggested a staff survey to help identify goals and critical starting points. Once Goals are developed, leaders have a starting point from which they can start to develop professional development.

Professional Development. Professional Development is a crucial part of the plan. In Darrow's et al. research they found that professional development is a key component for ongoing implementation of goals. An intentional and systematic professional development plan, based on stated goals, should be in place. Professional development should be customized based on the needs of the blended learning teachers and administrators (Darrow et al., 2013). Schechter's et al. research also supports teacher training strategies that support intrinsic motivation to lead to

successful implementations of new educational programs(Schechter, et al., 2017). Several questions that should be asked by the leadership team.

1. What type of professional development is needed for school leadership and blended learning teachers?
2. How will professional development be delivered and who will provide it?
3. How will ongoing and continuous professional development be provided?

When questions like these have been answered planning takes on a new role.

Barriers to Implementation

No matter what school implementation there is bound to be barriers to their success. With Blended learning there are several trends that come to the forefront. In order for initiatives like blended learning to work, school districts and school leaders need to take into account the following potential barriers. School districts and teachers will need to understand that it will take time to implement blended learning. Students have grown with at their fingertips.

Funding. No matter what the implementation schools more often than not are bound by funds. According to Jennifer Fritschi and Mary Ann Wolf The US Federal Communications Commission (FCC) started funding schools and libraries across the nation to better provide internet services. The program began in 1998, demand for E-rate funds has increased by 108 percent, from $2.36 billion in 1998 to $4.65 billion in 2011. However, despite the increase in demand, the 12--- available funding has remained nearly the same. From 1998 to 2009, the available E-rate funds were capped at $2.25 billion. The cap was indexed by inflation starting in 2010, resulting in $2.27 and

$2.29 billion in available funds for 2010 and 2011(Fritschi & Wolf, 2012). Buying computers for 1:1 initiatives is costly. Schools across the world are addressing this problem by incorporating mobile devices. If schools already have computers or iPads the technology that goes with it can also be just as costly. Expanding Wifi access in the school and more technical support comes with the implementation as well. In many cases schools hired technology technicians. Technicians help support teachers and students in their learning adventure. If a school district doesn't already have a technician this can be an added cost. Bailey et al. (2013) described understanding technology needs and total cost of ownership, when coupled with best-practices in purchasing, will facilitate acquiring the right devices at the right price. They recommend watching out for bundling deals. Manufacturers may try to increase revenues by selling additional products and services. When purchasing new technology, purchase only what is needed and nothing more. In order to cut costs look for already established resources with-in the state. Many states or area education agencies provide technology resources at a fraction of the cost (Bailey, et al, 2013). In Mark West's case today in Africa, many of the projects described in his case are no longer operating, having withered away after their initial funding dried up (West, 2012). Funding is crucial to implementing a blended learning environment. Mobile devices and 1:1 initiatives can only benefit schools as long as student's can continue to use the devices provided.

Students. The students themselves can be a barrier for implementation. If students are not accustomed to learning with technology students may struggle with this change. In Lautzenheiser and Hochleitner 2014 research in DC public schools. They

found that no matter how good the tools are if students cannot use them, even the most promising blended learning efforts will be derailed (Lautzenheiser & Hocleitner, 2014). Students will need to learn new habits and understand what it takes to be successful in a personalized learning environment. In 2005 Kathleen Matheos, Ben K. Daniel, and Gordon I. McCalla's study suggested that not all learners are comfortable with this shift. In their research more than half of all students surveyed preferred the traditional classroom (Matheos, Daniel, and McCalla, 2005). Another challenge for blended learning within the student realm is English Language Learners. Technology has yet to fully develop for ELL students. With any hybrid system technology will eventually be created to meet the shortcomings of the consumers.

Stigma. Research states that there is a large amount of stigma associated with blended and mobile learning. According to Fritschi & Wolf, Although over 75% of district administrators have a positive view of the potential uses of social networking in education, most also rated time-wasting and distraction as moderate or severe concerns related to social networking (Fritschi & Wolf, 2012). Mark West's study of Africa saw similar concerns. Many parents, teachers and even students tend to view mobile technology as out of place in education and potentially harmful to students, despite the fact that mobile devices are well-situated to improve and extend learning opportunities (West, 2012). According to a study done across Europe by Jan Hylén, many parents and educators also worry that mobile phones enable inappropriate behaviours like cheating and cyber-bullying (Jan Hylén, 2012). With the fears of parents and school districts in mind, many policy makers have created policies that ban

the use of mobile phones in education.In many cases, local policies are based on fears about worst-case scenarios. Critics of mobile learning cite concerns about student safety, distractions, inappropriate behaviour and cheating. For example, New York City Mayor Michael Bloomberg has imposed a citywide ban on mobile phones in school. A spokesperson for Bloomberg said the mayor believes that 'mobile devices are major distractions that prevent all the other students in the classroom from learning (Fritschi & Wolf, 2012).

What worked?

Implementing technology into the classroom has its added uses. According to Jan Hylén of UNESCO the use of mobile devices has an added benefit when utilized in a blended learning model (Jan Hylén, 2012). Likewise according to Fritschi & Wolf, Project Tomorrow reported that, based on the 2010 programme evaluation and data from the 2009 Speak Up survey, students are 'more likely to be very interested in a job or career in science, technology, math or engineering' than high school students nationally 32% versus 19% (Fritschi & Wolf, 2012).

Professional Development. In case study after case study, professional development came up as a driving force in implementing a blended learning program. According to Brad Bernatek, Jeffrey Cohen, John Hanlon, and Matthew Wilka, even experienced teachers acknowledge that they struggled at first with the novelty of blended learning. The schools in question spent significant time attracting teachers with early adopter mentalities and providing support on skills like data analysis. Nonetheless, simultaneously planning and managing both online and offline learning experiences has

proved taxing, and leads some teachers to comment that it feels like teaching in their first year all over again (Brad Bernatek,Jeffrey Cohen, John Hanlon, Matthew Wilka, 2012). By supporting teachers through long lasting professional development schools districts can assure that teachers will acquire the proper skills needed. Several schools developed incentive plans that were tied to professional learning. Teachers were also found to be more motivated to implement blended learning when time was allocated by the school through professional development. According to John Watson in the same way that online teaching is recognized as different from face-to-face teaching, blended learning is also unique and requires new methods of instruction, content development, and professional development. In order for success teachers need to have time to learn new strategies and skills to implement a blended learning environment.

What could have been done better?

In many cases the sustainability of blended learning programs are connected to the use of the internet. Without the use of the internet blended learning goes by the wayside. This exact scenario was seen in Africa. According to Mark West's study in Africa all program's previously established by outside stakeholders are no longer in existence (West, 2012). They have since shut down. In many cases outside stakeholders or individual schools have taken the initiative to implement blended learning. In order for blended learning and mobile learning platforms to continue state and local governments need to make it a priority. Without government support initiatives like these tend to die. Governments need to quit making policies that inhibit the use of certain technologies in the classroom. Like in the case of Mayor Bloomberg

in New York (West,2012). According to Shafika Isaacs for mobile learning to grow and be institutionalized in formal education systems, governments will need to play a more proactive role in promoting the use of mobile phones for teaching and learning as well as for the administration and management of education systems and institutions (Isaacs, 2012).

With that being said there are gaps in the research. Apricot Ann Truitt found this to be the case in her research. Very little could be found in the way of elementary studies. Most studies on the use of blended learning are at a high level (Truitt,2016). Along with the lack of research in the elementary field, Chung Kwan Lo and Khe Foon Hew found similar problems finding specific resources for flipped classrooms. They stated while the previous reviews have provided some useful snapshots of flipped classroom research, these reviews appear to be inadequate to inform us about the practice of flipped classroom approach in K-12 education (Lo & Hew, 2017). Blended learning is still relatively new in its current form. More research needs to be done on the use of the different blended learning models specifically rather than a whole.

Conclusion

As the United States moves more and more to an information age, technology will play a major role in the American classroom. The use of the computer in the classroom can not just be merely added. In looking at the research computers are not the only useful tool to reach students. Schools need to also think about the use of the mobile phone both in and out of the school setting. Schools need to have a plan and blended learning provides a platform for the transition to incorporating technology in the

classroom. Blended learning can come in many forms and that gives teachers and schools opportunities to create personalized learning environments. By differentiating instructions students can have a more designed plan for learning. Blended learning provides personalized learning for each student's needs and interests. In looking at implementing a blended learning environment schools need to have a clear plan. When designed and supported correctly blended learning can combine the best of the traditional classroom and the online learning environment. Research continues to support a blended learning environment, but more research is needed to see the true impact. As Mark West stated mobile learning has the potential to increase student achievement. Innovative districts and schools have produced empirical data showing improvements in student progress as a result of mobile learning programmes (West, 2012).

Schools across the globe are looking for ways to implement blended learning. They see blended learning as the way to help students build 21st Century Skills. The skills that students will need in order to build the future.

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